FOOD & BEVERAGE SERVICE SEMESTER – III / IV (THEORY)

Name of the Programme	Duration	Semester	Course/Course Code
B.Sc. in Hospitality Studies	Six Semesters	III/IV	Food & Beverage Service - III(USHO 302)
Course Code	Title	Credits	
USHO302	Food & Beverage Service -III	2+2	

For Course Per week 1 lecture /period is 60 minutes dur tion				For Subject per week 1 lecture /period is 60 minutes duration			
	Theory	Practical					
Actual Contact	3	4					
Credit	2	2					

Semester III /IV – 15 weeks

THEORY					PRACTICAL					Total Credits
Hours / week	Total Hours	Notional Hours	Credits	Total Marks	Hours / week	Total Hours	Notional Hours	Credits	Total Marks	Lecture + Practical
03	45	25	02	--	04	60	10	02		04

OBJECTIVES:

At the end of semester III/IV: -

- Describe the duties and responsibilities of beverage service staff members, and summarize techniques and procedures for responsibly selling and serving cocktails, beer, and wine.·
- Understanding the prod uction process of Beer, Wine and Spirits.·
- Making of cocktails with use of ingredients such as liqueurs and bitters. ·

Contents of syllabus for USHO 302

UNIT NO.	TOPICS	TOTAL NO. OF HOURS
I	**ALCOHOLIC BEVERAGES** a. Definition, history of Alcoholic Beverages & classification. b. Benefits and harmful effects of alcohol.	02
	WINES	13

	1.1 Definition & history of wines. **1.2 Types of Wines:** Still (red, white & rose), sparkling/Champagne, Fortified (sherry, port, Madeira, marsala & malaga), Aromatized wines (Vermouth). **1.3 Methods of production, Still (red, white, rose).** **a) Viticulture** (Wine calendar, terroir, vine species, grape varieties & diseases). **b) Vinification** (Manufacturing process, elements of wine & faults in wines). **c) Champagne & Sparkling Wines**. (History, districts, grape varieties, Methode Champenoise, cuvee close, transfer method, charmat & impregnation, Names & bottle sizes). **d) Fortified Wines (Production & types).** 1) Sherry (Solera system) 2) Port 3) Madeira (estufagen) 4) Marsala 5) Malaga **e) Aromatised wines (Definition & types)**			
II.	**1.1 Wine producing countries of the world** (Regions, Wine laws, labels & shippers). a) Old world wine producing countries (France, Italy, Germany, Spain & Portugal). b) New World wine producing countries (Australia, New Zealand, South Africa, U.S.A. & India).			10
	1.2 Wine tasting, Storage & Service			02

	1.3 Food and wine Harmony .			03

III.	**1.1 BEER & OTHER FERMENTED BEVERAGES** a) **Definition, History & Brewing process.** (Components of beer, top fermentation, bottom fermentation) **b) Types of Beer, Storage & Service** (Lager, Pilsner, Draught, Ale, Stout, Porter, Ice, Lambic & Smoked).	03

	c) **Other fermented beverages (Cider, Perry, Me ad, Sake & Toddy).**	
	1.2 SPIRITS a) Introduction and definition b) Pot and patent still method of production. **1.3 History, Production, types & Brand names (national & International)** a) Whisky (Scotch, Americ an, Canadian, Irish & Japanese) b) Rum (White, Gold, Dark & Flavoured) c) Brandy (Cognac, Armagna c & Fruit) d) Gin e) Vodka, flavoured vodka f) Tequila & Mezcal	05
	1.4 Alcoholic Strength :Proof, GL, Sykes, U.S., British (OIML) **1.5 Other Spirits (Aquavit, schnapps, Pastis, ouzo, arrack)** **1.6 LIQUEURS** Introduction, definition, classification & production of liqueurs a) Different types of liqueurs: Base, Flavours, Country of origin. b) Brand names of liqueurs (Generic & Proprietary)	04

	1.7 APERITIFS & BITTERS a) Definition	01

	b) Brand names	
	1.8 GLOSSARY OF TERMS RELATED TO Alcoholic beverages, Menu terminologies. Acidity Alcohol Aldeyhyde Ampelography Baume Blanc de blancs Blanc de Noirs Blush wine Bodega Bonded Botrytis cinerea Cap Cask Centrifugation Chambrer Chaptalisation Cork Cotes	02

	Cuvaison Cuve close Cuvee Decanter Decanting Degorgement Eau-de-vie Estufagem Eiswein Fining Gyropalette Lees Malolactic fermen tation Must Mulled wine Negociant Oechsle Oenology Oenophile Organic wines Pasteur, Louis Passe -tout-grains Petillant Photosynthesis Punt Ra cking Refractometer Residual sugar Rince cochon Sa ccharometer Sa ccharomyces ellipsoideus Sommelier Siissreserve Tannin Tastevin Tears Vendange Vinification Vintage wine Viscosity Tannin Tastevin Tears Vinification Vintage wine Vendange Viscosity Vitis vinifera Wash Weeper Yeast Yeast autolysis	
	TOTAL THEORY HOURS	**45**

REFERENCE BOOKS:-

- Dennis Lillicrap, John Cousins and Robert Smith- Food and Beverage Service.
- Larousse Christopher Foulkes- Encyclopedia of Wines - .
- Roy Hayter Food And Drink Service Levels 1 And 2.
- Greg Dempsey - The Perfect Cocktail - .
- Joanna, Simon - Wine With Food - Simon & Schuster.
- Dave Broom - Handbook of Whiskey.
- Shatbi Basu - The can't go wrong Cocktail book .
- Brian Glover - The world encyclopedia of Beer .
- Tom Stevenson - Champagnes and Sparkling W ines guide .
- Vijay Dhawan - Food and Beverage Service .

FOOD & BEVERAGE SERVICE SEMESTER – III /IV (ASSIGNMENTS)

All students should be given individual assignments. Out of the following given options each student needs to work on any two.

SR. No.	TOPIC FOR ASSIGNMENTS	MARKS
1.	Collecting wine labels of different wine producing countries and explain any one in detail.	
2.	Identifying International and Indian brands of Spirits.	
3.	Identifying International and Indian brands of Beer.	
4.	Explore any two innovative cocktails according to different methods of making cocktails.(Built up / Stirred / Shaken / Blended /Muddled)	
5.	Visit to Vineyard.	

Unit I

ALCOHOLIC BEVERAGE

A. Introduction

The word is derived from the Arabic word al-kohl. **A potable liquid containing ethyl alcohol or ethanol of 0.5 percent or more by volume is termed as an 'alcoholic beverage'.** Alcohol is generally defined as a liquid obtained through the fermentation of a sugar containing liquid. Fermentation is a process in which the yeast acts on sugar and converts it to ethanol and gives out carbon dioxide. The fermented liquid has 3-14% alcohol and it can be concentrated upto 95% by a series of distillations. Alcohol was referred to as any fine powder, which was applied to essences obtained by distillation by the alchemists of medieval Europe. Pure alcohol is a colorless, clear liquid with a burning taste. It derives its color from the wood of the cask in which it is matured. It also derives its color and/or from the caramel or vegetable dyes which may be added during its maturation or bottling.

The History of alcohol

Alcoholic beverages have been widely consumed since prehistoric times by people around the world, seeing use as a component of the standard diet, for hygienic or medical reasons, for their relaxant and euphoric effects, for recreational purposes, for artistic inspiration, as aphrodisiacs, and for other reasons.
Some have been invested with symbolic or religious significance suggesting the mystical use of alcohol, e.g. by Greco-Roman religion in the ecstatic rituals of Dionysus (also called Bacchus), godof drink and revelry; in the Christian Eucharist; and at the Jewish Passover.

Fermented beverages

Chemical analyses of organics absorbed and preserved in pottery jars from the Neolithic village of Jiahu, in Henan province, Northern China, have revealed that a mixed fermented beverage of rice, honey, and fruit was being produced as early as 9,000 years ago. This is approximately the same time that barley beer and grape wine were beginning to be made in the Middle East. Recipes have been found on clay tablets and art in Mesopotamia that show individuals using straws to drink beer from large vats and pots

Wine was consumed in Classical Greece at breakfast or at symposia, and in the 1st century BC it was part of the diet of most Roman citizens. However, both Greeks and Romans generally consumed their wine watered (from 1 parts of wine to 1 part of water, to 1 part of wine to 4 parts of water). The transformation of water into wine at a wedding feast is one of the miraclesattributed to Jesus in the New Testament, and his use of wine in the Last Supper led to it becoming an essential part of the Eucharist rite in most Christian traditions.

In Europe during the Middle Ages, beer was consumed by the whole family, thanks to a triple fermentation process — the men had the strongest, then women, then children. A document of the times mentions nuns having an allowance of six pints of ale a day. Cider and pomace wine were also widely available, while grape wine was the prerogative of the higher classes. After the collapse of the Roman Empire, wine production in Europe appears to have been sustained chiefly by monasteries.

By the time the Europeans reached the Americas in the 15th century, several native civilizations had developed alcoholic beverages. According to a post-Conquest Aztec document, consumption of the local "wine" (*pulque*) was generally restricted to religious ceremonies, but freely allowed to those over 70 years old (possibly the all-time record for legal drinking age). The natives of South America manufactured a beer-like product from cassava or maize (*cauim*, *chicha*), which had to be chewed before fermentation in order to turn the starch into sugars. (Curiously, the same technique was used in ancient Japan to make *sake* from rice and other starchy crops.)

The medicinal use of alcoholic beverages was mentioned in Sumerian and Egyptian texts dated from 2100 BC or earlier. The Hebrew Bible recommends giving alcoholic drinks to those who are dying or depressed, so that they can forget their misery.

Classification

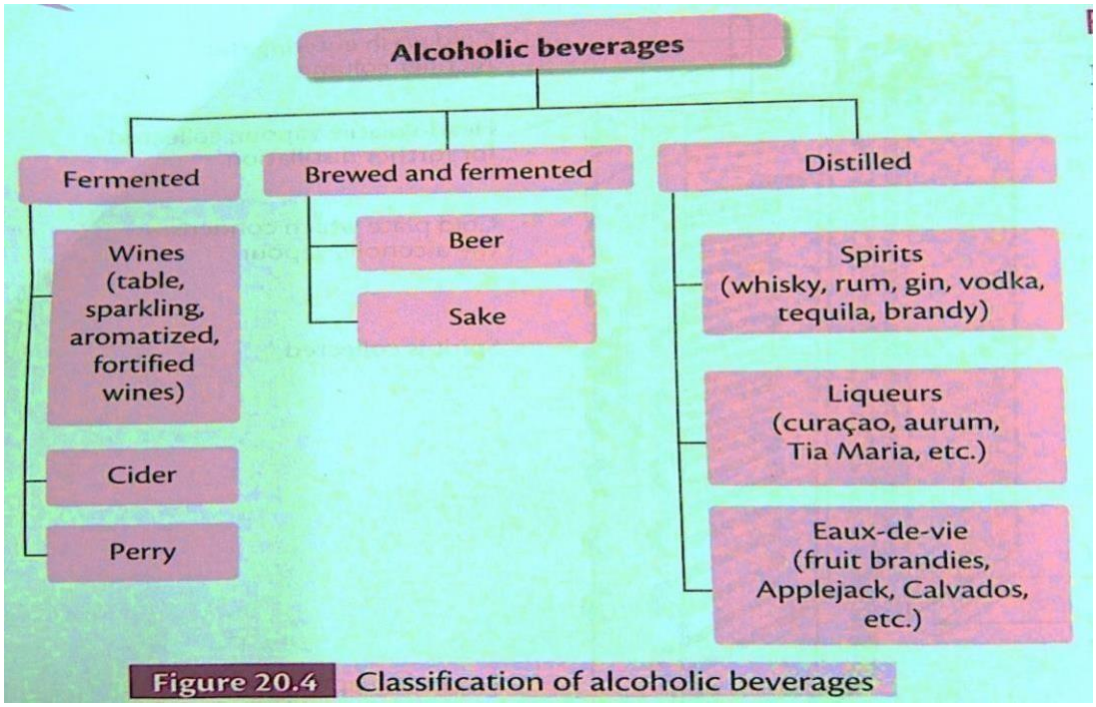


Figure 20.4 Classification of alcoholic beverages

Alcoholic drinks are prepared by the following three methods:

1. Fermentation
2. Brewed and Fermented
3. Distillation

Fermentation

Fermentation is a process in which sugar is converted to alcohol and carbon dioxide by yeast.This process is the basis for producing all types of alcoholic beverages. This process is the basis if producing all types of alcoholic beverages. The alcohol level of fermented drinks is normally between 3-14% depending on the amount of sugar present in the liquid. Once the alcoholic level reaches 14% the yeast gets killed bringing the fermentation to a halt. Examples of fermented drinks are wine, beer, cider and perry. The CO2 released during fermentation is either allowed to escape or is absorbed into the liquid to give effervescence. Examples are sparkling wine, sparkling ciders and beers.

For fermentation to be carried out the following are verynecessary: a.Sugar

b.Yeast

c.Temperature In absence of any of these

fermentation will not happen.

a.Sugar

It is one of the most important materials required for fermentation. Yeast acts on sugar and converts one molecule of sugar to two molecules of ethyl alcohol and two molecules of carbon dioxide. Some of the natural liquids have adequate sugar content, which is converted to alcohol.Fruit juices have natural sugars and they are fermented by the action of yeast which can be below.

1. Grape juice – Wine
2. Apple juice – Cider
3. Pear Juice – Perry

Sugar in Cereals

Cereals like barley, rye, corn, rice etc. are also used to produce fermented drinks.

Before fermenting cereals, the starch is converted into soluble sugars by the malting process. The malted cereal is then brewed in hot water to extract maximum soluble sugar from the malt. It is then cooled and allowed to ferment by addition of yeast. Examples of fermented drinks obtained from cereal are beer and sake. Barley is the main ingredient in the production of beer and rice in sake.

1. Barley – Beer 2.

Rye – Kvass

3. Corn - Chicha

4. Rice – Sake

b.Yeast

Single celled organism essential for fermentation. Originated hundreds of millions of years ago and currently there are 1,500 species identified. Found in huge quantities in soil, plants and air. Yeast sizes vary depending on the species and environment typically measuring 3-4 micrometer in diameter.

Following types of yeast are used in fermentation process; the type chosen dictates the profile of the fermented drink

1. Ambient or natural yeast
2. Cultured yeast

Ambient or natural yeast

Include all types of natural yeasts and are found in air, fruits, grains, soil etc. Wild yeast are typically present in the vineyard on the skin of the grapes. Examples are Hansenula, Klöckera, Pichia & Torulopsis – they stay active during initial fermentation of wine and gets killed when the alcohol level reaches about 5%. The presence of saccharomyces cerevisiae yeast along with the wild yeasts on the skin of the grapes continues the fermentation above 5% of alcohol. The action of the ambient yeast depends on the species of yeast involved and the maker will be able to produce the product with wide range of flavors and characteristics.

Cultured Yeast

Cultured yeasts are selected strains of yeasts cultivated in a laboratory in a controlled environment.The nature and action of the yeast is known. Many new world winemakers, who do not want to take risk of the unpredictable action of wild yeasts, favour the usage of cultured yeast for fermenting their products. Only one strain of cultured yeast will be used in fermentation, depending on the type of alcoholic drink being made. The action of cultured yeast is more reliable than the ambient yeast. The customer will not be able to differentiate wines made using ambient or cultured yeasts.

Examples are Saccharomyces cerevisiae, Saccharomyces carlsbergensis, Saccharomyces ellipsodium

c.Temperature

Ideal temperature is needed for yeast to act on sugar. Throughout the process, the temperature of the fermenting liquid should be controlled. Fermentation occurs in the temperature range of 3-32`C. At temperature above 32'C and below 3'C the fermentation process ceases, as the yeasts cannot function at these extreme temperatures. Cool temperature (below 15`C) fermentation takes place slowly and gently producing clean, crisp and aromatic features. White wine is fermented at relatively low temperature between 12 and 18' C. Fermentation will be quicker and vigorous producing heavier and fuller wines at hot temperature (above 20`C.) Red wine is fermented at slightly higher temperature so as to extract more colour from the skins of the grapes. It is fermented at the temperature range 22-25' C. During fermentation heat us released which not only accelerates the fermentation process but also influences the taste of the fermented drink. Different flavors develop in a drink at different temperature and therefore temperature control during fermentation is very important

3. **Brewed and Fermented**

   Similar to a fermented drink but only difference is that of the base ingredient. Malted & rushed cereal is brewed in hot water to extract maximum soluble sugar from the malt. It is then cooled and allowed to ferment with addition of yeast

Examples: Beer and sake

3.Distillation -Distillation is the process of concentrating alcohol. This is done by separating alcohol and water.The principle of this process is that ethyl alcohol vaporizes (boils) at a lower temperature (78 degrees C) as compared to water (100 degrees C). Then, the liquid which is slightly alcoholic is boiled and the vapor rises to the top of the still. When these vapors are collected and cooled they return back to the liquid state. This concentrated liquid is the distilled spirit. This process can be repeated again and again to get more purer and concentrated spirits. Eg.Whisky,Rum

B. Benefit and harmful effect of Alcohol

Uses

In places and eras with poor public sanitation, such as Medieval Europe, consumption of alcoholic beverages (particularly weak or "small" beer) was one method of avoiding water- borne diseases such as the cholera. Though strong alcohol kills bacteria, the low concentration in beer or even wine will have only a limited effect. Probably the boiling of water, which is required for the brewing of beer, and the growth of yeast, which would tend to crowd out other micro- organisms, were more important than the alcohol itself. In any case, the ethanol (and possibly other ingredients) of alcoholic beverages allows them to be stored for months or years in simple wood or clay containers without spoiling, which was certainly a major factor in their popularity.

In colder climates, strong alcoholic beverages such as vodka are popularly seen as a way to "warm up" the body, possibly because ethanol is a quickly absorbed source of food energy and dilates peripheral blood vessels (Peripherovascular dilation). This however is a dangerous myth, and people experiencing hypothermia should avoid alcohol. Although a drunk may feel warmer, the body loses heat and body temperature decreases, which may cause hypothermia, and eventually death. This is because of the dilation of blood vessels **not** in the core of the body; because of this increased blood flow, the body loses its heat out of its less protected outer extremities.

In many cultures, both contemporary and historical, alcoholic beverages — mostly because of their neurological effects have also played an important role in various kinds of social interaction, providing a form of "liquid courage" (those who consume it "gain" confidence and lose discretion). While other psychoactive drugs (such as opium, coca, khat, cannabis, kava etc)also have millennial traditions of social use, only coffee, tea and tobacco have been as universally used and accepted as ethanol is today.

B.Benefit and harmful effect of Alcohol

Moderate consumption

Moderate consumption of alcohol is defined by the U.S. Department of Agriculture and the Dietary Guidelines for Americans as no more than two drinks for men and one drink for women per day. It is defined as four drinks per day, not to exceed 14 per week for a man and three per day, not to exceed 14 per week for a woman.

An exhaustive review of all major heart disease studies has found that "alcohol consumption is related to total mortality in a J-shaped manner, where moderate consumers have a reduced total mortality compared with total non-consumers and heavy consumers" (La Porte *et al.*). Abstaining from alcohol is a risk factor for heart attack.

A logical possibility is that many of the alcohol abstainers in research studies previously drank excessively and had undermined their health, thus explaining their high levels of risk. To test this hypothesis, some studies have excluded all but those who had avoided alcohol for their entire lives. However, the conclusion remained the same: moderate drinkers are less likely to suffer heart disease.

Another possibility is that moderate drinkers have more healthful lifestyles (making them healthier), higher economic status (giving them greater access to better foods or better healthcare), higher educational levels (causing them to be more aware of disease symptoms), etc. However, when these and other factors are considered, the conclusion again remains the same: moderate drinkers are less likely to suffer heart disease.

Excess consumption

Excess consumption is sometimes detrimental to an alcohol abuser's health. The neurological effects of alcohol use are often a factor in deadly motor vehicle accidents and fights. People under the influence of alcohol sometimes find themselves in dangerous or compromising situations where they would not be had they remained sober. Operating a motor vehicle or heavy machinery under the influence of alcohol is a serious crime in almost all nations.

Some people are predisposed to developing a chemical dependency to alcohol, alcoholism. The results of alcoholism are considered a major health problem in many nations. The development of alcoholism does not take place in the absence of alcohol, but neither does the presence of alcohol cause it.

Question to remember

1) **List the different types of alcoholic beverages?**
   a. Distilled Spirits like Vodka, Gin, Rum, Tequila and Whisky
   b. Distillates like Brandy, Grappa, Calvados and Armagnac
   c. Liqueurs
   d. Brewed Beverages
   e. Wines

2) **How is alcohol made?**

Alcohol can be made in different ways. However Ethyl alcohol is the only kind of alcohol humans can consume safely. It is obtained by fermenting sugar rich juices from fruits, cereals, starchy plants and vegetables. But to make alcohol from these sugars we need something called yeast.

Yeasts are a kind of bacteria that convert fruit sugars into alcohol and carbon dioxide gas- this process is called ***fermentation***. Wines are produced by fermentation. If the sugar is obtained from starch like potatoes, rice etc. then this process of fermentation is called ***brewing***. Beer is a brew. These are low in alcoholic percentage. To obtain higher concentration, these liquids must go through a ***distillation*** process. Distilled alcohol is called spirit.

3) **What the approximate alcoholic percentages of the different types of alcoholic beverages?**
   a. Distilled Spirits like Vodka, Gin, Rum, Tequila and Whisky – Between 38 to 50 percent
   b. Distillates like Brandy, Grappa, Calvados and Armagnac- Approximately 40 percent
   c. Liqueurs – Between 18 to 40 percent
   d. Brewed Beverages like Beer and Sake- Between 4 to 10 percent
   e. Wines- Between 4 to 15 percent

4) **Why alcohol makes us behave differently under its influence?**

Alcohol acts primarily on the nerve cells within the brain. Alcohol interferes with communication between nerve cells and all other cells, suppressing the communication in the nervous system. This has the effect of making things sluggish, which matches the behavior you see in a drunken person.

5) **What is the origin of the word 'alcohol'?**

The word 'alcohol' is in fact an Arabic word. For centuries the Arabs had been making (and, in fact, still are) making eye make up using black powder that was liquefied, vaporized and solidified again. They called it 'Kohl'. When wine was first distilled, the name of this cosmetic was used to describe the result- al koh'l-since the procedure was so similar. From Arab masters, the knowledge of distillation was eventually passed to Western experimenters, who used it to create spirits.

6) **What are the raw materials for making alcohol?**

Alcohol can be obtained from many kinds of vegetable matter:-

i. **From Fruits:** Cognac is made from white wine derived from grapes, Calvados from cider made fromapples, Kirsch from cherries, Eau-de-vie de framboise (pronounced as 'o-the- vee') from raspberries.
ii. **From Cereals/grains:** Vodka, Gin, Whisky
iii. **Tropical Plants:** Rum is made from sugar cane, Tequila is made from Agave
iv. **Vegetable:** Potato vodka from Poland, Beet root is used to make neutral alcohols are added to liqueur

7.Advantages and disadvantage of alcohol

Advantages	**Disadvantages**
Relieves mental stress	Loss of self-control
Celebrate	Damage to liver
Provide better sleep	Nerve damage
Keeps body warm	Leads to obesity
Increases in appetite	Addictive
Helps put on weight	Sedation and death
Cooling agent	Acute alcohol poisoning
Helps neglect severe pain	Chronic alcohol intoxication

Wines

1.1 Defination

According to the wine and spirit association of Great Britain **wine is defined as an alcoholic beverage obtained from the fermentation of grape juice** (The fermentation of which has been carried out in the district of origin as per the local tradition and customs.)As per the definition wine can not be made from Fruits other than grapes. Such wines which are made from fruits other than grapes are called as country

wines in England. Similarly, from the definition it can be understood that wines made from canned grapes, tinned grapes or grape pulp cannot be called as wine as well. Such wines in England are called as British wine or British style wine. English wine refers to the wine made from grapes grown in England only.

Wine History

Evidences:

Georgia - **8,000**-year-old wine jars

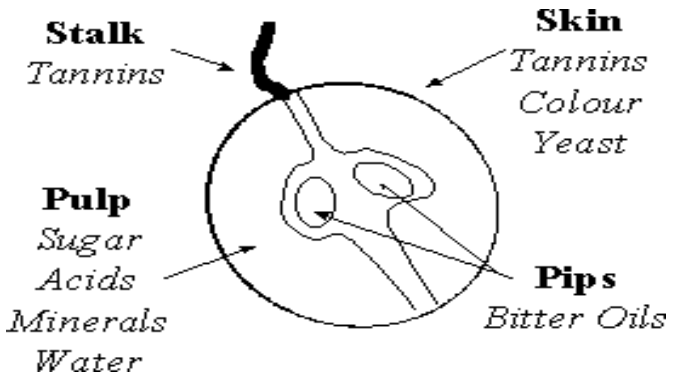
Iran - **7,000**-year-old wine jars

Armenia 6,100-year-old winery

China, **9,000**-year-old pottery jars.The earliest form of grape-based fermented drink. Ancient

Egypt, **Greece**, **Thrace** and **Rome** in **4500.**BC was consuming and celebrating

Grape Composition



The following are the constituents of grapes and each contributes to winemaking.

- Stalk
- Skin
- Pulp
- Pips

Stalk: Contains tannin and contributes to wine the astringency, keeping quality, and helps in clarification process

Skin: Coloring pigments and yeasts. Contributes color to the wine and provides yeasts for fermentation

Pulp: Contains liquid, sugar, acids and minerals. Provides sugar for fermentation and acids for bouquet and balance

Pips : Contain Tannins and Oils. Bitter flavor. Discarded during wine making

Composition of a grape ○ Water – 75% ○ Sugars – 22% ○ Acids – 1.10% (Tartaric 0.6%, Malic 0.5%) ○ Nitrogenous Matter - 0.80% ○ Phenolics – 0.05% ○ Minerals – 0.50% ○ Other matter – 0.55%

Grape family ○ Vitaceae Family ○ Genus (Specie)

Vitus ○ Vitus Vinifera ○ Has exact composition for

wine production ○ Vitus Vinifera is a global species

○ High levels of adaptability ○ Constitutes to

99.99% of total wine production

1.2 Classification of Wine(Types)

Wine is classified on the basis of the following factors

1. Color – White, Red, Rosé, blush & blue
2. Taste – Dry, sweet & medium
3. Content – Still, Sparkling, fortified, aromatized, tonic wine

1. Colour

White Wine ○ Color ranges from pale straw with a green tinge to

dark gold.

- Produced from both white and black grapes
- If made from black grapes, the skin of the grapes must be removed soon after crushing to prevent the color from taking over

Red Wine ○ Color of red wine ranges from purple when young and turn to brick red as it

ages ○ Made from predominately red grapes

- Skin is allowed to remain with the fermenting must either throughout the process or half way through
- The coloring pigments present in the skin give color to the wine

Rosé Wine ○ Light pink in color which is produced from the mixture of white and red grapes or only red

grapes

- Skin of black grapes is allowed to remain in contact with the must till the required tinge is obtained
  - Takes about 24-36 hours depending on the intensity of rosé color required
  - Once the required color is obtained the skin is removed

Blush Wine
- New style of rosé wine developed in California
- Skin of black grapes are allowed to macerate with the must for a very short period which produces a very light pink colored wine

Blue Wine
- Started only couple of years back in Spain
- Pigment found in grape skin and indigo from the isatis tinctoria plant (woad) are responsible for the wine's color

2. Taste

Dry Wine
- It is produced when all the sugar is converted to alcohol
- A dry wine is simply a wine that has no residual sugar meaning "it isn't sweet"
- To make dry wine, the winemaker will let the fermentation process finish completely allowing the yeast to consume all the sugars present
- Examples: Sangiovese (W), Sauvignon Blanc (W), Tempranillo (R), Cabernet Sauvignon (R)

Sweet Wine
- It is obtained when there is some sugar left after fermentation, stopped naturally or intentionally by the manufacturer
  - If a wine has more than 30 gms/litre of residual sugar in it, its considered sweet
  - Sweet wines can be found among white, red and rosé wines
- Examples: Lambrusco (R), Schiava (R), Moscato (W), Sauternes (W), Pink Moscato (Rosé), White Zinfandel (Rosé)

Medium Wine

- It is neither too dry nor too sweet ○ It has traces of sugar left after fermentation
- Medium bodied is often lighter on one's palate pertaining to sugar levels which can add weight a wine and/or tannin which add a greater texture to a wine ○ Examples: Pinot Noir (R), Merlot (R), Pinot Blanc (W), Viognier (W)

Still Wine ○ It is a kind of wine obtained by the natural fermentation process without adding anything else ○ The carbon dioxide produced during fermentation is allowed to escape ○ This type of wine is also termed as table wine ○ The alcoholic content can vary from 10-14% abv ○ Still wines are named after the region in which they are produced and lack aeration properties

3. Content

Sparkling Wine

- These are the wines bottled with CO_2 produced during fermentation in which the gas is prevented from escaping ○ The trapped gas is the result of secondary fermentation either in the bottle or in a sealed tank
- Some manufacturers impregnate the wine with the gas which gives effervescence or sparkleto the wine ○ The alcoholic percentage is between 10 to 13%
- The glasses used for sparkling wine must be thick to withstand the pressure of the gas behind the cork ○ Examples: Champagne, Sparkling Wine

Fortified Wine

- Fortified means 'strengthened' which means that fortified wines are essentially those which are stronger in alcohol than most

- The alcoholic strength of the wine is increased with the addition of a distilled spirit usually brandy either during or at the end of the fermentation ○ This type of wine is also termed as heavy wine ○ The alcoholic strength of the fortified wines range from 16-22% abv
- Unlike other wines these bottles will last anywhere from three weeks to several years after opening
- Examples: Sherry, Madeira, Marsala

Aromatized Wine ○ These wines are fortified and aromatized with herbs, spices, roots, fruit or other natural flavorings ○ The alcoholic may vary from 14-20% abv

- The majority of brands come from France and Italy but there are now arange of small craft producers around the world
- The alcoholic strength of the wine in which brandy and herbs are added with some residual flavor. After some weeks or months the herbs are removed and the aromatized wine is born ○ Commonly used in cocktail recipes like Martini, Negroni or Manhattan ○ Examples: Vermouth, Lillet Blanc

Main grape varieties- White

1. Chardonnay ○ Classic grape variety comes originally from Burgundy, France ○ Used in Champagne production ○ Produces light, crisp, dry wine with flavor of lot of tropical fruits ○ Withstands all kinds of climatic conditions and prefers soil rich in calcium ○ Used in USA, Australia, S/Africa, NZ &Toscana, Italy

2. Riesling ○ Originates from Germany ○ Grows well in cool climate but not in hot climates and can withstand an type of soil ○ They produce light citrus-flavored dry wines and floral, sweet wines ○ Can be consumed either young or can beaged when affected by botrytis ○ USA, Germany and S/Australia cultivate this variety of grapes

3. Sauvignon Blanc ○ Principal grape variety used in the Production of excellent wines of Bordeaux& Loire valley ○ The wine has a grassy flavor and the character of acidic fruit, gooseberry ○ Requires cool climate and limestone or gravelly soil ○ USA, Chile, S/Africa, NZ, Toscana are the regions using this variety of grape

4. Sémillion ○ Grows in Graves, Sauternes and Barsac regions of France ○ Lacks acidity hence its blended with sharp grape like S/Blanc to get balanced ○ Produces medium-to- full bodied, oily textured dry and luscious sweet wine ○ Grows well on sandy soil and the clay helps in development of botrytis ○ Wineries in USA & Australia use thisgrape variety

5. Chenin Blanc ○ Grown in the Anjou, Saumur and Tourainedistricts of Loire, France ○ Produces dry, medium and sweet sparkling wines ○ Grape has high level of acidity with an aroma of lemon, baked apple, honey andtoffee apple ○ Very important grape in S/Africa (Steen) ○ Prefers chalky soil and wineries in USA also use this variety of grape

Main grape varieties- Red

1. Cabernet Sauvignon ○ Black grape of remarkable quality and considered the best in the world ○ Easy to cultivate as it grows in any kind of soil and can withstand spring frosts ○ This grape has a thick skin which protects it from insects and rain ○ Grape ripens late and gives low yields ○ Flavor resembles black currant and hints of raisins, spices, mint and liquorice ○ Wine with high tannin content which needs slow ageing in oak casks ○ France, USA, Australia, Italy, Spain, Chile & Argentina are countries producing this grape

2. Pinot Noir ○ Classic grape variety of Burgundy& Champagne regions ○ Is one of the 3 permitted grapes used in champagne making to give structure to the wine

- Produces light colored, light tannin &delicately flavored wines with floral, herbal, strawberries, raspberries, cherry& cherry brandy aromas ○ Prefers chalky & clay soils ○ USA, NZ & Italy use this variety of grape

3. Merlot ○ A early ripening red variety from Pomerol district of Bordeaux ○ Sensitive to frost & fungi and is frequently blended with Cab. Sauv ○ Has a thin skin but bigger than Cabernet in size

- Grape has low tannin & acid levels and produces softer, smoother &fruitier wines with cherry, plum, red currant flavor notes ○ Prefers damp soil & cooler climate ○ USA mostly cultivates this wine variety

4. Syrah (Shiraz) ○ Produces deep colored, astringent red wine with aromas of violet, pepper, blackberry & blueberry ○ Has the ability to blend with other wines ○ Has a powerful tannin which allows the wine to mature gracefully ○ Adequate acid level makes the wine taste fresh

- Italy, Australia & USA produce these grape varieties

The further explanation of wine will be done under the three broad headings.

Methods of production

A.Viticulture

B.Vinification

Care of Wine

A. Viticulture

The plant, which bears the grape, is called as a Vine. The vines are a group of creepers, which belong to a family called **Vitaecae or Ampelidacene**. The family has 10 genera. One of the genus is called as Vitis. The genus vitis has a subgenus known as Euvites. The subgenus Euvites has 60 species. One of these species is Vinifera. The plan Vitis vinifera produces grapes, which are used for the production of the best quality wines of the world. The species vinifera produces some 5000 different varieties of grapes but only around 50 of them are used for the production of wine. The other species whose grapes can be used for the production

of wines are Vitis labrusea, Vitis rupestris, Vitis riparian and Vitis rotundifolia. These species are generally seen in North American continent and are used for grafting with the Vitis vinifera specis as resistance against a bug called as Phylloxera Vastatrix. In 1870 the vini fera specis was saved by using the labrusca specis as graft.

Unfermented grape juice is called as must and fermented grape juice is called as wine. Areas of growth → Grows best in the Temperate Zone. In Northern Hemisphere 30 to 50 degrees latitude and in Southern Hemisphere 30 to 40 degrees latitude. In India it grows the best in Nashik, Narayangaon, Hyderabad. There are around 25 million acres of vineyards world wide i.e 10 million hectares (1 hectare = 2.475 acres). The total wine harvest of the world is enough to cater to each and every inhabitant of the world with 8 bottles of wine a year.

Soil → It is generally acknowledged that the grapes grown in the poorest kind of soil which is even difficult to produces better quality of wine than grapes grown in richer soil although a rich soil will produce grapes in more quantity but the best composition of soil is considered to be combination of chalk or limestone, slate, gravel (Coarse sand) and Schist (crumbly form of granite)

Contribution of Soil →

It contributes to the quality of grapes through the mineral content of the soil.

Aeration → The soil is very loose. Hence it facilitates the breathing of the vine roots.

Affords good drainage → The porous nature of the soil allows the water to go down easily.

Distribution of heat → It holds the heat during, the day time and gives out during the night to. Maintain a uniformity of temperature between the day and night. Heat is very important for converting the acid into sugar. Near the river the water surface reflects the heat of the sun on to the grapes thereby concerting more and more acid into sugar. On the mountain slopes direct heat is available and the water flows down. In Europe the vineyards are never irrigated. Rain is the only source of supply of water. The minimum distance between two vines should be 3 feet and the minimum distance between two rows of vines is also 3 feet. This is done to ensure that no vine should cast its shadow on any other wine.

Climate →

The winter should be short and cold but not severely so, with good supply of rain.

The spring should be mild may be a little warmer with those beneficial showers of April. The

summer should be hot and long with nice balance of rain preferably in mild shower. A daily

average of sunshine is much preferable to the short scotching bursts.

The crucial month of Sept. and Oct. is best benefited by an Indian type of summer with little rain in between.

Temperature →

An annual average temp. of 10 degree centigrade is considered ideal but when grapes are maturing 25 degrees centigrade is considered ideal. But the most ideal temp. for growth of vine is 25 to 28 degrees centigrade. 60 to 80% of humidity is considered be the best. Grapes are not grown by seeds as there is no continuity of genes. Hence grafting is done to get the same quality of grapes and hence the same quality of wine. The lift span of a vineyard is 30 years. The graft spends 14 months in a nursery before being planted in the vineyard. Vine takes around 1 year to bear the grapes but the plant is not allowed to bear grapes for 4 years to make the plant more strong and healthy.

Wine maker's Calendar →

January → Pruning starts on St. Vincent's day (22nd of Jan.) when the vine survives temperature upto 15 – 18 degrees centigrade.

February → Finish pruning. Take cuttings for grafting and keep them in sand indoor (nursery) to be used in the next year. Prepare machinery and order for Copper Sulphate.

March →The vine tends to merge from dormancy. The sap begins to rise and brown sheaths tend to fall off. The first working of the soil is done to uncover the vine roots.

April →Keep the vineyards clean . Plan one year old graft in the vineyard. Frost and hail are harmful to the vine. Buds may appear, 4 to 5 leaves may also appear.

May →The frost danger is at it's height. Lighted stoves may have to be kept in between the vines. Second working of the soil is done to kill the weeds. Spray against odium and mildew.

June →The vine begins to flower in the beginning of June. Temp. rises to around 18 to 20 degrees centigrade. The weather is critical. The warmer it is the better. After flowering trim the shoots. Tie the best shoots to wires. Continue to spray against odium and mildew.

July →Spray the vines with Bordeaus mixture. (Copper Sulphate and slaked lime) Cut off the unnecessary shoots for maximum energy for the fruits.

August →Keep the vineyards clean. Black grapes change their colour in August. Prepare for harvest.

September →Keep the vineyards clean and the vines trimmed. Pray for sunshine. The grapes ripen. Harvest starts towards the third week of September.

October → The harvest continues for two weeks. After the harvest gets over spray manure and fertilizers in the vineyards. Deep ploughing is done for fresh plantations.

November →Cut off the long shoots and collect them for fuel. Plough the soil and bring back the soil to cover the vine roots as protection against the frost.

December →Soil washed down the slopes are brought back and redistributed. Pruning may start from the 15th December.

Grape Disease

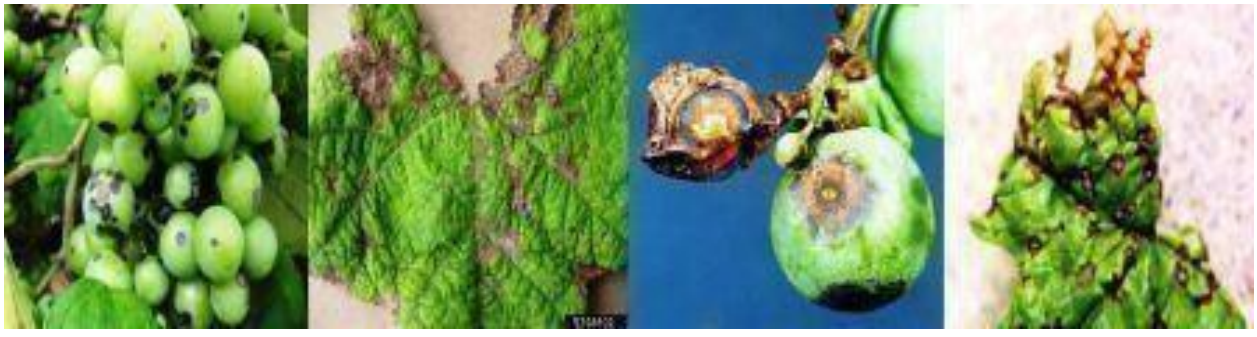
Pests and diseases

The vine is subject to pests and diseases in the form of birds, insects, fungi, viruses and weeds. The main ones are described below.

1. Phylloxera vastatrix

A louse-like, almost invisible aphid, which attacks the roots of the vine. Phylloxera arrived in Europe in the mid-1800s almost by accident, transported on American vines imported into various European countries from the eastern states of North America. It ravaged many of the vineyards of Europe at this time. The cure was to graft the European vine onto resistant American rootstocks. This practice has since become standard throughout the world wherever *Vitis vinifera* is grown.

2. Grey rot or pourriture gris



This fungus attacks the leaves and fruit of the vine during warm damp weather. It is recognised by a grey mould. The fungus imparts an unpleasant flavour to the wine.

3. Noble rot or pourriture noble (Botrytis cinerea)

This is the same fungus in its beneficent form, which may occur when humid conditions are followed by hot weather. The fungus punctures the grape skin, the water content evaporates and the grape shrivels, thus concentrating the sugar inside. This process gives the luscious flavours characteristic of Sauternes, German Trockenbeerenauslese and Hungarian Tokay Aszu.

4..Downy Mild dew

Disease symptoms

-The fungus is an obligate pathogen which can attack all green parts of the vine.

-Symptoms of this disease are frequently confused with those of powdery mildew. Infected leaves develop pale yellow-green lesions which gradually turn brown. Severely infected leaves often drop prematurely. - Infected petioles, tendrils, and shoots often curl, develop a shepherd's crook, and eventually turn brown and die.

-Young berries are highly susceptible to infection and are often covered with white fruiting structures of the fungus. Infected older berries of white cultivars may turn dull gray-green, whereas those of black cultivars turn pinkish red.

B. Vinification

This is the actual making of wine. The different steps involved in the production of wine are as follows:

Harvesting →After the grapes have undergone all the viticulture processes, they are ready to be harvested in early autumn. The grapes are cut by a special type of scissors called as Secateur. The harvesting period depend upon certain factors like the percentage of acidity and sugar in the grapes. The amount of sugar content in the grape is measured by a hand held Refractometer which comprises two prisms which holds a drop of grape juice in between. The light passing through the refractometer bends at an angle due to the sugar content of the juice. The angle is measured by a soale. The sugar content of the juice is known as "must weight"

Grading and Weighing → After the grapes are harvested they are taken to the winery where they are graded as per specification and weighed. In California a rectangular container having wheels is used to transfer the grapes to the winery. This container is called as Gondola. The grapes have to be transferred to the winery as soon as possible to avoid oxidation and breaking up of the grapes in the container. In the winery the rotten and unnecessary grapes are separated from the good ones. This process is known as Epluchage.

Destalking →This process is known as egrappoir and the machine used is known as egrappoir fuloir. Destalking is necessary if white wine is made but no destalking is necessary if red wine is made.

Blanc de Blanc → White made from white grapes

Blanc de noir → White wine made from black grapes

Crushing →The crushing can be both manual and mechanical. In manual crushing people crush the grapes by their feet. In Spain a specially studded boot is used for crushing the grapes. This boot is known as Zapatos di Pisar. The studs are made in such a manner that it prevents the seeds from getting crushed. Although the manual method of crushing has been taken over by the mechanical method of crushing, in Spain and Portugal the manual method of crushing is still in use to certain extent.

Mechanical method of crushing may be of the following types:

- Cylindrical or Horizontal Press → The system comprises a cylinder which has two iron plates on both sides connected to each other by a steel chain. The grapes are emptied into the cylinder. When the switch is put on the cylinder rotates at a very high speed. The chains hit the grapes as a result of which the grapes get cracked and the juice that flows out is known as free run juice. The wine that is made out of this juice is known as free run wine or Vin de goutte. The leftover grapes are called as manta. Finally the two places start moving towards each other and crush the manta. The vin de goutte or the free run wine does not have a good keeping quality as there is not much of tannin in the vin de goutte.

- Hydraulic or Vertical Press →The system comprises a vertical cylinder, which is attached to a hydraulic press. The grapes are put in the cylinder and the press is moved. Generally the residue of the cylindrical horizontal press and other grapes are used to be crushed by this method. The leftover skins and seeds in the vertical press after the grapes are crushed are called as Pomace. In France the pomace is used to make cheap quality brandy called as pomace brandy. In France it is called as Marc. It Italy it is known as Grappa.

- Pneumatic Press → This system comprises a round wooden container which has got a bladder or balloon type of arrangement inside. Grapes are put into the container and air is filled into the bladder. The bladder swells crushing the grapes against the wall of the container. The yield in this process is maximum but the process sis very slow and hence it is not normally used. This process originated in Germany.
- **Vatting** → After all the must is taken out it is transferred to the vats where they are fermented. The vats once upon a time used to be made from wood, but now a days stainless steel vats, concrete vats and glass lined containers are used. The wooden vats are soaked in water to seal the pores.

Chaptalization →If the must show insufficient alcohol potential, cane sugar is added to the must to improve the alcohol potential of the must. The process of addition of care sugar to the must to improve the alcohol potential is called a Chaptalisation . This process was started by Dr. Jean Antione Chaptal de Chanteloup (1756 – 1832) He was minister for internal affair and agriculture and also president of the Academy of Sciences under Napoleon I. In Germany chaptalization is legal and it is known as Verbesserung.

Fermentation → Fermentation is the action of the yeast on the sugar to convert it into alcohol and carbon dioxide. The most ideal temperature for fermentation of white wine is 15 to 18 degrees centigrade and the most ideal temp. For the fermentation of red wine is around 29.4 degrees centigrade. At this stage Sulphur Dioxide mixture is sprinkled on the surface of the fermenting wine to kill the microorganisms and keep the Oxygen away. The amount of Sulphur Dioxide, which is added, should be 10g for every 100 liters of must.

Maceration → This is a part of the fermentation. In case of red wine the skin is allowed to remain in contact with the must till the fermentation gets over. In case of rose wine the skin is allowed to remain in contact with the must for around 24 hours. In case of white wine the skin is separated from the must as soon as

possible. Normal period of fermentation is around 2 to 4 weeks. But in hot climate the fermentation gets over within 1 week. In cold climate the fermentation goes on for several weeks.

Bloom → The bloom comprises wine yeast. The wine yeast is Saccharomyces cllipsoldlusalt spends the winter in the intestine of animals. In spring it gets disseminated to alight and settle on the flowers and plants. It's only in the summer that it goes on to settle on the skins of the grapes. The size of the bloom is 1/500th of an inch but in favorable conditions it can break something like 10'000 sugar molecule per second.

Cultured yeast → These are thoroughbred stains of natural yeast which are cultured in the lab. Cultured yeast is used because they are more reliable and can withstand hard alcoholic strength. The yeast gets inactivated after 36 degrees centigrade and below -3 degrees centigrade. The yeast enzymes get destroyed after 65 degrees centigrade. The higher the temp during the fermentation, the more is the extraction of tannin and colour. The low the temp during fermentation the more is the retention of freshness and flavour.

Attemperators → These are pipes entering into the vats in zigzag motion and coming out which carry cold water in them continuously and help in maintaining the temp below 36 degrees Centigrade. These pipes are called as attemperators. They are used only in case of wooden vats.

In case of stainless steel tanks the tanks are sprinkled with cold water to maintain the temperature. The

fermentation stops for three reasons:

Temperature increases or decreases

The alcoholic percentage increases or decreases

Addition of Sulphur Dioxide.

Care of Wine

After the fermentation gets over the wine is made gut they have to be aged. Before being bottled for consumption. Red wines are generally aged in the wooden casks where as the white wines are aged in the stainless steel tanks. The oak casks contain tannin in them. The most appropriate temperature for storage of wine

a) Red wine – 16 to 18'C / Service 16 to 18'C

b) White wine – 13 to 15'C/ Service 10 to 13'C

c) Rose Wine – 13 to 15'C / Service 10 to 13'C

d) Sparkling wine – 10 to 13'C / Service 6 to 8'C

The tannin and other extractable materials present in the oak casks gives required complexity and characteristics to the red wine where as the white wines are required to retain their freshness and hence aged in stainless steel tanks. The casks are always kept on their side. There is a hole in the cask through

which wine is poured into the cask. This hole is known as “bung”. The bung is stoppered by a bungpeg. The cask is then transferred to a Chai. When the casks are filled they are filled to the top and no gap or space is allowed to be kept between the wine level and the top of the cask. If any space remains between the wine level and top of the cask the space is called as Ullage.

Chai →The chai is an above the ground arrangement for ageing and maturing of wine. Chai is a warehouse where the casks are stores. The person in charge of the chai is called the Maitre de Chai. He knocks the casks with a stick to find out if a ullage has been created. If any ullage is created then the maitre de chai fills up the cask with fresh wine. There are around 5% evaporation every year through the press of the casks which causes the ullage to be created.

When the wine rest for sometimes in the wooden cask or the stainless steel tanks they leave residue which are solid materials like the grape skins, seeds and other grape solids like grape skins and pectin etc.

These solid materials have to be removed to render the wine clean. These solid materials are removed by the process of racking and fining.

Racking and Fining →Racking in the process of separating the wine from the solid materials like grape skins, seeds and dead yeast etc. that are referred to as residue. The wine is rested in the casks for sometimes till the residue settles down at the bottom of the cask. The wine is siphoned off from the top into a fresh cask. The wine along with some sediments are left at the bottom of the cask. These sediments along with the little wine is referred to as the “Lees”. The wine will rest in the new casks till the next racking take place. After every racking the cask is topped up with fresh wine. This process is known as “topping up”. In the first year three racking’s take place in the months of Feb, June and Oct. In the second year two rackings take place and in the third year two racking’s take place. After several racking’s the wine still looks cloudy due to the presence of some suspended particles which contribute to the cloudiness. These suspended particles, which removed by the process of fining. Fining is the process of addition of a proteinous material known as fining agent to the wine to remove the suspended particles from the wine. The different types of fining agents, which are used, are egg white, bentonite clay, isinglass (Bladder or Sturgeon), Ox blood, gelatin, etc. The fining agent is beaten and whisked before being added to the wine. It forms a film on the surface of the wine, which gradually sinks down to the bottom of the cask along with all suspended particles.

Filtration →Filtration is done to get absolute clarity in the wine. Cellulose, Vegetable charcoal etc. are used as filter beds.

Blending → Blending is a legitimate process to get a predetermined standard, which the wine is known for in the market. Only vintage wines are sold unblended. A panel of experts who blend the wines by nosing does blending. The wines are blended in a blending cask and the wines are allowed to remain in the cask for at least one month to properly harmonize among them.

Vintage wines → Vintage wines are wines of an exceptional year in which the different factors of production like rainfall, sunshine, climate etc. are at its’ ultimate. The wines of a vintage year are not blended with the wines of the previous year and wines of one vineyard are not blended with the wine of another vineyard.

Filtration →After the wines are blended they are filtered once again to render it absolutely clear.

Bottling → Wine is generally bottled in the bottling plant. The bottling plants are fully automatic. Wine is generally bottled in glass bottles and never in metallic bottles as it is going to react. As a general rule "white wines are bottled in green color bottles, red wines are bottled in amber colored bottles and rose wines are bottled in transparent bottles "

Corking → After the wines are bottled they are cork. Corks are made from the bark of a tree called as Quercus Suber. The life span of the tree is around 165 years. The bark of the tree is harvested once in every 9 years after the tree has reached 25 years of age. It is the third harvest onwards that the starts giving quality bark for the production of quality cords. The best corks are produced in Portugal.

Labelling →Finally the bottle is labeled. Labelling is dress. Label containing the name of the wine, alcoholic strength, volume, etc. is put on the wine bottle. In Champagne bottle a metallic foil is put on the bottle covering the cork and the neck of the bottle. This is called as "capsule".

After the bottle is labeled it is rested for sometime before it goes into the market for selling.

Steps in red wine making

Step 1: Black grapes are passed through a mechanical de-stemmer-crusher to remove the stems and to crack the grapes to release the juice. The juice, pulp, stems, and skins, now called must, is transferred to a fermentation tank.

Step 2: The must undergoes fermentation for up to 14 days. The yeasts slowly convert the grape sugar to alcohol. The fermenting juice obtains the colour from the skin of the grapes. The juice, now termed as wine, is separated from the skins and stems by passing it through a press

Step 3: The wine is transferred to oak barrels for ageing.

Step 4: During the ageing process, the wine continues to ferment and develop. The yeast and the residue settle to the bottom of the barrel and form sediment called *lees*. Wine is separated from the lees by transferring the wine to clean casks. This process is called *racking*.

Step 5: The wine is subjected to fining and filtering to make it clear and star bright. Step

6: The wine is then blended, stabilized, and rested.

Step 7: It is finally mechanically bottled, corked, and packaged for distribution.

Steps in White wine making

Step 1:The grapes are passed through a destemmer-crusher and gently pressed to must

Step 2: The must is immediately passed through a press to separate the juice from the skins and stems

Step 3: It undergoes fermentation process in which the yeasts slowly convert the grape sugar to alcohol

Step 4: The wine is transferred to oak barrels for ageing

Step 5: The residue settles to the bottom of the barrel and form sediment called the lees. Wine is separated from the lees by transferring the wine to clean casks. This process is called racking

Step 6: The wine is subjected to fining and filtering to make it clear and star bright Step 7:

The wine is blended, stabilized, and rested

Step 8: The wine is finally mechanically bottled, corked, and packaged for distribution.

Element of wine

The following are the elements of wine

1. Acid. Acid is the most important element in the pulp other than water and sugar. ...
2. Alcohol. Alcohol is produced during fermentation when yeasts come in contact with the natural grape sugar in the grape pulp. ...
3. Sugar.-It is p[resent inside the pulp ..
4. Tannin.-It is present inside the pips and stalk of grapes
5. Water

Factors influencing the character of Wine

The factors influencing the character of wine are as follows:

1. Soil:

- The soils physical properties (drainage, granule size) ○ The soils chemical properties (availability of nutrients)
- The soils biological properties (organic material, living organisms)
- The mineral content of soil & ground water determines the composition of acids and other trace mineral influence the aroma
- Good soil should have the capacity to store sufficient amounts of water at the beginning of the plant's growth cycle to make sure it gets a strong start ○ Sandy soil – elegant wines with high aromatics, pale color & low tannin ○ Clay based soil – muscular wines with high extract and color ○ Silt soil – smooth & round wines with slightly less acidity ○ Loam soil – very fertile soil

2. Grape Variety:
   - Grape provides the basis of how the wine will taste
   - Each grape variety has a distinct aroma & other features which play an important role in determining the kind of wine to be produced
   - Different varieties have different fruit flavors, different ripening, characteristics and react differently to climate and wine making techniques
   - Different rootstock offer advantages and resistance to different pests and diseases.

3. Climate:
   - Climate can be defined by three elements:

   ➢ Temperature, rainfall, sunshine. ○ The climate can be a blessing or curse for the grapes ○ Extremes of sunshine, hail-storm, wind, frost, rain etc can damage the grapes.

   - The average yearly temperature of the place should not be below 10*C and the ideal should be 14*C.
   - Climate has a tremendous influence on the composition of the fruit at harvest.

4. Latitude:

- Most wine producing countries lie between 30* and 50* latitude
- The countries near the 30* latitude have higher temperature which accelerates the fermentation process producing poor quality wine
- The countries near 50* latitude produce better wines

5. Aspect:
   - Vineyards on the slopes of the valley are normally preferred as the frost will roll down ○ The slopes facing south normally produce good quality wine due to longer exposure to sunshine ○ The slopes facing north do not have the same advantage

6. Viticulture:
   - This is the most important and in every stage of viticulture (ploughing, pruning, weeding, spraying, harvesting) happen at a particular month of the year considering the weather ○ Any delay in the schedule will influence the character of wine
   - Example late harvested grapes have more sugar content which determines the character of the wine

7. Vinification:
   - Refers to the method of making wine. ○ Wine producers have a lot of options before them at each stage of making wine.
   - Options on method of pressing, fermentation container, temperature control, type of wood for ageing, duration of ageing, blending etc.
   - Wine produced in new world uses latest technology while traditional wine making countries follow the old methods of making wine.
   - Time allowed for fermentation, temperature maintained during fermentation, type of yeast used and maturation containers (steel or oak, fining agent, aging period determines the character of wine.

8. Ageing:
   - Ageing determines the character of wine

- The longer the wine matured, the mellower and smoother will be the wine, taking the flavour of vanillin from the wood.
- Ageing also affects the colour, aromas, taste and balance of the wine.

9. Storing:
   - Wines should be stored at appropriate temperature and in the rooms free from direct sunlight and vibration.
   - Wines should not be subject to extreme fluctuation of temperature.
   - Poor storage can have a bad effect on the character of the wine.
10. Transportation:
    - The endpoint of wine making and the whole process can go wrong if logistics is not handled carefully ○ Bottles should be transported and handled carefully during the transit

Faults in Wine

1. Corked or Cork:
   - Wine bottles are closed with cork to retain the characteristics and to preserve quality & quantity of the content ○ While storing, wine bottles are stored horizontally to prevent the cork from drying out
   - When stored horizontally, cork comes in contact with the wine, swells and does not allow air to go in
   - Contaminated cork with strong mouldy smell by substance known as trichloranisole (TCA) during sterilization process
   - The wine takes on the smell of the faulty cork

2. Excess Sulphur
   - During fermentation, sulphur dioxide (SO2) is added to check the actions of wild yeast which also acts as a preservative ○ Addition of SO2 leaves an unpleasant smell which resembles the smell of a burnt matchstick ○ Disappears when exposed to air by decanting the wine or swirling the glass

3. Oxidation:

- During the ageing process, air invades the wine through very fine pores of wood and alcohol interacts with oxygen ○ When exposed to oxygen for a long period of time, white wine especially assumes brownish colour ○ Both red and white wines acquire the aroma of sherry ○ They may also go lifeless with dull and flat smell

4. Vinegar:

- Wine turns vinegar when it is exposed to oxygen for long duration ○ By activities of bacteria acetobacter if unchecked acts on alcohol and converts wine to vinegar

5. Hydrogen Sulphide:

- This has the smell similar to a rotten egg ○ Wine takes on the smell of rotten egg when the yeasts react with SO2 during fermentation ○ It fades away during decanting ○ This occurs mainly in red wine

6. Formation of Crystals:

- There may be the formation of potassium bitartrate crystals on the cork in the wine ○ This spoils the appearance of the wine ○ However, crystals can be retained in the wine bottle by pouring the wine gently into the glass. ○ Commonly found in German wines

7. Foreign materials and sediments:

- Sometimes wine may be contaminated by foreign materials such as splintered glass due to faulty bottling
- Wines throw up sediments during ageing which can be removed by racking or decanting

C. Champagne & Sparkling wine

Champagne is defined as a wine produced harvested and processed in a specific part the province of champagne originating from certain noble varieties of grapes fermented naturally inside the bottle in accordance with the rules laid down by the French Government and consulting the champagne salute.

History

The **history of Champagne** has seen the wine evolve from being a pale, pinkish still wine to the sparkling wine now associated with the region. The Romans were the first to plant vineyards in this area of northeast France, with the region being cultivated by at least the 5th century, possibly earlier.
When Hugh Capet was crowned King of France in 987 at the cathedral of Reims, located in the heart of the region, he started a tradition that brought successive monarchs to the region—with the local wine being on prominent display at the coronation banquets. The early wine of the Champagne region was a pale, pinkish wine made from Pinot noir.

The Champenois were envious of the reputation of the wines made from their Burgundian neighbours to the south and sought to produce wines of equal acclaim. However the northerly climate of the region gave the Champenois a unique set of challenges in making red wine. At the far extremes of sustaining viticulture, the grapes would struggle to ripen fully and often would have bracing levels of acidity and low sugar levels. The wines were lighter bodied and thinner than the Burgundies.

Furthermore, the cold winter temperatures prematurely halted fermentation in the cellars, leaving dormant yeast cells that would awaken in the warmth of spring and start fermenting again. One of the byproducts of fermentation is the release of carbon dioxide gas, which, if the wine is bottled, is trapped inside the wine, causing intense pressure. The pressure inside the weak, early French wine bottles often caused the bottles to explode, creating havoc in the cellars. If the bottle survived, the wine was found to contain bubbles, something that the early Champenois were horrified to see, considering it a fault. As late as the 17th century, Champenois wine makers, most notably the Benedictine monk Dom Pérignon (1638–1715), were still trying to rid their wines of the bubbles.[1]

The principals of these rules are: -

1. Only the following three varieties of grapes can be used:

   - Pinot noir (black)
   - Pinot meunier(black)
   - Chardonnay(white)

2. Short pruning

3. Maximum yield of grape per hectare

4. Maximum yield during pressing in one hectoliters per every 160kg of grapes (1hectolitre = 26.4 gallons)

5. Minimum alcoholic strength fixed annually

6. Wines to be prepared at locations separated from all other and only champagne wine to be stored.

7. Natural process called as champagne method to be used.

8. Ageing in the bottle for a minimum period of one year before dispatch

The Vineyards

The areas currently under production totals approximately 25000 hectors out of which

1. 75% is in the dept of Marne
2. 17% is in the dept of Marne Aubc
3. 8% is in the dept of sienne et Marnc

The distribution of the three varieties of grapes, which are allowed by the French law for, the production of champagne is as follows:

1. Black grapes is grown in 72% of the area
2. White grapes are grown in 28% of the area

There are around 150 cooperatives throughout the champagne region. Champagne houses have vast cellars, which totals around 200 kms.

Champagne as a province

Situated 100 (160 Km) miles to the north of Paris

The legal defined area covers 85000 acres of land out of which some are very good for the cultivation it contain around 250 acres and villages and left out can not be made beyond the limit of this region.

Geographical conditions of Champagne

1. 800 to 1000ft of chalky soil which facilitates easy drainage but retains a lot of moisture

2. Average annual temp is around 10.5 degree C

3. Climate is very hot during summer and very cold during winter

4. The botanical name of the chalky is Belemnita quadrata

Areas of production of Champagne(District)

- Montagne de Reins – Main city is Reinms
- Valle de la varne – Main city in Eperney
- Cole des blancs – Main city in Aube

Production of Champagne-Méthode Champenoise

Figure 21.5 Steps Involved in Champagne Production by Primary Fermentation

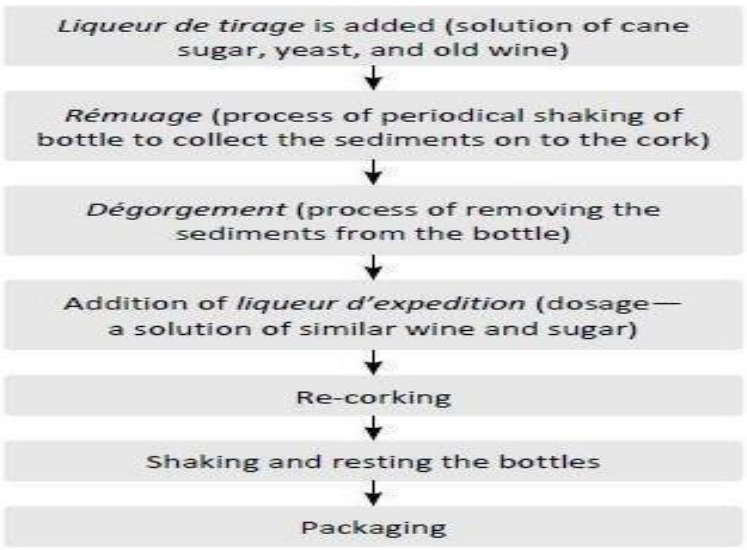


Figure 21.8 Steps Involved in Champagne Production by Secondary Fermentation

1. **Picking or harvesting**- Grapes are generally harvested between the mid of year . The picking is done by hand and the best grapes is selected for the Champagne appellation. The grapes are generally picked up when all of them have equal ripeness.

   Epluchage - Epluchage is the process of separating the rotten grapes from the good ones. The rotten grapes and the good grapes are taken for pressing.
2. **Pressing** - Wooden vertical press called as Marc is used for pressing the grapes 4000kilas of grapes are pressed at a time which produces 2666litres of must. ○ First pressing – It comprised ten pressing and each pressing produces 205 liters of must. So the output is 2050 liters of must. This is known as Vin de Cuvee.
   - Second pressing – It comprises two pressing and the output is 410 liters. This is called as the premier Taille. The premier Taille may be added to the vin de cuvee or may be added to the second grade champagne of the house.
   - Third pressing – It comprises only one pressing and it produces 206 liters of must. This generally used to make the BOH (Buyers Own Brand)
3. **First Fermentation** – The first fermentation is slow regular and complete. The first fermentation goes on for a period of 2 weeks the temperature that is maintained is around 12 to 20 degrees C. The fermentation tanks are generally made up off stainless steel although wooden fermentation tanks can also be used but most Champagne houses use stainless steel tanks for fermentation. Topping Up -The made wines are to be topped up regular as the evaporation causes ullage. If regular topping up is not done then the ullage can trap thereby causing oxidation of the wine. Topping up is the addition of fresh wines to the cask containing the Champagne wine to fill up the ullage.
4. **Racking and Fining**–Two or three racking and fining are carried out to render the wine absolutely clear.

5. **Liqueur d' tirage** - Wine + refined beet sugar + cultured yeast; liqueur d' triage mixture is added to the wine
6. **Bottling** -The wine along with the liqueur d' triage mixture is at in the individual bottles. The rest of the process of the Methode Champenoise goes on inside this bottle and this is the bottle, which comes to the market. The specification in his bottle was given by Louis XV on 9thmarch 1735.
7. **Corking** - After the wine is bottle it is corked and aerated. The corks obtained from the bank of a plant called Quercus Suber. The barks of the plant are harvested once in every 9 years after the plant becomes 25 years old. The plant is generally seen in Spain and Portugal particularly. Most Champagne houses use crown cap for their wines.
8. **Second Fermentation** - The second fermentation goes on for a period of 3 to 6 months. The temperature that is maintained is around 10 to 12 degrees C. The yeast acts upon the sugar to convert into carbon dioxide and alcohol. The carbon dioxide is not allowed to escape and contributes to the sparkle. The bubbles are called as mousse. Vin mousseaux means fully sparkling and cremant means partially sparkling. The presence of carbon dioxide contributes to the pressure that exists in the bottle . **9.Ageing** - After the fermentation gets over the bottles are allowed to lie vertically in huge piles for a period of 3 to 6 years. During this period the dead yeast come in contact with the wine. The more is the contact of these dead yeast with the cane the better is going to be the quality of the Champagne.

During this period of ageing the bottles are shifted from one place to another either manually or by forklift trucks. This shifting cause disturbance to the dead yeast so that there can be thorough contact of the yeast with the cane. This shifting of the bottles is called poignetage.

1. Rémuage –The person who does it is known as a "remueur". The remuage is done in a wooden cabinet called as "pupitre". Rémuage is a simultaneous process giving slight twist to the bottle and tilting it a little at the front. When the bottle is twisted a little dead yeast gets distributed and with the slight tilt the dead yeast and other solid articles which contribute to the sediments starts moving downwards that is towards the corking the bottle. When the twist completes 180 degrees the bottle is standing on its neck. This position called as sur - le - point. The pupitre is made in such a manner that the bottle remain in its position. After the 360 degrees rotation is completed when the bottle is standing on its neck its sediments have accumulated near the neck. Maller first introduced the pupitre in 1816 in the house of Veuve Clicquot. Each bottle is remuaged once in three days for a period of 6 weeks. A remueur can remuage around 40,000 bottles in the season. 2.Resting - Once the remuage gets over the bottles are arranged neck inside the racks and the bottles

are allowed to remain in this position For a period of 3 to 6 months. The longer is the contact with the dead yeast the better the quality of the Champagne.

10. Dégorgement - Dégorgement is the process of removal of the sediments, which are accumulated at the neck due to theprocess of remuage. The person who carries on the process of dégorgement is known as degorger. Degorgement can be carried out in 2 different ways. They are:

- á la volée
- á la glace

- A la vole - (In full flight) This is done by an expert flip of the hand. If the bottle has a cork along with an agraffe, the degorger cuts off the agraffe with a special knife and with the help of a pincer which looks like a lobster claws he eases the cork and the cork gets thrown out along with the sediments because of the internal pressure. If a crown cap is used then the degorger removes the cork with the help of a normal bottle opener and the plastic inlet in which the sediments have been trapped gets thrown out along with the crown cap.
- A la glace - (By freezing) The bottles are placed in wire trays and immersed neck downwards in a Zinc lined tank containing refrigerated brine solution of Propylene Glycol to about 5 cm below the cork or just below the polythene inlet for 10 to 12 minutes. The sediments along with some amount of wine also get frozen. Like à la voleée they are thrown out like a frozen bullet. As a result of degorgement there is a loss of around 2% of wine and around the atmospheric pressure from the bottle.

11. Liqueur d' expedition – The liqueur d' expedition mixture comprises wine of the same blend + cane sugar. The liqueur d' expedition mixture is added to compensate the loss of wine as result of the degorgement. The amount of sugar to be added is also decided by the manufacturer at this point depending upon the style of Champagne, which the manufacturer wants to make. The following describes the sugar content inn the wine.

- Brut (Very dry Champagne) - 6 to 15 grams per every 1 litre of Champagne. Most Champagne houses add around 8 to 10 grams per 1 liter of Champagne.
-

- Extra Dry (Dry Champagne)- It contains 12 to 20 grams per every 1 litre Champagne

- Sec (Medium Dry)– It contains 17 to 35 of sugar per every 1 litre of Champagne
- Demi Sec (Medium Sweet)- It contains 33 grams of sugar per every 1 litre of Champagne
- Doux (Very Sweet Champagne)- It contains more than 50 grams of sugar per every 1 litre of Champagne

12..Recorking - The bottle is corked and agraffe. The cork that is seen on the champagne bottle is not made from one piece of cork oak. The top part which remains on the neck of the bottle is a agglomerated one and the part that goes into the bottle comprises sever discs of circular piece of cork which are infused with each other.

13. Shaking - The bottles have to be shaken to mix the liqueur d'expedition thoroughly with the wine. The bottle are taken to the machine which shakes them thoroughly and the liqueur expedition mixture gets mixed with the wine.

14. Labelling/Packaging- The bottles are finally dress and labeled. The capsule, which covers the neck including the cork till the collar of the bottle, is put. Before being sent to the market it is checked for any flaws.

Types of Champagne

1. Vintage Champagne -It is the Champagne of an exceptional year and 15% wine of the previous year. The vintage year never appears on the bottle.
2. Pink Champagne - This Champagne is made by allowing the skins of the grapes to remain in contact with the must for sometime till the must gets that fain-pink colour.
3. Blanc de Blanc - It is a Champagne made from the Chardonnay grape. This Champagnehas extraordinary fineness.
4. Crémant – These wines have a little less fizz than ordinary champagnes. They have about two atmospheres, whereas a complete sparkling wine has about 4-6 atmospheres or pressure behind the cork.
5. Blanc de Noir – It is a white wine made from only black grapes. No of very good quality.
6. Deluxe Champagne - An extraordinarily packet mixed Champagne which is highly priced.

Methods other than Méthode Champenoise used for making sparkling Wine

1. **Charmat Process/Cuvee close method** →This process was named after the inventor of the process Eugene Charmat a French wine scientist who invented this process in 1910 to cut down the manpower, money and time involved in the classic method of making sparkling wine. The original Charmat process, which with some modification is still used, involves the use of three tanks.

- 1st tank → The wine is run into the first tank where it is artificially aged by being heated for 12 to 16 hours and then immediately cooled. This process of heating the wine immediately cooling gives artificial ageing to the wine.

- 2ndtank → The aged wine is then transferred to the second tank to which is added yeast and sugar and the fermentation is allowed to go for 15 to 20 days. The carbon dioxide is not allowed to go out.
- 3rd tank → The fermented wine is then run into a third tank which is immediately cooled to a temp of 30 degrees F. This process provides clarity to the wine and helps in the tartrate stabilization. The wine is then filtered and transferred into bottles under pressure In this method good quality sparkling wines can be prepared within a span of one month. This is the less among the less expensive methods of making sparkling wines.

2. **Transfer method** → This method originated in Germany in 1930. This method is all development over the Méthode Champenoise. In fact both the Méthode Champenoise and the transfer method are identical except that the there is no remuage or degorgement in the transfer process. After the wine is adequately aged in the bottle it is transferred to a tank where pressure is used to remove the cork and suck the wine out of the bottle. The tank is maintained at the temperature of 32°F. This helps the wine to get clarity. But the problem in the process is that the process of filtration may adversely affect the subtlety, which the wine maker has worked so curiously for. The sparkling wine made by this process is labeled as “fermented inside the bottle”.
3. **Artificial Carbonation /Direct impregnation**→ This is the method in which is use to make the ordinary aerated water and soda bottles. In this method the sparkle does not remain in the glass but long after the drink is poured into the glass. In this method the sparkles are much larger than the

sparkle which are present in the champagne bottle as sparkle in a Champagne is an integral part of the wine

Sparkling wines other than Champagne produced from France

1. Vouvray → Made from Chenin Blanc grapes in the Loire region of France
2. Saumur → Made from Chenin Blanc grapes from the Loire region of France
3. Ruly → It is made from Chardonnay and Pinot Blanc grapes from the Cote Chalonnais region of France.
4. Clairette de die → Produced from the Clairette and Muscat grapes from the Cotex du Rhone area of France. 5. Saint Peray → Produced from the Cotes du region of France.

Sparkling wines produced from other countries

1. Asti Spumante → Produced from Italy
2. Sekt → Produced from Germany
3. Cava → Produced from Spain

Sparkling wines produced from India

1. Marquis de Pompadour → Produced by Indage India Ltd.
2. Vin Baille → Produced by Grover Vineyard
3. San Benedetta→ Produced from Goa
4. Sula Brut
5. York Sparkling wine
6. Chandon Brut

Table 21.1 Terms Denoting Sweetness of Champagne

Terms	Meaning
Brut, Nature	Very dry. A minute amount of sweetening is added to remove the astringency of complete dryness
Extra sec	Dry champagne (1–2% sugar)
Sec	Medium dry (2–4% sugar)
Demi-sec	Medium sweet (4–6% sugar)
Demi-doux	Sweet (6–8% sugar)
Doux	Rich, very sweet (8% and above sugar)

Table 21.2 Size of Champagne Bottles

Terms	Bottle size
Magnum	2 bottles
Jeroboam	4 bottles
Rehoboam	6 bottles
Methuselah	8 bottles
Salmanazar	12 bottles
Balthazar	16 bottles
Nebuchednezzar	20 bottles

D. Fortified Wines

The alcoholic content of certain wines is increased upto 22% with the addition of grape spirit, either during fermentation or at the end of fermentation. Such wines are termed as fortified wines or heavy wines.

Type of fortified wines is as follows:

- Sherry
- Port
- Madeira(estufagen)
- Marsala
- Malaga

1.Sherry

Sherry is a fortified and blended non-vintage wine, made via the Solera system. It contains 17.22% of alcohol. It is traditionally produced in Spain, although certain other countries also produce a similar product they call as sherry

Sherry originated in southwest Andalusia in the region of Jerez. Phoenicians founded the town of Jerez in 1100 BC who brought their sailing ships to an inland city near the city of Cadiz of the Atlantic and named it as Xera. After the Roman conquest, Xera was Latinized to secret, which the moors pronounced as scheris. This was subsequently his panelized to jerez and realized in reference to the beverage into Sherry.

The Jerez area is triangular in shape and lies between the Guadalquivir and Guadalete rivers in the southwest Spain, with Atlantic ocean on the west. Three major towns bound the official sherry producing area known as the zone "De Jerez superiore" or zone of superior sherry .

1. Sanlúcar de Barrameda

2. Puerto de Santa Maria

3. Jerez de la Frontera

The tribunal high court of England ruled in 1967 that only wines from Jerez may be identified as Sherry and that imitation must be labeled by country of origin.

Climate

The area around Jerez has a yearly rainfall of 635mm of which less than 10% falls during the summer months. The temperature often rises to 46 C. when it rains it comes like a deluge.

Soil

Basically there are three types of soil which is seen in the Jerez district.

1. Albariza - This is the most important and contains around 80% of calcium carbonate. The best grapes for the production of the best Sherries come from here.

2. Barros - This is slightly reddish in appearance and contains around 30% of calcium carbonate. It produces good but not great grapes

3. Arenas - The third type is the one which produces grapes in quantity but not in quality

Grapes used in Sherry Production

Palomino – Almost 90% of all sherry is produced from Palomino grapes.

Pedro Ximénex – It is used for making sweet sherries and also for sweetening and coloring the wine before bottling.

Moscatel – It is used for sweetening and coloring the sherries and also for producing inexpensive sweet sherries.

Production of Sherry

1. **Harvest**

There is no official date as such for the harvest to start but it generally starts in the first fortnight of September. The picking continuous for about 15 days. The Palomino and the Pedro Ximénex grapes are

allowed to dry on the Esparto grass mats. The drying of the Palomino grapes continues for 12 – 24 hours depending upon the condition of the weather and the sun. This is done to evaporate as much moisture from the grapes as possible. The Pedro Ximénex grapes continue to dry longer, may be between 10 to 20 days till they lose all the moisture and become raisin like. The must that comes from this grape is extremely sweet.

2. Pressing

Grapes are generally pressed by the traditional method wherein they are put in a lagar, a wooden trough of about 10 sq meters. About 4 to 5 men crush those grapes inside the lagar either barefeet or wearing Zapatos de pisar. The must is then taken to the tub and then to the cask for fermenting.

3. Fermentation

Soon after pressing the fresh grape juice is taken to the nearby bodegas where it is placed in wooden barrels called butts where the fermentation. The bodegas are specially designed buildings for the production of sherry. They have high, arched celings and windowed walls for good air circulation, which keeps the area cool. The floors are sprinkled with water to maintain the humidity. The temperature throughout the bodegas should remain constant and the air moist. The fermentation lasts for about three months. lasts lasts for about 3 months. After fermentation all sherries are dry white wine with 10 to 14% alcohol. Grape Brandy is added to the wine after the fermentation bringing the alcoholic strength to 15½%.This young wine known as añada is stored in wooden barrels with a lose stopper to encourage oxidation.Sherry is classified as either *Fino* or *Olorosso* by nature based on the formation of dense, white, frothy yeast called the *flor*.The formation of *flor* may occur within 18–24 months after fortification during storage. If *flor* occurs it restricts the air interacting with the wine and prevents it from oxidation, keeping the wine *paleand delicate*. This wine is known as *Fino*. If flor does not develop, the air invades the wine oxidizing it and making it *dark and heavy*, resulting in Olorosso.

In some barrels wine develops flor, but it is thinner than that of *fino* and dies after 2 or 3 years. This allows light oxidation, which contributes slightly fuller and darker sherry than *fino* but not as dark and heavy as *olorosso*. It is between fino and olorosso, called *amontillado.*

4. Fortification

Wine alcohol is added to kill the flor and stop the fermentation.

The wine is allowed to remain under the flor for a period of one year or two so that the wine will develop a yeasty smell and taste. The longer the sherry sits on the flor the more flavour it extracts and the finer it becomes. After a period eighteen to twenty months of ageing under the flor disturbed the wine is transferred to the winery's solera system.

5. Solera System

The solera may be linked to a school where the wine from the nursery is introduced to the first grade. It is gradually promoted till it graduates as the final product. In the casks of the solera the entry classes are of the top and the graduating are at the bottom.

The sherries are placed in *Solera* system for ageing and blending. Each category of sherry has its own *solera. Solera* is a network of large barrels, through which the wine passes during the ageing process. The *solera* has several rows of identical barrels. The barrels contain 2/3rd wines.Each row of barrels is termed as *scale or criadera and the number of criaderas in a system is not fixed. There* may be 10–14 criaderas in the system. The bottom row of barrels, termed as *solera, contains the* oldest sherry and the topmost criadera is topped with new wine, *añada.* At the time of bottling, up to 1/3rd of the wine is drawn from each barrel in the bottom row of the *solera* and subsequently, the barrels are replenished with wine drawn from the barrels of the first *criadera* (the second scale).The second *criadera* (the third scale) is topped with wine from the third *criadera* (fourth scale), and so on, up to the top row with *añada* taken from the original barrel.The wine drawn from the solera undergoes further treatment of fining to make it clear and bright and the alcohol level is adjusted to 16-20% by adding neutral grape brandy.

Types of Sherries

- Fino – Pale, straw colored, light and very dry with 15.5-16% alcohol. It is served chilled and is often preferred as an aperitif wine ○ Manzanilla – Palest, lightest and driest
- Amontillado – Amber, dry and nutty to about 16.5-18% alcohol.
- Olorosso – Strongest of sherries. Alcohol level of 20% ○ Amorosos – Smooth & sweet Olorosso. Also termed as cream sherry ○ Palo Cortado – Between Olorosso & amontillado. Contains 18-21% alcohol ○ Cream – Smooth, full, sweetish wine.

Sherry Shippers

Gonzalaz Byass & Co. ltd – market their sherry as Tio Pepe Duff Gordon's

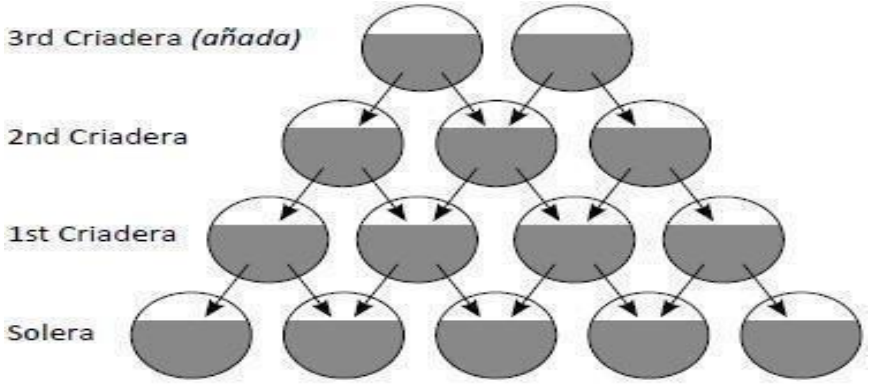


Figure 22.2 Solera system

they Sandeman. Bros and co.Ltd – market their Sherry as Apitar Pedro Damacq S.A

Garvey S.A

William and Humbert Ltd- market their Sherry as dry Sack and Pando. La Rive and Co Ltd

2.Port

Port has been the official drink used for toast by English Royal family for two centuries. In Portugal history goes back to before the birth of Christ. In fact Douro is world's second legally demarcated wine region after Italy's Chianti Classico region. In1756 during the era of Marquis de Pombal' the Douro region was defined to protect the quality and good name of Port (known as Porto in Portugal).

The production of port is limited to strictly defined area of approximately 1500 square miles along the River Douro in northern Portugal.

Port takes it's name from Port Oporto. The Romans used to call Oporto as Portus Cale, which eventually got changed to Portugal. Port started as a table wine and was being exported to England as early as 14th century but this wine used to be very harsh and did not travel well. Grape spirit used to be added to keep it alive on it's voyage. In 1933 three bodies protected it:

1. The Port wine institute - which looks after the administration, sale, alcoholic strength, lodges and demarcated area.

2. The Port wine shipper guild – which basically looks after the exports, formalities standard of lodges and stocks etc.

3. The Douro district department – which looks after the agricultural aspects like planting of new vines, tillage etc .

Climate

The winter can be extremely cold and the main rainfall is during the month of December. As much as 127 mm of rainfall takes place during the month. The summer can be hot and temp varies between 27 to 44*C. Harvest

Late September to early October

Grapes

There are about 40 different varieties of grapes grown in the quintas (wine estate) of Douro region for making port wine. Some of them are listed below

For red port -	For white port-
Bastardo	Muscatel Branco
Tourigo	Mourisco Branco
Mourisco	Rabo de Ovelho
Souzao	Malvasia Rei
Tinta Francisca	Gouveio
Tinta de Carvalha	
Tinta Cao	
Boca de Mina	

Production of Port

Crushing

There are two different method of crushing the grapes. The old method which is manual method of crushing and the new method of crushing which incorporates the mechanical devices for the crushing of the grapes

The manual method of crushing - In manual method of crushing it takes two men to work in a four-hour shift to work in a pipe (cask). The result is known as CORTE meaning the first treading after which the men dance around the must for another four hours during which the restrictions of the first four hours does not remain the treading may continue for 24 to 48 to sometimes 60 hours.

Fermentation

Juice is then transferred to large vats for fermentation. Important step in making port is the rapid extraction of color from the grapes and introducing the grape spirit at the appropriate stage to bring fermentation to a halt and retain sugar.

Sugar is converted to alcohol and the color is extracted from the skins. When wine receives enough color and sugar content has fallen, *Baumé* a half fermented wine is drawn off and mixed with a predetermined quality grape spirit, which stops further fermentation by killing the yeasts.The ratio of wine to grape spirit is 4:1 which results in a sweet fortified wine called port.

Ageing

Then the wine is given sometime before being tasted for quality and characteristics. After tasting the wine is blended in huge vats called Balsetros. This is now transferred to vats where the wine remains till they get matured. In between racking takes place 3-4 times in the first year. The frequency decreases the following year onwards. After it matures adequately in the cask it is ready to be shipped and boiled. During each year in the cask there is a loss of around 2.5 to 3% of wine through evaporation.

Bottling

With the exception of vintage, crusted and very old tawny port all other ports have to be clarified using either isinglass, egg white or by filtration, refrigeration etc.

Types of Port

Port is divided into two main categories

- Wood ports
- Vintage Port

1. Wood Port – These ports are matured in oak casks and are ready to drink after they have been bottled. The following are some of the styles and their characteristics of wood ports.

Ruby port-Traditionally they are the youngest of ports, which take their names from the ruby color.
Usually rich and fruity they are best consumed when young. No cellaring is necessary.

Tawny Port-The name is derived from the tawny color of the wine which comes from long ageing in the barrel which causes the wine to lose some of it's redness. Much smoother than Ruby port, tawny port usually spends a minimum of six to eight years in the cask {which helps round the fieriness of the alcohol} resulting

in a wine with a smooth texture and a touch of sweetness. Tawny ports do not improve significantly in the bottle as it has been matured enough in the cask.

White port-These tend to run from dry and slightly tangy to medium sweet. Although some appear to be slightly oxidized, the drier ones are perfect aperitifs for a Portuguese dinner. Themselves, slightly chilled with some crackers or cheese during warm weather, may also enjoy them.

Colheita Port- These are tawny ports made from single vintage instead of different years. As per law, it should be matured in wood for a minimum of seven years and it may be aged up to 60 years. The date of vintage and date of bottling will be stated on the label.

2. Vintage Port (Bottle Port) – It is blended port that has been bottled after 5-6 years of wood ageing and then stored until it throws a crust. It spends at least seven years in bottle.

Late bottled vintage (LBV) -They are ports of a single vintage year from March 1 to September 30 declared by the shipper during the fourth year after the vintage the port is bottled between July 1 of that year and December 31 of the sixth year after harvest. Generally late bottled vintage ports are vintage not declared as vintage ports and are usually ready to be drunk when released.

Vintage port-These are by far the greatest ports. Vintage ports are made only in years that are declared by the shipper as very best {usually three to four vintage in a decade} they are generally aged for two years in wooden casks and bottled somewhere between July 1 of the second year and June 30 of the third year after the harvest. Vintage ports are very difficult to be drunk in its youth because of the tannin high acid, alcohol and concentration of fruit and sugar. However those who are patient enough to wait for fifteen to twenty years will be rewarded with one of the world's greatest fortified wines

Crusted port-A blend of young wines of several years chipped in cask and then bottled. Gets its name because it throws a crust on the bottle. Similar in color to vintage port.

Shippers of Port

Cockburn's Smith's and Co

Croft and co Ltd

Gonzalez Byass and Co Ltd

Mackenzie and Co Ltd

Sandeman and Co.Ltd

Leacock and Co Cossart Gordon

and Co

Rutherford and Miles Ltd

Service of Port

When served as an aperitif— It should be served either 30 or 60 ml in port wine glass or an A.P wine glass or a cocktail glass. It should be served chill with a slice of lime.

When served as an accompaniment to the dessert— It should be served 30 or 60 ml in port wine glass or a A.P wine glass or cocktail glass but at room temperature.

3. Madeira(estufagen)

In 1418, one of Henry the navigators captain João Gonçalves Zarco and Tristão Vaz Teixeira discovered an island around 660 kms the north of Portugal Capital of Lisbon. The island was completely wooded in it entire length of 50 km and width of 23 kms. He names the island as Madeira, meaning wood or timber in Portugal language. Zarco was eventually appointed as a Captain General of the island. He established his base at the site, which is now the island's capital of Funchal. Zarco, saw that the trees are an obstruction to the growth of colonisalism so Zarco set fire to the forest. It is told that the forest kept burning for seven years and the wood ash enriched the soil. Much of the prosperity is due to the fortified wine known as Madeira.

Grape Varieties

Most of the Grapes grown in the island belong to different species.

- Sercial – driest, slight almond
- Verdelho – Soft, sweet and smoky
- Bual – Full bodied sweet, velvet color
- Malmsey – Dark rich with full flavor
- Blends – Blended and marketed

The making of Madeira

The grapes are generally harvested in the mid August and the harvest continuous till late October. The grapes at sea level that is Verdelho and Bual are harvested first. Then the Malmsay and finally the Sercial is harvested. The reason is why the Sercial is harvested the last is the grapes being cultivated at the highest terraces where the atmosphere is quite cool it takes a lot of time for the grapes to reach the required level of ripeness. The grapes are harvested manually and then taken to the lagar(winery), where barelegged people crush the grapes. The must is then immediately transferred to the lodges at Funchal.

As the fermentation starts in the termination tank, the wines which are intended to be sweet fortified wines will have their fermentation terminated at a very early stage by the addition of grape spirit distilled from Madeira wine itself. The drier form of Madeira that is Sercial and Verdelho are fermented much longer. Alcohol is however added in small doses in order to slow down the fermentation process and not completely stop it.

When the fermentation is complete the fortified wine is given a resting period in the cool lodges. Now these wines are known as Vinho Claro. In the olden days the wines used to be carried in selling ships to the tropics and back. The wines during its journey to the tropics used to come in contact with increasingly high temperature and during its journey back and used to connect with progressing decreasing temperature. This process of coming in contact with high and low temperature used to improve the quality of the wine but later it was found that these trips are becoming un-commercial and time consuming. So an artificial heating system developed which will have the same type of effect on the wine as the tropical journey used to have. This artificial healthy system was known as Estufagem.

Estufagem or estufa system

The estufa is simply a heated room or stove. In its earliest form it used to be known as “Estufa del sol” or a glass house where natural sun rays used to heat the wines kept in pipes (casks) but the cold air during the night used to adversely affect the quality of the wine. So artificial heating was required.

Now-a-days two types of artificial heating are in use.

1. The central heating system where hot water pipes run along the wall of the room, which heats the

Madeira. 2. Hot water pipes run through the wall of the cement tanks in which the wine is matured.

The capacity of the cement tanks is around 4000 liters. These tanks are controlled by thermometers, which have a Government seal attached to that. If the temperature rises above an agreed level then this seal automatically breaks and the Government ensures that such a wine is not sold as Madeira. Usually the

maximum temperature is fixed between 43.3 degrees C to 66 degrees C but 50 degrees C is considered to be ideal. The temperature is increased very gradually and never more than 2.75 degrees C per day. When the required temperature is reached it is kept at that temperature for 3 -4 months, sometimes up to 6 months. The wine now is called Vinho Estufado.

By now the wine must have lost around 10 – 15% of its original volume. It must have become a little darker and developed a light burnt taste. After being given a good resting period it is racked into new casks. Now the wine is called as "Vinho transfegado". In these new casks the wine is added with 10% of alcohol. Now the wine is known as Vinho Generoso". Now the wine enters into the Solera system for blending and maturation.

The Governmental law does not allow the wine to be sold before at least thirteen months after its time in the estufa.

Varieties of Madeira

Madeira is generally named after the grapes used for their production. There are five different types of Madeira.

1. Sercial - Sercial Madeira is an amber colored aperitif wine with a crispy taste. It varies from dry to not so dry. Served chilled.

2. Verdelho - It is a golden colored Madeira and not as dry as Sercial. This can be an excellent accompaniment to soups or can be enjoyed at any time of the day.

3. Rainwater - The wine was believed to have been created by Mr. Habisham, a local Madeira shipper from Savannah Georegia. Mr. Habisham made very special blend of Sercial and Verdelho that were lighter and quite a bit paler (almost like rainwater) than most of the Madeiras. It used to be consumed during the early nineteenth century.

4. Malmsey - It is dark brown in colour and the most renowned and expensive form of Madeira. Truly a dessert wine and can also drunk after the coffee.

5. Bual – It is a full-bodied sweet wine with full color. It is regarded as one of the finest wines.

4. Marsala

Marsala was first produced in 1760s when John & William Woodhouse, English merchants from Liverpool came to Sicily to purchase 'Soda-ash' to a ship back to England soap makers. While in Sicily they tasted the local wines. After noting down how similar it was to the already existing popular wines from Jerez & Madeira, they sent back several casks – 60 pipes or approximately 6,700 gallons to England. But first they added alcohol, approximately 2 gallons of it to each barrel of wine to ensure that it would survive the long voyage. England was so impressed with the quality of the newfound wine that John decided to stay behind with his sons to help cultivate Marsala wines. In 1773 Woodhouse founded a vinery to produce Marsala for export to England.

The name Marsala is believed to have been derived from the Arabic 'Marsh – El – Alla' harbour of God. The Marsala area and the rules of production are limited by law number 1069 passed on November 4, 1950 which also designates three provinces of Sicity - Trapani, Palermo and Agrigento, where Marsala can be produced. Marsala was granted DOC designation on April 2, 1969 by a presidential decree.

Production of Marsala

Marsala is both the name of the city in north-east city and the name of a blend of grapes most notably the Catarratto &/or Grillo grapes with a maximum of 15% Inzolia is allowed. Like Sherry & Port, Marsala is a fortified wine. It bears some resemblances with Madeira in that one or more of is constituents that are cooked or heated during processing. The white wines rich in-extract and low in acidity are blended and allowed to ferment till dry. The blend is slowly heated for about 24 hours until it has been reduced to one third of its original raw volume. During his time they become thick, sweet and caramel like. This cooked wine is Calle Cotto and is allowed to cool. The Cotto is then added to a base wine in the proportion of six part of Cotto to one part of alcohol. This process is used to make sweet Marsala. The dry Marsala is also made in same way except that less of the Cotto is used, sometimes to the tune of 1%. Marsala is aged in casks for a minimum period of four months to as much as five years and occasionally longer.

Types of Marsala

The Italian DOC law has set production rules for four versions of Marsala.

1. Marsala Vergine - This is considered as the finest Marsala and is made by the Solera system. By law it cannot contain less than 18% of alcohol. What makes Marsala Vergine so special is that it is made from the best grapes of the vintage and must be aged for at least 5 years in Oak casks, before the producer can sell it. It is therefore extremely dry. When properly stored Marsala Vergine can be stored for 10 to 5 years.

2. Marsala Fine - This version must be aged for a minimum period of four months and have an alcoholic content of no less than 17%. This is the most heavily advertised and consumed Marsala in U.S.
3. Marsala Superiore - This version must be aged for a minimum period of 2 years and should have alcoholic strength of no less than 17%. It is basically made in two styles, dry and sweet.
4. Marsala Speciale - This version cannot be sold following the harvest. Law it should have an alcoholic strength of no more than 18% but it's can change taste with the addition of other ingredients and flavorings. This product is designed to render it useful for the preparation of different sweet dishes.

Serving and storing Marsala

Normal procedure for proper wine storage, apply to marsala except that most Marsala's come in screwtop bottles and can be stored upright. There is really no reason to age Marsala for extended period of time as it is sufficiently aged prior to bottling. Once opened Marsala should be refrigerated which will extend its shelf life to about one month.

Dry Marsala is an excellent aperitif, which should be served chilled from the refrigerator, and sweet Marsala's go very well with the dessert and should be served at room temperature.

Common Shippers of Marsala

Woodhouse & Company Ingham

Wittakar & Company Florio &

Company

5. Malaga

It is a sweet fortified wine that comes from Malaga on the Mediterranean coast of Spain.The main grape used in its production is Pedro Ximénez. It is produced from the grapes dried on the straw mats in the sun.It is then blended with concentrated grape juice after fermentation and is then fortified with grape spirit. It is matured in the solera system.

Types of Malaga

Malaga wines are classified according to age, color and sugar content.

According to age:

- Malaga (Aged for 6-24months)
- Malaga Noble (Aged for 2-3yrs)
- Malaga añejo (Aged for 3-5yrs)
- Malaga trasañejo (Aged for more than 5yrs)

According to color:

- Dorado or golden (It is produced with no added grape syrup)
- Rojo dorado or rot gold (It is produced with the addition of up to 5% grape syrup)
- Oscuro or brown (It is produced with the addition of grape syrup between 5-10%)
- Colour (It is produced with the addition of grape syrup between 10-15%)
- Negro o Dunkel or dark (It is an aged wine produced with the addition of over 15% of added grape syrup)

According to the sugar content:

- Dulce crema or cream (Contains sugar between 100-140g/L)
- Dry pale or pale dry (Contains sugar not more than 45g/L)
- Pale cream (Has higher sugar content of more than 45g/L)
- Sweet (Sugar content of more than 140g/L)

E. Aromatized Wine

Aromatized wines are fortified wine that has been flavored with herbs, spices, fruit or other natural flavorings. Must have a minimum alcohol content of 14.5% and a maximum content of 22%.Majority of older brands come from France and Italy. Other similar beverages in this family may include aromatized wine-based drinks (non-fortified) and aromatized wine-based cocktail (>7%).

Vermouth

The most popular of all wine based aperitifs are vermouth. Vermouth is German in origin. In the 16th century it was not uncommon in Germany to flavor the local wines with Wormwood. The concoction used to be called as "Wermutwein" The word was taken over by the French and the Italians. Any thing to do with Germany has to have a scientific aura associated with it. It was immediately introduced for its medicinal properties. Production finally settled at Marseille and Turin in France and Italy respectively. Since that time France has been associated with white and dry vermouth and Italy with red and sweet vermouth but right now there is no national demarcation as such and both France and Italy are producing both dry and sweet styles.

Vermouth is an aromatized wine, which is fortified. The base wine is quite ordinary which is fortified with Mistelle. Mistelle an unfermented grape juice and brandy in the ratio of one part of brandy to four parts of grape juice. The other ingredients present in vermouth are aromatic herbs, sugar and of course alcohol. The

herbs which are all spice, angelica, angostura, aniseed, benzoin, bitter almond, bitter orange, celery, coriander, Chamomile, Cinnamon, clove, cocoa, fennel, ginger, hope, mace, myrtle, nutmeg, peach, quinine, rosemary, rhubarb, saffron, sage, thyme, vanilla woodruff, etc.

Production of Vermouth:

The base wine, which is used in the production of vermouth, is very ordinary. An example of the ordinaries of the wine, which is used in the production of vermouth, is that almost all wines, which are used for the production of vermouth, are obtained from Midi. The blended wine is then matured for a period of three years. Mistelle is then added to the wine in varying proportions, sometimes to the tune of one part of Mistelle to four parts of wine. On the meanwhile aromatic herbs are steeped in neutral alcohol till the correct degree of flavoring has been extracted in the alcohol. This may take place in seven days. The flavored alcohol is then added to the wine and mistelle mixture. The entire lot is then thoroughly blended in huge tanks. There are mechanical devices present in the tank, which thoroughly agitate and raise the mixture. Some amount of cinnamon is added for depth and some amount of gelatin is added for clarity. The wine may be refrigerated to ensure that any tartrate remaining will form into crystals and fall to the bottom of the tanks. Then the wine is bottled. Vermouth does not mature in the bottle and should be drunk young and crisp.

Types of Vermouth

Styles	Features
Dry vermouth	It is termed as French vermouth. Produced from dry white wine, flavoured, and fortified. Light yellow to gold in colour
Sweet vermouth	It is also known as Italian vermouth. Reddish brown in colour, sweet; made from white wine, flavoured, fortified, and coloured with caramel
Bianco	It is a straw coloured, sweet vermouth. Sweetened with *mistelle* or sugar
Rosé Vermouth	It is less sweet than Bianco and coloured with caramel

Brand Names of Vermouth

Cinzano (Italy) - Carlo Steefano and his brother Giovanni Cinzano first established The house of Cinzano in 1757. Cinzano produces a dry white, a sweet red, a sweet white and a special called Antica.

Noilly Prat (France) - The house of Noilly Prat was established when Claudius Prat joined hands with Louis Noilly in 1843. Both red and white varieties are produced.

Punt–E–Mes (Italy) - This Italian vermouth is from the Carpano family of Italy. Punt – E- Mes history begins in 1786, in Pizza Catello in Turin where Antonio Benedetto Carpano, a well respected Bar and Restaurant owner who used to make his vermouth to fit the individual preference of the customer.

Punt - E - Mcs (Italy) This Italian vermouth is from the Carpano family of Italy. Punt - E

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Noilly Prat (France); Thehouseof Noilly Pratwas established when Claudius Prat joined hands with

Louis Noilly in 1843. Both red and white varieties are produced.

Other Aromatized wine

St. Raphael(France) The house of St Raphael was established in 1880 by a young Frenchman Dr. Pierre

Juppet. Both red and gold varieties are produced mixed. With equal part of orange juice, it makes an

excellent drink

Dubonnet (France) 18% Alcohol first fermented by Joseph Duibonnet in 1846 in chambery of

France. The red and white varieties of Dubonnet have a semi dry taste and fulol bodied flavour.

Dubonnet was first introduced into California under the French Licence. It is best when served chilled

from the refrigerated or poured over ice with a twist of lemon.

Byrrh: A proprietary Mistelle based aperitif which has a ruby red colour. Byrrh is best when

served with soda over ice.

Lillet: This term was founded by Paul and Raymond Lillet, in 1872 in a small town of Poderrac

near Bordeaux. Lillet both red and white is dry and full bodied. It is best served chilled from a refrigerator or on the rocks with a twist of lime or a slice of orange or with a splash of soda.

Unit II

1.1 Wine producing countries of the world

A. Old world wine producing countries.(France,Italy,Germany,Spain and Portugal)

France

France is number one wine-producing country in the world. It produces wines of remarkable quality . Terroir makes the French wines very different from others..Terroir refers to geology of the soil, micro and macroclimate Most French wines are named after the place except the wines produced in Alsace region, which are named after the grape

French Wine Laws and Classification of French Wines

French wine laws classify the French wines into four categories.

Vin de Tables

Vin de pays

Vin Délimité de Qualité Supérieure (VDQS)

Appellation d'Origine Contrôlée (AOC)

Vin de Table

This is the basic wine which amounts to approximately 40% of the total wine production of France.There are no restrictions on the grape varieties used, and on the yields.'Produce of France' is printed on the label without the name of grapes, region, vintage etc.

The wines are sold in carafe or in glass. This category of wine is also termed as carafe wine **Vin de**

Pays

The wines of this category are made from approved grapes of a specific region.It guarantees minimum alcohol content, and the area of production

The official name of the appellation would appear after the phrase 'vins de pays de….'

Vin Délimité de Qualité Supérieure (VDQS)

This category of wines is produced in delimited areas.It guarantees the area of production, grape variety used, minimum alcohol content, viticulture, and vinification methods.This group is slowly being phased out as the wines of this class are promoted to Appellation Contrôlée (AC)status

Appellation d'Origine Contrôlée (AOC) or Appellation Contrôlée (AC)

This category of wines is the highest standard of quality and it guarantees the following

the area of production,he grape varieties used,Viticulture and vinification methods ,Maximum yield and minimum alcohol content

Wine-Producing Regions

Following are the important wine-producing regions of France

Bordeaux

Burgundy

Alsace

Champagne

The Rhône Valley

The Loire Valley

Bordeaux

This is the largest quality wine –producing area in France. It produces about 70% AC quality wines.This region produces red, white, and rosé wines. The greatest wines of this region are reds, which are known as claret. It produces excellent sweet white wine, Sauternes.The wines of this region are named with the word château (estates)

The main black grapes are Cabernet Sauvignon, Cabernet Franc, Merlot, and Petit Verdot. The first three are the major varieties and the blend is called the 'Bordeaux blend'. The main white grapes are Sauvignon, Sémilllon, and Muscadelle

Following are the well-known wine-producing districts of Bordeaux

Médoc,Graves,Saint-Emilio,Pomerol,Fronsac, Bourg, and Blaye,Sauternes,Loupiac and Entre-deux-Mers

Burgundy

This region is noted for its red wines in general and produces both red and white wines of a variety of styles.Most of the wines produced in Burgundy are red, which are full-bodied and heavier compared to claret. The well-known whites include Chablis, Meursault, and Pouilly-Fuissé.Most growers ferment the wines and sell in bulk to the négociants (merchants),who age, blend, bottle, and sell the wine according to the norms laid down by the appellation.Four main grapes used in Burgundy. Pinot Noir and Gamay are for red wines and Chardonnay and Aligoté for white wines.

The main wine producing districts of Burgundy are:

Côte d' Or (Côte de Nuits and Côte de Beaune),Côte Chalonnaise,Mâconnaise,Beaujolais and

Chablis

Alsace

Alsace is a white wine area. The white wines of this area are fresh, dry, light, fine, and aromatic. Wines are named after the grapes in this area.Around 30 per cent of all appellation contrôlée white wines come from this region.The noble grape varieties of this region are

- Riesling • Gewürztraminer • Muscat • Sylvaner • Pinot Gris (Tokay d'Alsace) • Pinot Blanc

The wines of Alsace are bottled in the area of production into Alsatian tall green flute-shaped **bottles.**

Champagne

This region is world famous for its sparkling wine which is named after the region, Champagne.This wine is made by Méthode champenoise(refer to Me'thode Champenoise)

Rhône Valley

Rhône region produces red, white, and rosé wines.The reds from Rhône are heavy, full-bodied, dark in colour, and rich in flavour with high alcohol content. They are made from Syrah grapes or from the combination of Grenache and other grapes.Rosé wines are dry with an orange tinge. A very small quantity of sweet wine is made by halting the fermentation process by adding alcohol to the fermenting grape juice. These wines are known as vin doux naturel. This region also produces sparkling wines The major portion of the wines is sold under the name of Côtes-du-Rhône.

Following are the communes of Southern Rhône

Triscatin,Rasteau,Gigondas,Beaumes-de-Venis,Vacqueyras,Châteauneuf-du-Pape,Lirac,Tavel

Côtes du Ventoux, and Côtes du Lubéron

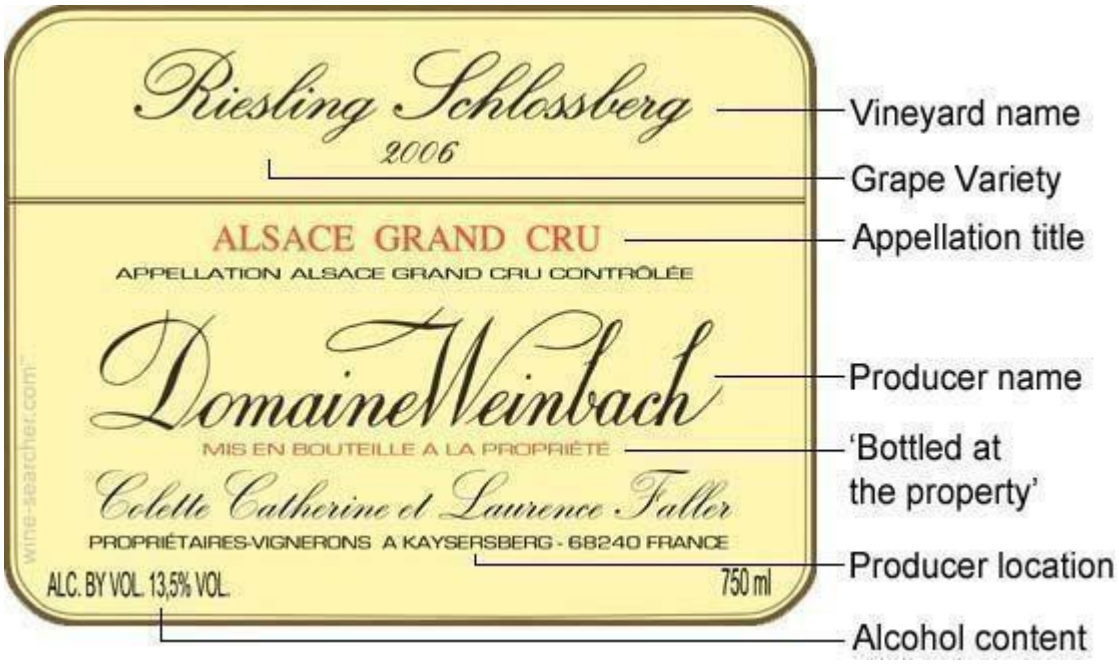
Loire Valley

The loire is the longest river in francerising in the mountains of the Massif central in the Ardeche and joins the ocean at Nantes .Most of the Loire benefits from soil type

The region has four districts

Nantes,Anjou and Samour,Touraine andCentral Vineyards

French wine label



Wines of Italy

Italy is well known for its robust, full-bodied, and fruity red wines, though it makes quality white wines. It is also known for spumante (sparkling wines). The best wines of Italy come from the northern regions, especially from Piedmont and Tuscany. Well known native grapes are nebbiolo, sangiovese, and trebbiano

Italian wines get their names from geographical regions and from the variety of grapes used, sometimes with the district's name.

Italian wine law and classification

Italian wine law classifies the wines as following (given in ascending order of the quality standards) Vino da tavola: ordinary table wine, unclassified.

Vino tipico/Vino da tavola con indicazione geographics (IGT): wine from a defined area.

Denominazione de origine contrallata (DOC): quality wine from an approved area. Grape varieties, cultivation and vinification methods and maximum yields are specified.

Denominazione di origine controllata e garantia (DOCG): guaranteed quality wines from approved areas. Grape variety and proportions, maximum yield, vinification methods, pruning and cultivation and minimum alcohol content are specified.

Wine- producing Regions

Piedmont,Lombardy,Trentino_Alto Adige,Friuli-Venezia-Giulia,Veneto,Emilia-Romagna

Tuscany,The Marches,Umbria,Lazio,Campania, Basilicata, Apulia, Calabria

Sicily and ,Sardinia

Wine label

Italian Wine Terms Blanco : White

Rosso : Red

Nero : Dark red

Rosato : Rosé

Dolce : Sweet

Secco : Dry

Asciutto : Bone dry

Riserva : Wine aged for longer period than usual

Vecchio : Old

Spumante : Sparkling

Wines of Germany

German wines are named after the grapes and area Germany is known for excellent white wines.Hocks and Moselles are the two main types of white wine produced.Hock refers to white wine produced near the Rhine, while Moselle refers to white wine produced near river Moselle and its tributaries, Saar and Ruwer.Hock wines are bottled in brown-coloured bottles while the Moselle wines are bottled in green- coloured bottles

Wine law of Germany | classifies its wines into two | broad categories. They are

1 Table wine 2 Quality wine

Table wine

Ordinary everyday drinking wine. It is further classified into

Deutscher Tafelwein : made exclusively from the grapes produced in Germany.

Tafelwein: German wine blended with wines imported from other countries in the European Economic Community (EEC)

Quality wine

It must originate in one of the 11 authorized regions and must be made from the approved grape varieties, grown in approved vineyards

Quality wines are further classified into

1 Qualitätswein bestimmer Anbaugebiete (QbA 2

Qualitätswein mit Prädikat (QmP)

Qualitätswein bestimmer Anbaugebiete (QbA)

The label of this category must clearly show the name of the authorized region and the term Qualitätswein.

Qualitätswein mit Prädikat (QmP)

These are the top category German wines. Come from a single district in one of the authorized regions. The label must show the term Qualitätswein mit Prädikat (QmP) and the name of the authorized area.

Wine Regions of Germany

1.Mosel-Saar-Ruwer 2. Rheingau

3. Nahe 4.Rheinhessen

5. Rheinpfalz 6. Hessische-Bergstrasse

7. Baden 8. Ahr

9. Württemberg 10. Mittelrhein

11. Franken

German Wine Label

Following are the terms used on the German wine labels:

Anbaugebiete: 11 authorized regions of wine production Bereich:

District

Grosslage: group of vineyards of the authorized region Einzellage:

Individual vineyard of authorized region

AP Nr (Amtlich Prüfungs nummer): number awarded by the inspection board. The last two digits show bottling year.

Sekt: Sparkling

Trocken or Diabetiker-wein: Dry wine suitable for diabetics German

wine Label

Note: Some German wines labels carry the terms Trocken (dry) or Halbtrocken (medium dry) or

Lieblich (medium sweet). The two newer classifications of dry wines are: Classic and Selection

(which meets additional quality criteria).

Spain

Spain is the third largest wine producer in the world and has the largest land area dedicated to vineyards than any other country.

Earlier, it was known for ‘sherry’ and red wines from Rioja. But today, almost all its wines are well recognized. Some new Spanish winemakers employ modern technology and introduce classic grape varieties along with native grapes, to have a wide range of wines. Cava is Sparkling wine made in Spain using méthode champenoise.

Traditionally, Spanish wines were oak-aged for long periods but today the wine producers use temperature-controlled stainless steel containers with no or little oak ageing to get lighter fruity wines.

It is an affordable substitute for expensive wines of France and other countries.

Spanish wines are classified as follows

Vino de Mesa (VdM)

Vino de la Tierra (VdT)

Denominacíon de Origen (DO)

Denominacíon de Origen Calificada (DOCa)

Following are the classification of Spanish wines according to the minimum ageing requirement in wood. It is applied to all the Spanish wines. However, DO of each area specify its own ageing norms for various types.

Vino Joven or Sin Crianza

,Crianza Reserva

Gran Reserva

Wine label

Wine producing region

Rioja,Penedés,Priorato,Costers del Segre,Ribera del Duero,Rueda,Galicia

La Mancha,Valdepeñas,Valencia,Alicante,Montilla-Moriles,Navarra,Alella,Jerez Malaga

Portugal

Portugal is best known for its fortified wine, Port. Apart from Port, it is also known for its pink and pétillant Mateus Rosé, Lancers, and Vinho Verde.

During the Anglo-French conflict, Portuguese wines were the first choice of wines for the UK, though the quality of these wines was not comparable with that of the French. The Methuen Treaty of 1703 popularized Portuguese wines in the UK

Most of Portugal's vineyards are under the control of cooperatives Portuguese

wines are classified as

Vinho de Mesa

Vinho Regional

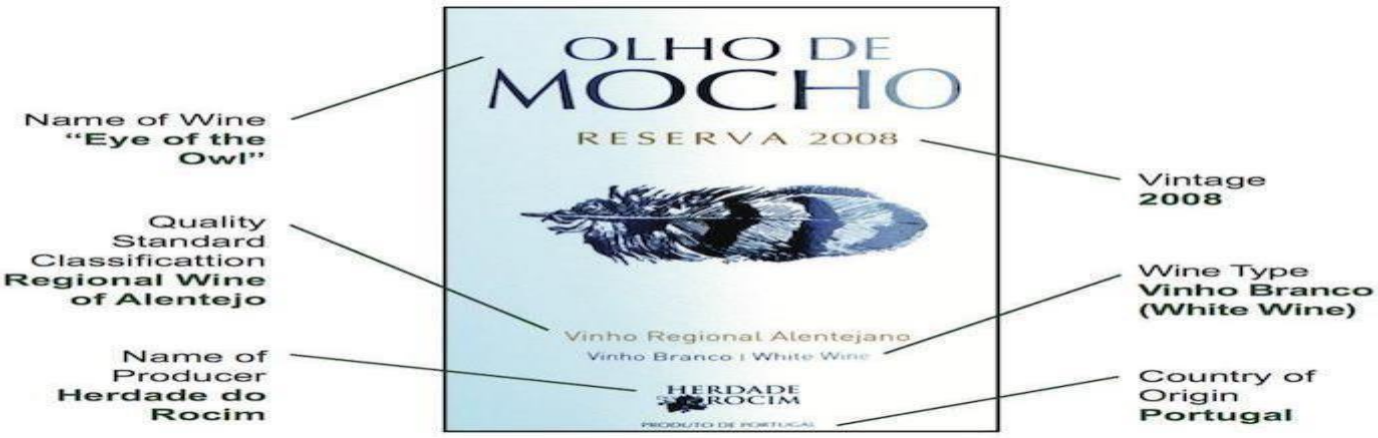
Indicaçao de Proveniêcia Regulamentada(IPR)

Denominação de Origem Controlada (DOC)

Wine producing region

Minho,Douro,Dão,Bairrada,Beira,Trás os Montes,Alentejo,Setúbal,Colares

Wine Label



B. New world Wine

Wines of the USA

Almost every state in the USA produces wines and of all the states, California is the leading wine producer, making about 90 per cent of the USA's wine.An American viticultural area (AVA) is an approved wine grapegrowing region in the USA, identifiable by geographic features, with boundaries defined by the Alcohol and Tobacco Tax and Trade Bureau (TTB).

On 20 June 1980, the first AVA (Augusta AVA) was recognized near the town of Augusta, Missouri.

Wine producing region: California ,Newyork,

US Wine laws

There is a nationwide appellations system monitored by the TTB. The AVA identifies geographical areas of quality production. Wines from AVA must be made with at least 85 per cent of grapes from that area. If it is a varietal wine, then it should be made from at least 75 per cent of that grape. If the wine label mentions the vineyard, then 95 per cent of the wine should be made from the grapes grown in that vineyard.

Wine region of New zealand

New Zealand wine is produced in several winegrowing regions of New Zealand. The country's elongated island geography in the South Pacific Ocean results in maritime climates with considerable regional variation from north to south. Like many other New World wines, it is usually produced and labelled as single varietal wines, or if blended the varietal components are listed on the label. New Zealand is best known for its Marlborough Sauvignon Blanc, and more recently its dense,

concentrated Pinot Noir from Marlborough, Martinborough and Central Otago

Best wine regions in New Zealand

MARLBOROUGH. ,HAWKE'S BAY.,GISBORNE. ,WAIRARAPA.
,CANTERBURY. CENTRAL OTAGO.

Australian Wine

The Australian wine industry is the fourth largest exporter in the world. The climate in most part of Australia is warm, which produces ripe, rich, fruity reds, and whites. Australia produces good quality varietal wines and these wines are reasonably high in alcohol with strong fruity flavour. Australian wines are ready for drinking earlier than some of the European wines that are made from the same grapes. Some of Australia's best reds are labelled shiraz, which is known as syrah in Franc**e.**

Major grape varieties of Australia are shiraz, cabernet sauvignon, merlot, chardonnay, sauvignon blanc, semillon, and riesling.In Australia, GSM is a common name for a red wine consisting of a blend of grenache, shiraz, and mourvèdre

Australian Wine laws

If the term 'show reserve' is used on the label, the wine has won a medal at tasting competition.If the term 'wood matured' appears on the label, it means that the wine has oaky taste

Wine Regions of Australia

South Australia,,Victoria,New South Wales,Western Australia,Queensland,Tasmania

Wines of South Africa

In 1973, 'The Wine of Origin' (WO) was introduced and it is governed by the South African Wine and Spirit Board. The WO seal on a bottle stating the origin guarantees that 100 per cent grapes come from that area. Wine regions under WO system fall into four categories which are mentioned in the following in the order of larger area first and the smallest last

1. Geographical units 2. Regions 3. Districts 4. Wards

All WO with grape name or vintage must have minimum 75 per cent of that grape or vintage. All WO wines must go through analytical test and tasting panel. Every bottle of wine passed by the board carries a seal which includes up to three-coloured bands on the neck of the bottle. A blue band guarantees the origin, the red band guarantees the vintage year, and the green band guarantees the grape variety stated on the label.Each seal carries identification number.

If the word 'Estate' is printed on the label, it means the wine is from that Estate while the word 'Superior' on the label indicates wine of superior quality according to the standards of wine and spirit board. Wine producing region:Deveon valley,jonkershoek,cape south,Breede river valley

Wines of Hungary

Two famous wines of Hungary are Tokay and Bull's blood.

Tokay:

Tokay (Tokaji) is a premier wine of Hungary made in Toakj- Hegyalja region. It is very sweet and luscious comparable to the great Châteaux of Sauternes and the Trockenbeerenauslese of Germany. It is made from grapes that are subjected to noble rot.

Styles of Tokay:

Tokay Essencial/Essenz, Tokay Aszú, Tokay Szamorodni

Wine producing region :Tokaj

Wine of India

Vineyards in India range from the more temperate climate of the northwestern state of punjab down to the southern state of Tamil nadu. Some of India's larger wine producing areas are located in Maharashtra, Karnataka near bangalore and Telangana near Hyderabad. Within the Maharashtra region, vineyards are found on the Deccan plateau and around Baramati,Nashik,Pune,and sangli The high heat and humidity of the far eastern half of the country limits viticultural activity.The India produces red,White and sparkling wine

Sula is the popular brand presently which is consumed largely in the domesticaated market and also export

1.2 Wine tasting,storage & service

Steps in wine tasting & Serivce

1. Observe clarity and colour
   Pour 2-3 oz of wine to be evaluated in the wine glass and hold at 45* angle against the white background or against the light and observe the color and clarity. Make notes of your observation.

- Clarity

The wine should be clear and bright. If it is dull or haze, it shows the sign of faulty fermentation and/or filtration. Presence of any bubbles in the wine indicates that the wine has started fermenting again in the bottle.

- Color

One can observe the color gently fading between the middle of the wine and the rim of the wine. Some wines have transparent ring around the rim from which one can assess the flavor. The larger the transparent ring, the more dilute the flavors will be and vice versa. The color of the wine varies according to the age. The color of the white wine ranges from pale straw color to gold. White wine from hot climate and sweet white wine has deep yellow or golden color and the wine from cold climate has greenish tinge. The wine with deep amber or brown color may mean a problem. The color of red wine is purple when young and changes to crimson red or reddish brown when old.
Red wine with amber color indicates some problem.

2. Swirl the glass
   Swirl the glass and observe the fall of the wine on the sides of the glass which reveals the viscosity if the wine and take notes. Viscosity refers to the consistency of the wine. When wine is swirled around the glass it slides down the glass. When it slides, observe the formation of ‘lines of beads’

which is also called 'legs' or 'tears' on the inside of the glass. The thicker the legs the higher the alcoholic contents and/or sugar content. The wine with low alcohol or sugar content will have weak or light legs.

3. Swirl and nose the wine
   Holding the glass by the stem, swirl it gently for five seconds. Swirling makes more of the wine come in contact with oxygen and release the alcohol and the elements in the wine that produce the distinctive aroma and bouquet. Put the nose almost inside the glass and take quick smell. Compare the smell with any of the fruits, spices, chemicals, vegetables and flowers and make notes.
   Some of the flavors often identified are as follows:
   Fruity – Wines may have the flavor of tropical, citrus and stone fruits.
   Floral – Geranium, violet, rose, orange blossom etc.
   Vegetal – Grassy, asparagus, peas, bell pepper, artichoke etc.
   Spicy – Black pepper, cloves, anise etc. Chemical – Soapy,
   sulphur dioxide, damp card board, skunk etc.

4. Swirl and taste the wine

   Take a small amount of wine roll it round the mouth and draw some air through the wine to heighten the flavor. Sweetness, dryness, acidity and astringency of the wine are evaluated. The astringency is associated with red wine, which is due to the presence of tannin.

5. Feel the body of the wine

   Body is the feel of the wine in the mouth. Alcohol, sugar, tannin and the acids contribute the body of a wine. Full-bodied wine fills the mouth in a sensuous way. Observe the aftertaste, which refers to the feeling in the mouth after tasting.

6. Make notes

   Make a note on the observation on the color, clarity, smell, viscosity, taste, body and the aftertaste and sum up your observation.

Storage of wine

Here are some simple tips for storing wine effectively.

1.Store Wine at the Proper Temperature. 2.Store
Wine Bottles Horizontally.

3. Protect Wine from Light and Vibration. ...
4. Store Wine at the Proper Humidity. ...
5. Store Wine in a Wine cellar., Not a Regular Fridge. ...

6. Serve Wine at the Proper Temperature.

Wine should be stored in an area that is cool, but not cold (45-65 degrees Fahrenheit); humid, but not too humid (50-80% humidity); and relatively dark. Temperatures above 70 degrees could cause the wine to "cook," which affects its flavor and longevity.

1.3 Food and wine Harmony

Traditional rules for Pairing Wine and Food

1. The aperitif, which is served before the meal should be dry and preferably wine based

2.The starter courses are best served with dry white or dry rosé wines.

3.National dishes are recommended with the wines of that country

4.Shellfish and fish dishes are served with dry white wines.

5. White meat are served with medium white wines.

6. Red meat go well with red wines, game dishes with robust red wines

7. ll the wines go well with cheese. Red wine suits the blue-veined, hard, and mild cheese. 8.Medium white and rosé wines go well with cream cheese. Port is the traditional wine served with Stilton cheese.

9. Sweet wines are offered with sweets and desserts.

10.Brandy and liqueurs are served at the end of the meal **The**

following factors influence wine and food pairing Acidity

Tannin

Texture (Weight)

Flavour

Fat

Sweetness

Preparation Methods

Wine with Food

Wines do not go well with all types of food. If served with certain foods, the wines will taste dull and flavours cannot be enjoyed.The following foods do not go well with the wine:

Chocolate

Egg, especially boiled egg

Highly acidic food such as relishes and salads dressed with very sharp dressing Very spicy

food

Meat

Red meat is served with the following types of dry red wine:

Médoc • Margaux • Pauillac• Saint-Estèphe • Burgundy Red • Bardolino• Chianti • Valpolicella • Chinon• Zinfandel

White meats are served with the following types of dry or medium white wine: Château

Olivier • Entre-deux-Mers • Soave

Saumur • Sauvignon Blanc

Light red wines may also be offered with roasted white meat.

Poultry

The following light red wines go well with roast poultry

Beaujolais • Chinon

Game

Full-bodied robust red wines are offered with game.

St. Joseph • Hermitage • Châteauneuf- de-Pape • Nuits St. Georges • Gevrey-Chambertin • Médoc• Graves • Barolo

- Chianti Classico • Rioja • La Mancha

Cheese

Blue-veined cheese is served with red wine and cream cheese is served with Vouvray and Anjou.

Port wine is served with Stilton.

Sweets and desserts

The following are wines served with sweets and desserts:

• Sauternes • Auslese• Beerenauslese • Sweet champagne

The following guidelines should be considered when wine is suggested for a multi course meal

- Dry wine is served before sweet wine

-White wine before red wine

-Light wine before heavy wine

-Sparklers before still wines

-Young wine before old wine

Wine list is a list of alcoholic beverages offered for sale in a food and beverage facility. It is also termed as beverage list. The list may include all categories of alcoholic drinks, such as beer, wine, spirit, liqueur, and cocktail, depending on the size and style of operation, and the location of the facility.

Wine list , Bar list, Banquet wine list , Room service wine list etc are the types of beverage lists used in a luxury hotel.

Aperitifs

Some aperitifs are

Dry and medium sherries, Madeira, Dry vermouths,Bitters,

Medium white and rosé wines such as Rhines, Moselles, Vouvray, white Bordeaux, Anjou, Cabernet rosé, Dry champagne and sparkling wines

Fish and shellfish

Fish and shellfish are served with dry white wine. Some dry white wines are

Champagne Brut • Chablis • Meursault• Pouilly-Fuissé • Entre-deux-Mers • Alsace• Sancerre • Muscadet • Frascati• Château Olivier • Dry rosé wine for salmon

Unit III

1.1 Beer and other fermented Beverage

History

The Kalevala, the finish epic describes the creation of the earth in 200 verses but require 400 verses it explain the origin of beer. Julius Caesar described beer as a high and mighty beverage. Beer was discovered probably by accident when some of the nomadic tribes of the Middle East decided to settle down to an agricultural life depending on the cultivation of grain. In times of plenty the excess might have been stored for a possible future period of failure. Due to the damp storage condition the grain might have sprouted and germinated. In a desperate way to salvage the crop they must have made a porridge by boiling the sprouted grain with water. This must have released the sugar into a liquid resulting into a sweet tasting porridge.

This was probably left in the open to cool allowing the natural yeast of the atmosphere to settle on the porridge forming alcohol or what was a crude wash.

There is evidence that the brewing process was established in Babylon as early as 6000 B.C. the Egyptians improved upon the process which was diffused along the trade routes by the Greeks and Romans. The Romans started brewing on a commercial basis to provide a substitute to wine. The Nomads carried the process with them when they conquered England.

The term beer today covers all beer like things such as Ales, lagers and Stout. In days gone by Ales used to be made without the addition of hops. The addition of hops came about in the middle of 16th century A.D got approval only in the 17th century. Beer gets its name from Anglo Saxon word called "BAERE" meaning "BARLEY".

Definition

Beer is defined as a fermented alcoholic beverage made from grains such as barley/ wheat, rice etc. and flavored with hops. Beer is the world's most widely consumed and likely the oldest alcoholic beverage. Third most popular drink overall, after water and tea. The alcoholic content of beer ranges from 2-16%. Best to have it chilled and has different types available

Beer Ingredients/Components

1. **Malt -** Any type of cereals can be used for production of beer i.e. barley, wheat, rice etc. Beer can be made from a single grain, a combination of grains or malted barley. Barley is the most predominantly used.

Reasons why Barley is used:

- Barley is cheaply available.
- Barley is not used as a staple diet.
- Barley is very low in protein, which in excess can cause cloudiness.
- Barley grain has a protective sheet, which protects barley from contamination.
- Barley has a lot of insoluble starch which must be converted to soluble starch and which in turn has to be converted to sugar. For that the barley has two enzymes: the cystase and the diastase. The cystase converts the insoluble starch to soluble starch and the diastase converts the soluble starch into sugar.

2. **Water** - The body of beer consists of 90% water and quality & mineral content affect the character of the brew. It provides bulk and body. It contributes to the flavor. Many breweries have their own

sprigs or wells for water. Termed as liquor in brewery. Water contains salts like bicarbonate, sodium, calcium, magnesium and sulphur. High level of bicarbonate will produce acidic mash, which will reduce the extraction of sugar from malts. Too much sulphur will give bitterness in brew. Magnesium is an essential ingredient for yeast

3. **Hops** - Hop is a climbing vine, member of the same family as cannabis and grow on sup to height of more than 3 mts. Perennial plant lasts for around 10 to 20 years and grows in a clockwise twisting direction. The female flowers are used in brewery, which are cone like blossoms which have tannins and resins. The dryness and distinctive bitterness of the beer is contributed by the hops. Hops help increase the shelf life of the beer due to the presence of tannin in it. The cones are light green in colour, tender with moisture content of 60 to 80 percent. The cones need to be dehydrated in a special chamber called Oast House. Moisture is not reconstituted because the constituents are not water-soluble. So after dehydration they need not be soaked. In India hops are grown in cooler state like Himachal Pradesh. Best hops are the Bavarian hops of Germany.

4. **Sugar** - Graded or refined sugars are added for fermentation. They help reduce bitterness. Gives color in the form of caramel. They cause secondary fermentation. Sugar is generally used in the form of sucrose. Invert sugar that is Sucrose is broken down to Glucose and Fructose so that immediate action can take place. Adds to the sparkle.

5. **Yeast** - Living organism, which is essential to induce fermentation. During fermentation, the yeast converts sugar into alcohol and releases carbon dioxide. Yeast multiples and the new yeast is collected and stored for future use.

   Two types of yeast are used:

   - Saccharomyees cerevisiae – Ale Beer
   - Saccharomyees carlsbergensis – Lager Beer **Top Fermentation**

   Top fermenting yeast that is Saccharomyces Cerevisiae work at 15-19C. Hence top fermenting beers are generally drunk at room temperature i.e. 16-19C.Top fermenting yeast remains at the top of the brew and carries out the fermentation.

   Bottom Fermentation

   Bottom fermenting yeast that is Saccharomyces Carlsbergensis work at a very low temperature of 2- 5°C. Hence bottom fermenting beers require refrigeration during its production to maintain the temperature. Bottom fermenting yeast sink to the bottom of the fermentation tank and carry out the fermentation.

6. **Finings** - Brightening agents added to clear and brighten the beer. Isinglass is commonly used and is obtained from air bladders of various fish especially sturgeon. It attracts sediments to the bottom of the cask. Helps to make the beer clear and bright.

Production of Beer/Brewing process

Malting

The first step in the production of beer is malting. In malting, the starch in the cereal in converted to soluble sugar. Barley is soaked in water and then spread on the malting floor causing *germination or sprouting.* Moisture, warmth and oxygen are necessary for the growth of shoot and rootlets. Moisture is made available by soaking, warmth by spreading on the floor of the malting shed and oxygen by frequent turning of cereals. During germination the insoluble starch in converted to soluble sugar by diastase. The germinated cereal is termed as green malt. Green malt is then dried and roasted in a *kiln* to stop germination. The temperature and length of the heat dictate the color and taste of the beer. After kilning, the dried and roasted malt is milled to a coarse powder *grist*.

Brewing

The grist is sent to mash tun with hot water and other additives such as unmalted barley, maize, rye and wheat called *mashing.* The mash is heated at around 65*C to extract the soluble materials from the grist. During the brewing process, much of the sugar and color is extracted together with non-fermentable substances. These non-fermentable substances give body to the beer. The sweet liquid at this stage is known as *wort*. It is run off the mash and the residue is sprayed with hot water to extract any remaining sugar termed as *sparging.* The leftover solids from the mash tun are used as cattle feed. The wort goes into a huge copper-brewing vessel where dried hops and sugar are added. The amount of sugar and hops added depend on the style of beer under production. Wort is boiled for 1-2 hours, which makes the wort, take on a bitter flavor from the hops. The hopped wort is then run into a vessel called as hop back.

Hop-Back

The spent hops are retained on the screen base on the hop back and the hot wort filters through them. The spent hops are retained as cattle feed/sold for agricultural uses. The hop-flavored wort is channelized to the wort receiver

Cooling and Pitching

Wort is then cooled to 15*C by paraflow (heat exchange) system and transferred to fermenting vats where it is pitched with yeasts for fermentation. The wort should not be at 30*C and above while adding the yeast. Yeast remains active between 5-30*C. Yeast is essential to convert sugar to alcohol. During fermentation, the yeast multiples and the new yeast is collected for future fermentation. Two types of brewers yeast are

available - Saccharomyees cerevisiae and Saccharomyees carlsbergensis. The type of yeast added depends on the style of beer being produced – ale or lager. Yeast also adds to the taste of thebeer

Fermentation

Saccharomyees cerevisiae yeast is used for top fermentation which produces ale. The yeasts stick together as they multiple and form a surface layer on the liquid and convert sugar into alcohol and give off CO2 on the top of the liquid. The liquid ferments for a week at temperature between 15-25*C termed as *ale.* The fermented drink is now termed as ale bee. The gas released during the fermentation is trapped and absorbed into the beer.

Saccharomyees carlsbergensis yeast is used for bottom fermentation, which produces lager beer. The yeast added falls through the liquid and converts the sugar into alcohol from the bottom of the vat at cooler temperature between 5-9*C which produces *lager*.

Maturing and Pasteurization

After fermentation, ale (top fermented beer) is racked into a storage tank and stored for 3-21 days which can be pasteurized or un-pasteurized. After 2-3 days, it is put into casks without pasteurization with some working yeast cells which condition the beer in the casks known as cask conditioning. Cask conditioning is done which is sold as draught beer. Hops are added to flavor the beer and make the clarification easier. Some specialty ales are bottled without filtration or an added dosage known as bottle conditioning (sediment beers). Worthington White shield, Bass, Guinness are traditional bottle conditioned beers, which contain sediments. A majority of the bottled beers are pasteurized.

The lager is racked into a storage tank and matured for 10-24 weeks between 1-3*C. The lager will withstand low temperature without turning cloudy. Lager then can be packaged as per the brewery. During maturation, the yeast settles, harsh flavor mellows and the beer gets its natural texture and carbonation.

Brightening or clarifying The beers are then brightened with the addition of finings and are

carbonated and filtered.

Packaging of Beer

The beers are packed into sterilized casks, kegs, bottles and cans. Some draught beer, bottled & canned beer are pasteurized by subjecting them to steam at 60*C for 18 minutes to sterilize and lengthen the shelf life. The beer is then cooled, labeled, packed and distributed for sales.

Casks

Draught beers are racked into sterilized casks made from plants of oak and bound by metal belt. Most modern casks are made of metals. These beers are allowed to condition before distributing to the market which makes the contents have CO2. This aids in the formation of 'head' while serving. Casks are stored horizontally on stillion in the cellar. Casks are available in different capacities in the market.

Kegs

These are metal containers of beers stored vertically in the cellar. The condition of the beer is taken care of by CO2 cylinders secured near the keg. The sizes of the keg are usually 5-10 gallons which should be exhausted within four days of delivery. The average size of a keg is 30 lts. Keg should be finished within 3 days of opening.Guinness kegs do not need a gas cylinder as the gas is contained in the keg itself

Bottles

It is advisable to bottle beer in dark glass bottles to protect it from sunlight. Most breweries used brown color bottles. However, beers are available in clear glass bottles which should be stored away from sunlight. Bottles of different sizes are sold in plastic crates for easier transportation and stacking. Nips are the smallest bottles with a capacity of one-third of a pint, which hold stronger beer. This bottle is termed as baby. Half pint and one pint bottles are quite common in western countries. The capacity of the Indian beer bottle is 650mls. and some brands in India are also available in sizes of 300ml and 375mls. Bottling the beer retains the flavor, quality and character for a long time with easier picking and distribution.

Bottles beers may be classified broadly into two groups as follows:

1. Beers that have matured before bottling and pasteurized
2. Beers that finish maturing in bottles-they have dosage of yeast which causes sediments The

bottling process involves the following steps:

- Sterilizing the bottles
- Filling the bottles with clear beer (adding dosage of yeast for bottle conditioned beers)
- Sealing the bottles with a crown corks
- Pasteurizing the bottles (not applicable to bottle conditioned beers as it has dosage of yeast) ▪ Labelling ▪ Packing and distributing.

Cans

Beers are canned in sterilized containers of half pints. It is also available in larger containers for special occasions. The advantages of canned beer are as follows:

- Protection from sunlight
- Easy to store
- Easy to dispose
- No breakage
- Better shelf life
- Easy for customers to carry
- Minimum risk of spoilage

Tanks

Used where beer consumption is too high, is delivered by road tankers in bulk quantity. These tankers deliver the beer to the cellar of the vendor's place and from there the beer is directed to large tanks.
Capacity of a tank is 350 to 650 lts

Strength of Beer

The average strength of beer is approximately 4% abv, but there are beers with the alcoholic percentage of 10% often termed as strong ale or barley wine. These strong beers are available in bottle sizes of about 180mls. Classification of Beer according to alcoholic strength:

Term	Alcohol Range (%abv)
Alcohol free	Not more than 0.05%
Low alcohol	0.5–1.2%
Standard	3–4%
Premium	4–6%
Strong	6–8%
Super	8–11%

Faults in Beer

Beer faults can be attributed to poor cellar management. The following are some of the common reasons for poor quality of beer.

- Dirty beer dispensing system
- Failure to clean beer lines after every empty barrel
- Failure to draw off the beer in pipes after operation
- Failure to leave water in beer lines overnight
- Poor sanitary conditions
- Warm temperature
- Fluctuations in temperature
- Greasy glasses

Common faults noticed in beer and the possible reasons for them are in below:

Sour Beer
- Deposits of yeast in pipes and dispensing equipment
- Adding stale beer to a fresh cask of beer
- Not exhausting the beer on time
- Exposing beer to heavy fluctuations of temperature
- Exposure to heavy lighting

Cloudy Beer
- Stored in low temperature
- Uncleaned or poorly cleaned pipes
- Trying to pull the beer from the cask before removing the spile

Flat Beer ○ Poor or faulty spile control – soft pile when hard spile is needed ○ Very low temperature ○ Served in a greasy glass ○ Poured and left in the glass for a long time

Foreign Bodies ○

Production errors

Storage of Beer

The modes of storage of beer are as follows:

- Beer must be stored in a well-ventilated cellar at the temperature of 13–15°C (55–58°F).
- The casks received should be kept on the stillions and should remain at least for 24 hours to allow it to settle after its journey from the brewery.
- Spile control should be done to ensure the quality of the beer and control the pressure inside the cask.
- Tapping should be carried out 24 hours before it is required. ○ Beer left in the pipe at the end of the day should be drawn off and filtered back into its cask. ○ High temperature fluctuations will spoil the beer and must be avoided.
- Bottled beers should be stored in clean conditions and must not be subjected to extremes of temperatures. Beer stored at too cold temperature will develop a 'chill haze'. It may disappear if the temperature reaches about 7*C.
- Bottled beers should not be exposed to sunlight. The shelf life of the bottled beers varies. Bottles displayed on the bar rack should be wiped clean and arranged in a way that their labels face the guests.
- Adequate quantity of beer bottles of each brand should be stored in the cooler and replaced as and when the stock moves.

B.Types of Beer(Style of Beer),Storage and service

Beers are classified into two types. They are ale (top fermented beer) and lager (bottom fermented beer). Each type is available in various styles. Some of them are as follows.

Ale (Top fermented Beers)

Barley Wine Ale ○ Dark and fruity ○ High alcoholic content from 6-11%

Bitter Ale ○ Copper colored draught ale ○ Predominant hop flavor results in bitter taste ○ Alcoholic content from 3-7%

Brown Ale ○ Dark brown colored sweet ale ○ Low alcoholic content

Mild Ale ○ Lightly hopped and faintly sweet ale

- ○ Slightly weaker and darker than bitter ale
- ○ Around 3% alcoholic strength

Stout Ale ○ Very dark beer ○ High proportion of malts and hops ○ Around 7-8% alcoholic strength

Scotch Ale ○ Very strong and extremely dark beer ○ Around 6.5-10% alcoholic strength

Porter Ale ○ Named as was very popular among porters of Dublin and London ○ Bitter taste and dark color ○ Around 4-5.5% alcoholic strength

India Pale Ale (IPA) ○ Named as was very popular among traders of east India company ○ More hoppy flavor ○ Around 5-9.7% alcoholic strength

Trappist Ale ○ Manufactured by Trappist monks in Belgium and Netherlands ○ Around 6-12% alcoholic strength

Tripel Ale ○ Term used by Belgian Trappist breweries to refer to the strongest blonde beer ○ Occasionally spiced with corriander ○ Around 8-10% alcoholic strength

Burton Ale ○ Strong, dark beer mulled or spiced ○ Very popular during winter ○ Around 5-7.5% alcoholic strength

Lagers (Bottom fermented Beers)

Bock Lager ○ Strong beer from Germany ○

In US, it is darker and sweeter ○

Belgian bock is less alcoholic ○

Around 5-7.5% alcoholic strength

Doppelbock ○ Extra strong beer from

Germany ○ Rich & weighty lagers ○

Intense malt sweetness with a note of

hopbitterness to balance the sweetness

○ Full amber to dark brown color ○

Alcohol level from 7- 8% abv

Dortmunder ○ Blonde beer with a lightly hopped

flavor ○ Rich malty flavor and crisp in nature ○

Alcohol level around 5.5% abv

Ice beer ○ It is a strong beer ○ Brewed at sub-zero temperatures so that ice

crystals form ○ These are then strained off to remove impuritiesand

excess water ○ Alcohol level from 6% abv and above

Munchener ○ Very malty beer originating from Germany ○ Dark brown malty beer ○ Alcohol level from 5% abv

Pilsner ○ Origins in Pilsen, Czech Republic ○ Pale gold color beer ○ Most imitated of all beer styles ○ Around 4.5-5% alcoholic strength

Vienna ○ Medium dark or amber red lager ○ Brewers use the term Vienna maltto indicate kilning malt to amber red ○ Around 4.7-5.5% alcoholic strength

Märzen ○ Means march in German ○ Brewed in March and stored in caves beforethe summer ○ Has malty aroma, amber-red color ○ Around 5 % abv alcoholic strength

Rauchbier(Smoked beer) ○ Produced from smoked malt ○ Dark in color ○ Around 5 % abv alcoholic strength

Popular Beer Brands	**Country**

Budweiser Budvar	Czech Republic
Hoegaarden, Leffe, Stella Artois	Belgium
Kingfisher, Haywards	India
Corona	Mexico
Amstel, Heineken	Netherlands
Fosters	Australia
Tiger	Singapore
Carlsberg, Tuborg	Denmark
Anchor, Budweiser, Brooklyn La er	USA
Franziskaner, Dortmunder	Germany
Peroni	Italy

B. <u>Other Fermented beverage</u>

<u>Cider and Perry</u>

<u>Cider</u>

Cider is an alcoholic beverage obtained from fermenting the juice of cider apples.

The juice of any variety of apple can be used but cider apples are the best. It is also legally permitted to make cider from the mixture of apple juice and pear juice, the latter being the maximum of 25 % in the mix. Somerset, Dorset, Devonshire, and Herefordshire counties of the UK and Normandy and Brittany of France are well-known areas for the production of cider. They can be classified in the first instance from dry to sweet. The appearance ranges from cloudy with sediment to completely clear. Color ranges from light yellow through orange to brown. The variations in clarity and color are mostly due to filtering between pressing and fermentation. Sparkling and still ciders are made; sparkling is more common. Cider alcohol content varies from 1.2% to 8.5% abv in traditional ciders and 3.5 to 12% in continental ciders

Cider Production

Pressing: Apples ground to pomace and juice is then strained.

Fermentation (saccharomyces cerevisiae) is carried out at a temperature of 4-16*C.After fermentation, racking occurs into a clean vessel trying to leave behind as much yeast as possible.

The cider is ready to drink after a three month fermentation period though more often it is matured in vats for upto 2-3 yrs.

Apple based juice may also be combined with fruit to make a fine cider; fruit purees or flavoring can be added such as grape, cherry, raspberry, blueberry, cranberry.

Draught Cider – Usually unfiltered and has a dosage of yeast and sugar to induce fermentation, which gives sparkle to the product. Termed as cask conditioned cider. Slightly sweet with sparkle.

Keg Cider – It is pasteurized and filtered cider, which is usually carbonated and sweetened. Very brilliant in appearance.

Bottled Cider – Pasteurized and filtered cider bottled with dosage of yeast and sugar to induce secondary fermentation in the bottle or impregnated with CO_2 gas.

Perry

Perry is an alcoholic beverage made from fermented pears similar to the way ciders are made from apples. It is allowed to mix cider juice to a maximum of 25%. The alcoholic percent is around 8.5% abv. Perry has been common for centuries in Britain and France. For Perry, special pear are used for e.g. in England its Blakeney Red, a pear not of eating quality but produces superior Perry. Perry pears are higher in tannin and acid than eating or cooking pears and are generally smaller. Perry is carbonated either by tank method or direct impregnation method

Mead

Mead is an alcoholic beverage created by fermenting honey with water, sometimes with various fruits, spices, grains, or hops. The alcoholic content ranges from about 3.5% ABV to more than 20%. The defining characteristic of mead is that the majority of the beverage's fermentable sugar is derived from honey. It may be still, carbonated, or naturally sparkling; dry, semi-sweet, or sweet.

Mead was produced in ancient times throughout Europe, Africa and Asia, and has played an important role in the mythology of some peoples. In Norse mythology, for example, the Mead of Poetry was crafted from the blood of the wise being Kvasir and turned the drinker into a poet or scholar.

The terms "mead" and "honey-wine" often are used synonymously.Some cultures, though, differentiate honey-wine from mead. For example, Hungarians hold that while mead is made of honey, water and beer- yeast (barm), honey-wine is watered honey fermented by recrement of grapes or other fruits.

Toddy

Toddy is an alcoholic beverage created from the sap of various species of palm tree such as the palmyra, date palms, and coconut palms. It is known by various names in different regions and is common in various parts of Asia, Africa, the Caribbean, South America, and Micronesia.

Palm wine production by smallholders and individual farmers may promote conservation as palm trees become a source of regular household income that may economically be worth more than the value of timber sold.

Important question & Answer

1. What is “beer”?

A. Beer is an alcoholic beverage made from malted grains, hops, yeast, and water. The grain is usually barley or wheat, but sometimes corn and rice is used as well. Fruit, herbs, and spices may also be used for special styles.

2. What is the origin of the word "beer"?

a. Origin from Latin word, *biber* which means ‘a drink’ and from *bibere* ‘to drink’.

3. How historic is beer and beer making?

A. The history of the beer dates back to about 10,000 years. Agricultural historians believe that the first beer may have been produced accidentally when a stack of grains were soaked by rain and then warmed by the sun which spontaneously fermented by wild air-borne yeast. There are evidences of pottery from Mesopotamia dated 4200 BC. By around 1100 AD brewing techniques became sophisticated and the hops were introduced around 1300.

In the middle ages brewing was done in home by women who were known as "Brewster's". The first brewery was established in 1622.The first commercial scaled brewery was established in 1638.

4. What is "draught" (draft) beer?

A. Technically speaking, draught beer is beer served from the cask in which it has been aged or in an applied way beer served from a large container. More recently, it has been used as a promotional term for canned or bottled beer to try to convince us that the beer inside tastes like it came from a cask. See also "Real Ale".

5. What is beer made of?

b. There are four basic ingredients used in beer making: grains, water, hops and yeast.

- Grains - grains contain sugar required for fermentation which provides color, flavor, body, texture. Grains like malted barley, wheat, millet, Sorghum, corn, rice.
- Water - beer contains 90% of water. Water used in brewery is called "liquor". The mineral content in the water gives each beer its individual taste. A lot of brewery prefers spring water.
- Hops - hops are small green cone shaped dried flowers from the female plant (hop vine). Hops grew wild amongst the willows "like wolf among the sheep" thus acquiring its Latin name "Humulus Lupulus".Hops give the characteristic bitterness found in the beer but they also act as antiseptic during the brewing process.
- Yeast- yeast is classified as fungus. 2 types of yeast used in beer making are- Saccharomyces Cerevisiae (Lager): Saccharomyces Carlbergenisis (ales). Yeast encourages fermentation in beer and produces alcohol and CO2. Most breweries develop their own strain of yeast to produce a particular character to their beer.

6. What gives the fizz to the beers?

A. When beer is fermented the carbon dioxide is not allowed to escape. Rather, the carbon dioxide is retained and reintroduced in the beer at a later stage and it is what provides the carbonation or fizz in beer.

7. What are "adjuncts" in beer?

A. Majority of the beers are not made of 100% malted barley (commonly referred to as Malt). During the brewing process of Beer, the malt is often mixed with other cereals such as rice, corn, millet etc. which adds to the process of fermentation is known as adjuncts. The more adjuncts are used for making beer, the less expensive the beer will be to make, as barley malt is quite expensive.

8. What are "organic beers"?

A. In an effort to define "organic" beer, the U.S. Department of Agriculture has four certification levels. They are:

- 100 Percent Organic: All ingredients meet or exceed USDA specifications, which ban the use of synthetic pesticides, herbicides, chemical fertilizers, antibiotics or hormones, and

contain no artificial preservatives or other additives, except salt, water and basic necessary ingredients.

- Organic: At least 95 percent of the ingredients meet or exceed USDAstandards
- Made with Organic Ingredients: At least 70 percent of the ingredients meet or exceed USDA standards. If the food or beverage is less than 70 percent organic but contains an organic ingredient, it can still use the word "organic" to describe the ingredient, but only in the small type of the ingredient panel.

9. What do you mean by "beer is pasteurized"?

A. Pasteurizing is the process of heating a beer in its final container to 140 ˚ to 150 ˚ F (60 – 65 ˚ C) for at least twenty minutes. Pasteurizing kills any bacteria in the beer as well as any remaining yeast, which might allow the fermentation to continue, thereby exploding the bottles or cans. Barrels and kegs beers are generally not pasteurized, which is why many people believe that these beers taste better.

10. How the beers should be stored?

A. Most bottle and canned beer is pasteurized to lengthen its shelf life so does not have to be refrigerated until a while before it is needed. However, it should always be kept below 70 ˚ F (21 ˚ C) and preferably in a dark area. Canned and bottled beer is recommended to be kept not more than four months without refrigeration and under refrigeration canned beer can be kept for four months and bottled beer six months.

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11. What are the different types of faults often found in beer?

A. Although thunder has been known to cause a secondary fermentation in beer, thereby affecting its clarity, faults can usually be attributed to poor cellar management. Faults are as follows:--

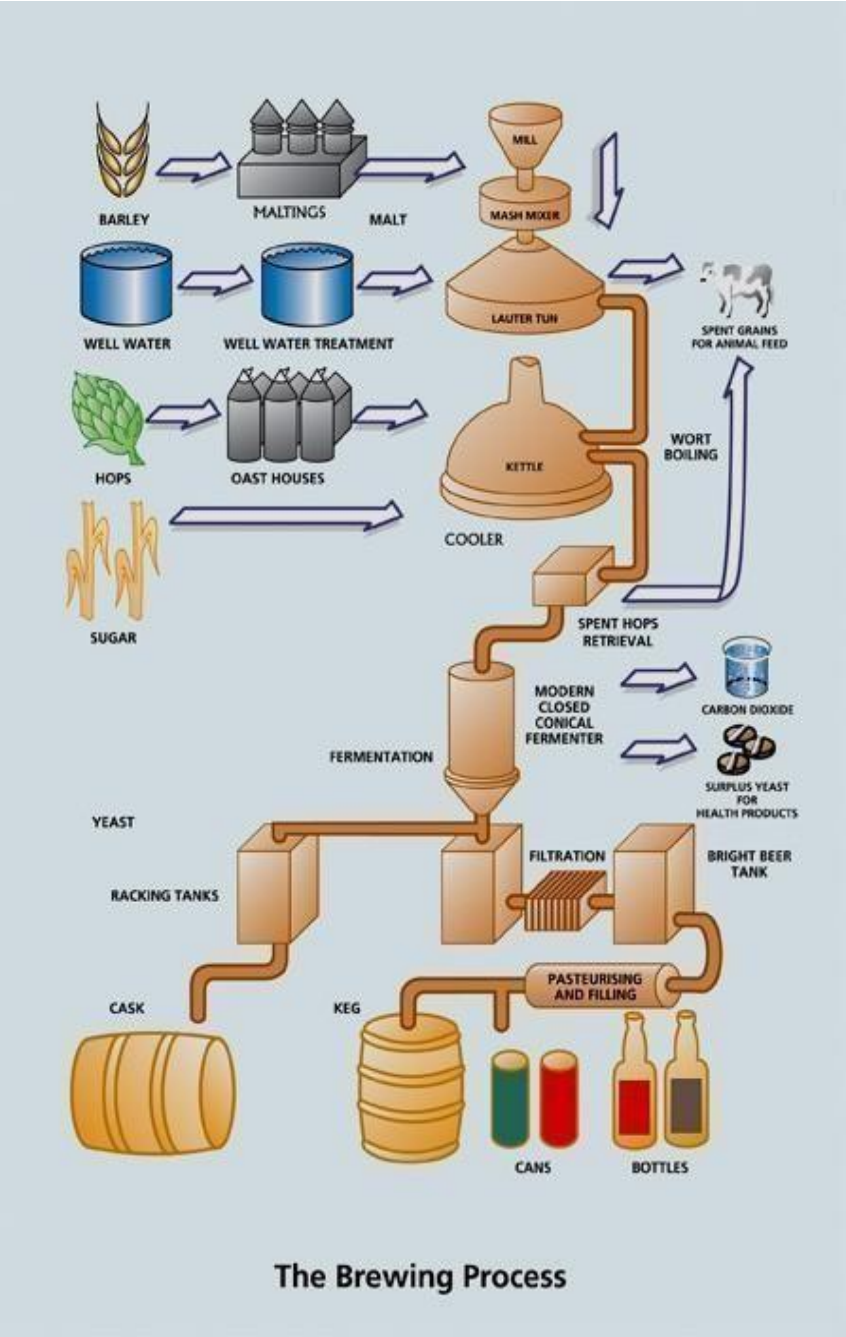
Cloudy Beer: This may be due to too low temperature in the cellar or, more often, may result from the beer pipes not having been cleaned properly.

Flat Beer: Beers become flat, if, the storage temperature or the beer dispensing lines are too cold. It may also happen that air is leaking from kegs, tapping connectors, valves, or pressure lines.

Sour Beer: This may be due to lack of business resulting in the beer being left on ullage for too long. Sourness may also caused by adding stale beer to a new cask, or by beer coming in contact with old deposits of yeast which have become lodged in the pipeline from the cellar.

- Foreign Bodies: Foreign bodies or extraneous matter may be the result of productional or operational slip-us.

12. What is the brewing process?



KEY TO UNDERSTAND

MALT is grounded to get GRIST (grounded malt). Then the hot water is added & the mixture is heated. After straining this liquid we get WORT. At this stage hops are added and the mixture is heated yet again.

After stabilizing the temperature commercial yeast is added to thi9s liquid. This yeast converts the sugars in the liquid into alcohol. This is called FERMENTATION. The beer needs shelf life therefore it is treated to PASTEURISATION.

13. What are the types of beer?

A. Beers are distinguished on the basis of the yeast activity during the fermentation of the brewing process. As,

- Lagers- They are bottom fermented beers. The name comes from a German word meaning "resting "or "storing". Lagers are aged for several weeks or months to smoothen it. Lagers are light bodied and less alcoholic usually, light or pale colored.
- Ales- They are top fermented. Hops were not used originally to make ales. They are less aged than lagers and are sold within few days after its fermentation. Today, ales have strong hop flavor and are high in alcoholic percentage.

TYPES OF LAGER:

a. Pilsners - First brewed in Bohemia. They are lively, mild and thirstquenching.
b. Light lager - Similar to a pilsner. It is low in alcoholic percentage, carbohydrates and calories.
c. Malt Lager - It has higher alcoholic content than the pilsner. The malt is dark roasted which gives the beer a caramel color and taste.
d. Bock - They are strong lagers of dark amber color, nutty, sweet and with a caramel flavor.
e. Dopplebock - They are the strongest of all the lagers. They are nutty, dark and quite sweet.
f. Dunkel - spicy, malt, Dark brown brew from Munich. TYPES OF ALES:

a. Bitter Ale - It is an English style beer with lots of hops.
b. Lambic - An ancient beer made from wildyeast.
c. Wheat - It is made from a combination of wheat and oats. It is fermented by using the ancient yeast strains.
d. Porter– Dark colour London ale made with roasted malts and high in alcoholic volume. e. Pale Ale- It is dry complex and nutty
f. Stout– It has a high hop content and strong malt taste. The malt is first roasted which gives the beer it`s dark colour.
g. Trappist - It is a strong bottle conditionedbrew.
h. Fruit Beer- It is a lambic beer fermented with fruits.
i. Mild – It is a gentle, dark and sweet beer with lessalcohol.

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11. What is the right service temperature for different types of beer?

A. The right service temperature for different types of Beers are as follows:-

- American and Australian lagers :- Approximately 7 °C
- Light and Stout Beers :- 0 °C
- European lagers :- Lightly chilled i.e. approx 9 °C
- Dark lagers, altbeer and German wheat Beers :- Almost at cellar temperature i.e. 13 °C
- British ale, stout and most Belgian specialties :- At room temperature i.e. approx 15.5°C

12. What is the best way to enjoy different types of beers?

B. The most common ways to enjoy different types of Beer are as follows:-

- Pale, Ales and bitters are best consumed at coolish temperature.
- Lagers, wheat beers and golden ales should be lightly chilled.
- Stouts are served ice cold.

13. Is there any specific glass ware that beer should be served in?

C. Different variety of Beers is enjoyed best in different shapes and sizes of Glasses. They are as follows:-

- Ales are best in straight pint pots
- Lagers in tall thin straight sided glasses.
- Fruit beer should be had in champagne flute.
- Barley wine in red wine glass. Beer Goblets are generally used to serve all kinds of Beer.

14. What kinds of foods go really well with beer? D. Generally, beer goes well with any kind of food.

- Lager Beer - They are palate cleansing beers but should not be used to wash down curries.
- Porters - They are thirst quenching and go very well with oysters and any seafood and fish.
- Stout- Goes well with cheddar cheese and even with spicy food. Mustard makes perfect partner to this beer.

15. What is Rootbeer?

A. Root beer is a fermented beverage made from a combination of vanilla, cherry tree bark, licorice root, sarsaparilla root, artificial sassafras root bark flavoring (the pure form is mildly carcinogenic), nutmeg, aniseed, and molasses among other ingredients. Many local brands of root beer exist, and homemade root beer is made from concentrated roots or rarely from actual roots. Like normal beer, root beer has a thick and foamy head when poured.

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Brands

COUNTRY OF ORIGIN	BEER NAME	ALCOHOLIC STRENGTH (%)
ALBANIA	BIRRA PEJA	5.0
ANGOLA	EKA	6.9
ANTIGUA	CARIB	4.7
ARGENTINA	PALERMO	7.0

	ISENBECK	6.0
AUSTRALIA	MELBOURNE BITTER	5.5
	SWAN	7.0
	BEEZ NEEZ	6.0
	CASCADE	8.0
AUSTRIA	STEFFLEBRAU	4.7
	PUNTIGAMER	5.0
BAHAMAS	KALIK	3.6
BARBADOS	BANKS	4.5
BELGIUM	KASTEELBIER	5.2
	APPLEBOCQ	5.5
BRAZIL	BOSSA	6.0
	NOVA KAISER SUMMER	7.0
	ORIGINAL	7.5
	BOHEMIA	5.5
CANADA	MOLSON	6.0
	BLACK HORSE	6.0
CHILE	ESCUDO	8.0
CHINA	QINQTAO	4.5
	TSING TAO	7.0
	KIPER GINGER	5.0
CZECHOSLOVAKIA	PILSNER-URQUELL	6.0
DENMARK	CALSBERG	6.8
	TUBORG	5.5
EGYPT	STELLA	6.6

EL SALVADOR	BAHIA	5.3
ENGLAND	BASS	4.0
	FROG ISLAND	5.0
	BUDDINGTON	4.5
	BUDWEISER	6.0
	BOMBAY PILSNER	7.0
FINLAND	URH O	5.7
	KOF F	6.5
FRANCE	KRONENBOURG 1664	6.5
	RED ERIC	7.0
GERMANY	BECK	5.6

	DORTMUNDER	8.2
	CRIKAK	7.5
	MORITZ FIEGE PILS	6.5
GUYANA	CARIB	6.8
HOLLAND	HEINEKEN	6.0
	BRUMMEN	5.5
INDIA	COBRA	8.5
	KINGFISH ER	5.0
	KHAJURAHO	7.5
	HAYWARD`S BLACK	6.5
ITALY	PERONI	6.0
	MENABR EA	4.5

IRELAND	GUINNESS	6.0
	TENNANTS	7.0
JAPAN	KIRIN	8.0
	ASAHI	5.2
MEXICO	CARTA BLANCA	6.0
	CORONA	5.4
	DOS EQUIS XX	3.7
NEWZEALAND	STEINLAGER	5.5
	AMSTEL	6.2
NORWAY	FRYDENLUNDS	4.8
PARAGUAY	PILSEN	7.5
PORTUGAL	CINTRA	8.2
SCOTLAND	Mc EWAN	7.8
SOUTHAFRICA	CASTEL	6.5
	LAGER AMTEL	7.1
SINGAPORE	TIGER BEER	8.0
SPAIN	MAHOU	6.2
SWEDEN	THREE CROWNS	7.3
USA	BEST BER	5.0
	POINT REYES	6.2
	PORTER SAM ADAMS	4.5

1.2 Spirits

A.Introduction and Defination

Spirit comes from the Latin word for "breath," and like breath, spirit is considered a fundamental part of being alive We also use spirit to mean "the general mood or intent," like when you tell your former enemy,

"I approach you in the spirit of kindness **An alcoholic liquid made by a process called distillation is called a spirit.**

B .Distillation

Distillation is the process of separating elements in a liquid by vaporization and condensation. This method has many applications and one of them is the production of spirits. In distillation, the alcohol present in the fermented liquid (alcoholic wash) is separated from water. Spirits are examples of distilled drinks and the plants producing the spirits are known as distilleries.

Brandy, whisky, gin, rum, vodka and tequila are examples of spirits, which are prepared from alcoholic wash as given in the following.

Brandy – fermented grape juice

Rum—fermented molasses Gin,

whisky—fermented cereal Vodka—

fermented potatoes or cereal

Tequila – fermented sap of agave Tequilana weber

All spirits are distilled from a base of a fermented liquid and have a high percentage of alcohol compared to fermented drinks. There are many distinct and popular types of spirits, each having its own flavor and body. There are differences in taste, smell and color. They may be full-bodied or pale and light bodied with strong or mild aroma, colorless or with color and so on. The differences in characteristics are largely influences by the following:

- Ingredients used in the fermented liquid – molasses, cereals, juices used in the fermentation process contribute to the character of the final product.
- Proof at which it is distilled – higher the proof, lower the flavor and vice versa

- Amount of congeners allowed to go to condenser – the congeners influence the flavor, body and taste of the product (methanol, acetone, acetaldehyde, esters, aldehydes)

- Type of cask used and the period of maturation – the type of the wood used in the cask, the type of cask – new, used, toasted – contribute to the flavor and color of the spirit. Longer the maturation period, mellower the product.

- Blending – it is mixing the spirits of a particular kind of varying qualities to ensure consistency.

  Types of still

There are two types of still used for distilling spirits

- Pot Still ○ Patent or Continous still

Pot Still

The pot still method is the oldest method of distillation and the most of the finest spirits are made of pot distillation. The pot still has the shape of a huge onion and has two parts – Still and Condenser with spiral tube.

Distillation occurs in pairs of copper pot stills with tall swan necks. The first still is called 'wash still' which is larger than the second still called 'spirit still'.

The pot stills used in Ireland are much bigger than the pot stills used in Scotland.

The alcoholic wash is directed to wash still where it is heated up. The fermented wash is heated either by a source of fire from underneath or by steam coils present in side the pot still there mechanical scrapers present which prevent the solid particles from getting stuck to the base of the still and get burnt. When the temperature reaches 78' C. the alcohol vapors rise, pass over the neck of the still and are led to the condenser through the spiral pipe which is enclosed in a cold water container. The condensed liquid is termed as low wine, which has an alcoholic content of around 30%.

Now the low wine is sent to spirit still for a second distillation. This is carried out to get a drink of higher alcoholic content. The first part of the distillate, called 'foreshots/head' (feints/tête) is kept aside for further treatment as it is pungent and impure. The central portion is the distillation, termed as 'heart' (coeur) is the best part; it is an alcoholic strength of approximately 75%, is condensed and collected in the spirit container which is later matured in casks of various kinds. The final part of the distillation called 'tails/aftershots' (feints/queue) is weak in alcohol and contains fusel oils and impurities. It is added to the foreshots and sent back for redistillation. The spirit thus obtained will have a high percentage of alcohol with some water and minute amount of other substances such as acids, esters, trace minerals, flavorings oils, etc. that are derived from the base wash and give flavor, body and aroma to the drink. These substances are called congeners. Drinks obtained from pot distillation have more congeners than the ones obtained from patent still, which contribute to the body and aroma. Cognac, malt whisky, Dutch gin, Irish Whiskey, Tequila, Liqueurs and dark rums are pot stilled.

Advantages of Pot Still

- The basic advantage of this pot distillation process is its simplicity.
- It does not require a constant supply of beer, which is often not available in minimum-labor fuel alcohol processes.
- It also provides a very simple equipment system. with cooking, fermentation and boiling for distillation carried out in the same vessel.
- This procedure may aid in sterilizing equipment between successive batches, since cooking and fermenting in the same vessel tends to heat-sterilize.
- Separation of the spent grain and large solids from the beer prior to heating for distillation is not necessary, an added advantage.

Dis-Advantages of Pot Still

- The disadvantage of the pot distillation process and its system simplicity is lower distillation efficiency, because of the diminishing alcohol concentration in the beer under continuous boiling. ○ Less stored heat may be used at the end of cooking when the slurry is rapidly cooled for fermentation; and heat losses during cooking and distillation heating cannot be minimized as readily as with the constant-feed process.
- Insulation applied to the pot to conserve heat during cooking and distillation heating may hinder cooling necessary to fermentation in the summer.
- Thus, amount of energy required per gallon of alcohol for the pot distillation process is high.

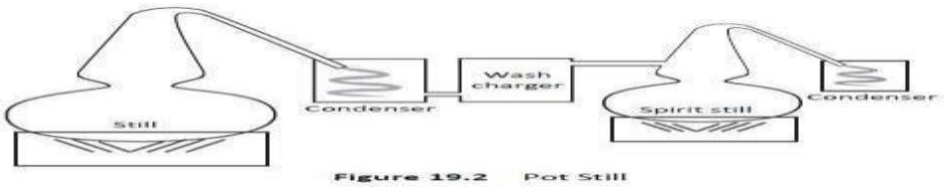

Figure 19.2 Pot Still

Patent Still/Continuous Still / Coffey Still

It was not until the late 1820s that a new form of still was invented by Robert Stien, which produced spirit in a continuous stream as long as wine, beer or some such mildly alcoholic wash was fed into it. First going into commercial production in Cameron-bridge distillery in Fife, Scotland. A Dublin Excise officer, Aeneas Coffey, attended a demonstration of the new still, took the idea and developed it further, and it was Coffey's version of the continuous still that eventually caught on worldwide.

This new still was called the 'Continuous Still' (also 'Column', or 'Patent', or 'Coffey Still'). In simple terms, consists of two columns, one of which has steam rising and wash descending through successive storey inside (referred to as the 'Rectifier'). The steam stripped out the alcohol from the wash and carried over to the second column (referred to as the 'Analyzer') where it circulates until it can condense at the required strength.

The benefitsof the continuous still is a cheaper and purer spirit [the alcohol produced is high in strength - 90%].

Has two main parts, a 'Rectifier' and an 'Analyzer', which both resemble tall, wide tubes. They are both filled with steam. The liquid being distilled enters a pipe travelling down the rectifier, and is heated almost to boiling point. The alcohol from the primary liquid vaporizes and is channeled along with the steam back to the base of the Rectifier. Here it mixes with more steam around the pipes, bring with it more liquid to be distilled, hence a 'Continuous Still'. Roughly two-thirds up the Analyser, the vapour hits a cold plate condensing it into a liquid. This is channeled out as a distilled product.

It does involve the task of emptying, cleaning and refilling. It consumes less fuel to operate. Today, alternatives open to distillers are to use the labor intensive pot still which carries the fragrances and flavors of the raw material, or the faster, cheaper continuous still with its potential for high strength, pure but tasteless spirit.

How does it work:

Steam is fed into the base of the analyser and hot wash into the top. As the two meet on the surface of the perforated plates, the wash boils and a mixture of alcohol vapours and uncondensed steam rises to the top of the column. The spent wash runs down and is led off from the base. The hot vapours enter the rectifier at the base and as they rise through the chambers they partially condenseon the sections of a long coil through which wash is flowing. The spirit vapour condenses at the top of the rectifier and is run off through a water- cooled condenser to the spirit safe and on to the spirit receiver. Once the spirit begins to be collected it runs continuously until the end of distillation.

The Process in detail:

This distill has 2 main columns namely Analyzer and Rectifier. The role of the analyzer is to separate the parts in the “wash”. The role of Rectifier is to enhance the character of spirit and also to condense the alcoholic vapors. Inside each of these columns, there are chambers. These chambers are divided by copper perforated plates. There is a drip pipe that runs through these chambers. The fermented liquid or the wash enters at the top of the rectifier. The rectifier is heated with steam. As the cold wash passes through the drip pipe, its temperature increases. By the time it reaches the bottom of the rectifier, it is at boiling point. When the wash reaches the bottom, it is pumped into the other column called Analyzer. The analyzer too has chambers that are divided by perforated plates. The hot wash enters the analyzer from the top and passes through different chambers. While the hot wash is being channeled downwards, gush of steam is injected into the analyzer from the bottom. The steam boils the wash and produces alcoholic vapors. The vapors rise upward and the “spent wash” goes to the bottom of the column. The spent wash is removed from the still at this stage. The alcoholic vapors which rise pass through the different chambers and reach the top of analyzer. From here, it is channeled into another pipe to the bottom of the rectifier. These hot vapors pass through the perforated plates. As the fumes go up, it is met by drip pipe which is carrying the cold wash. Due to the sudden change in temperature, partial condensation of the hot vapor takes place. The vapors keep getting cooler and the wash keeps getting hotter on its way to the analyzer. When the vapor has reached 2⁄3 of its way up, it reaches the cold spiral plate and condenses fully. The first part of the liquid (heads) that is collected in the spirit receiver sent back for distillation. This is because it is pungent and it is unpalatable.

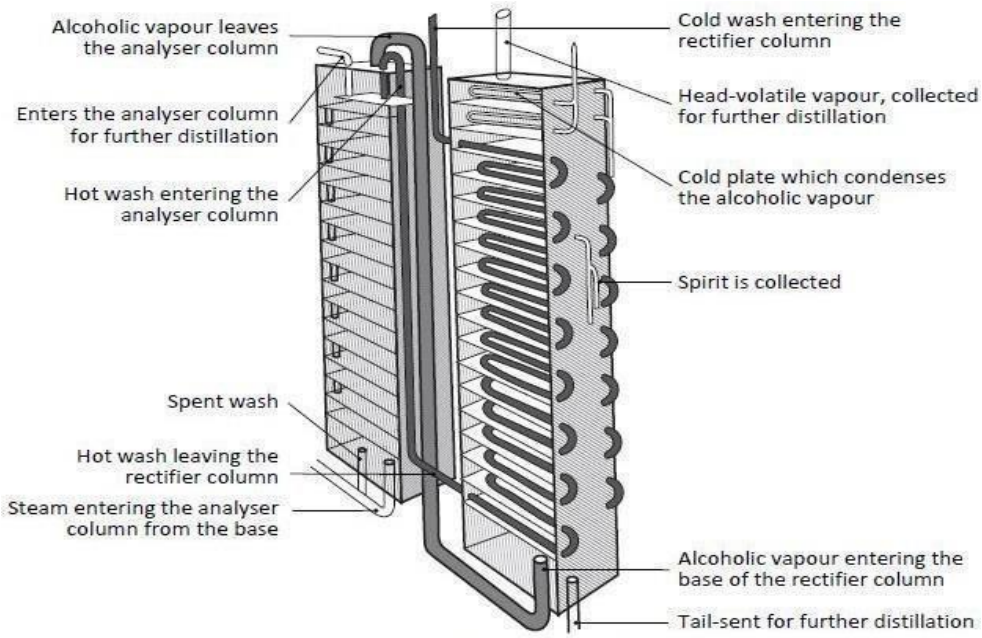

Figure 19.3 Patent Still

The pure spirit, which follows subsequently, is collected. This pure spirit is reduced in strength by de- ionised water. Deionised water is used since it does not alter the taste of the end product. After it has been treated with water, it is sent for maturing.

Some of the spirits that use patent still distillation are Vodka, Gin, Rum etc.

A rectified spirit or rectified alcohol highly concentrated ethanol (drinking alcohol) which has been purified by means of rectification (repeated distillation). It is used in mixed drinks and in the production of liqueurs.

FACTORS AFFECTING DISTILLATION COLUMN OPERATION

The performance of a distillation column is determined by many factors, for example:

- Feed conditions
- Weather conditions

Some of these will be discussed below to give an idea of the complexity of the distillation process.

Feed Conditions

The state of the feed mixture and feed composition affects the operating lines and hence the number of stages required for separation. It also affects the location of feed tray. During operation, if the deviations from design specifications are excessive, then the column may no longer be able handle the separation task. To overcome the problems associated with the feed, some column are designed to have multiple feed points when the feed is expected to containing varying amounts of components.

Vapour Flow Conditions

Adverse vapour flow conditions can cause

1.Foaming

2.Entrainment

3.Weeping/dumping

4.Flooding 1.Foaming

Foaming refers to the expansion of liquid due to passage of vapour or gas. Although it provides high interfacial liquid-vapour contact, excessive foaming often leads to liquid buildup on trays. In some cases, foaming may be so bad that the foam mixes with liquid on the tray above. Whether foaming will occur depends primarily on physical properties of the liquid mixtures, but is sometimes due to tray designs and condition. Whatever the cause, separation efficiency is always reduced.

Entrainment

Entrainment refers to the liquid carried by vapour up to the tray above and is again caused by high vapour flow rates. It is detrimental because tray efficiency is reduced: lower volatile material is carried to a plate holding liquid of higher volatility. It could also contaminate high purity distillate. Excessive entrainment can lead to flooding.

Weeping/Dumping

This phenomenon is caused by low vapour flow. The pressure exerted by the vapour is insufficient to hold up the liquid on the tray. Therefore, liquid starts to leak through perforations. Excessive weeping will lead to dumping. That is the liquid on all trays will crash (dump) through to the base of the column (via a

domino effect) and the column will have to be re-started. Weeping is indicated by a sharp pressure drop in the column and reduced separation efficiency.

Flooding

Flooding is brought about by excessive vapour flow, causing liquid to be entrained in the vapour up the column. The increased pressure from excessive vapour also backs up the liquid in the downcomer, causing an increase in liquid holdup on the plate above. Depending on the degree of flooding, the maximum capacity of the column may be severely reduced. Flooding is detected by sharp increases in column differential pressure and significant decrease in separation efficiency.

Weather Conditions

Most distillation columns are open to the atmosphere. Although many of the columns are insulated, changing weather conditions can still affect column operation. Thus the re-boiler must be appropriately sized to ensure that enough vapour can be generated during cold and windy spells and that it can be turned down sufficiently during hot seasons. The same applies to condensors. These are some of the more important factors that can cause poor distillation column performance. Other factors include changing operating conditions and throughputs, brought about by changes in upstream conditions and changes in the demand for the products.

A.WHISKEY

DEFINITION OF WHISKEY

Whiskey is a spirit made by fermenting and distilling grain

SPELLING DIFFERENCE

By long standing tradition Scottish distillers spell the name of the spirit as whisky and the Irish distillers spell their spirit as Whiskey .The Canadians follow the Scottish spelling and the Americans follow the Irish spelling.

History

The use of grain as a source of alcohol originated among the Celts (The people of Ireland) between the $10_{th}$and 15^{th}century. The name given to the distillate variously spelt as ulsge beatha or ulsca or usquebaugh and pronounced as Wee-ska-bah meant Water of life .Over the centuries the word has been anglicized to Whiskey. Both Scotland and Ireland have long been claiming to be the original source of whiskey. But neutral say that the soldiers of Henry had taken alloy of ulsce beatha to England they invaded Ireland in the 12_{th}century. This precedes the olden known reference to the scotch, an entry in the Scottish exchequer rolls in 1484.

TYPES OF WHISKEY

Every country has its own style and ingredients for making whiskey. The

ingredients used in different countries are as follow

SCOTLAND -mainly barley both malted and unmalted with slight corn added to that

IRELAND -mainly barley malted and unmalted but preferably malted barley.

U.S.A -corn and rye

CANADA -only rye used for the production of whiskey although the Government does not have any

regulation the grains to be used.

PRODUCTION OF WHISKEY

From the view of production of whiskey they can broadly be classified in 2 categories. 1_{st}.

Pot Whiskey

2_{nd}. Patent Whiskey

The entire of manufacture of whiskey can be divided in to 2 different parts:-

1. Preparation of the fermented mash 2. Distillation of the fermented mash either through

pot still or through patent still.

METHOD OF PRODUCTION

POT STILL WHISKEY

The different stages involved in the production of still whiskey are as follows.

MATERIALS:-

As mentioned earlier any type of cereal can be used. The Scotch use barley both malted and unmalted with little corn added to that. The Irish use mainly malted barley but sometimes unmalted barley is incorporated to the mash.

STORING:-

When the grains come from the farmers they are screened, removed of any extraneous matter, cleaned and in order to prevent deterioration during storage the moisture content is reduced to around 12% by kiln drying the barley.

MALTING:- The grains are then soaked in huge tank of water for 2 to 3 days till the moisture content goes up to 40%. The excess of water is then drained off and the barley is then taken to a malt room . On the stone floor of the malt room the grains are spread at a depth of 15 to 30 cms. An average temp of 15°c with 40% of moisture the grains start to germinate.

GERMINATION:-

The process of germination is a complicated one which encourages growth but simultaneously restricts the growth as well. The process of germination develops an enzyme called diastase which converts the starch to maltose and other complicated dextrin's. At this stage the grains cannot be left on their own in order to prevent the bottom most grains from getting burnt and to prevent the rootlets from getting entwined among themselves the grains have to be continuously disturbed. Previously. Wooden shovels used to be used to disturb the grains but now a day's massive corkscrews are used to disturb the grains.

MALT KILN OR KILNING:-

Then the grains are kiln dried. The basic purpose is to stop sprouting and to facilitate grinding and storing. In Scotland the grains are dried by being heated on perforated steel plates by beat fire which is said to contribute to the characteristic Smokey flavor of the scotch. In ire land the grains are heated on perforated floors but the fire comes from smokeless anthracite coal or oil fired furnace. The heating goes on till the moisture content goes down to 3%. The grains are gently dried at first but then the temp is raised to 51°c . The process continues for 2to 3 days.

SIEVING:-

The grains are then sieved to remove the plumules which develop as a result of germination .The plumule is sold as cattle feed.

GRINDING:-

The grains are then ground by roller mills to from what is called as grist. In Ireland both malted and unmalted barley are used to make the grist.

Note:-the grains are roughly broken and not powdered MASHTUN:

-

The grist is then introduced into a vessel called mashtun along with water. The water is heated to around 65°c. There are mechanical arrangements present inside which continuously stir the mixture of water and grist for around two to two and half hours. This extracts the sugar content from the grist in to the water.

After being heated for the required amount of time the water and grist mixture goes into the base of the mashing which has very finely sorted plates through which only the water containing the sugar pass through . The grains are left behind which are sold as cattle feed. The water containing sugar is known as wort. When the grist is Stuck to the out side of the grist .the temp of the wort is brought down to around 20 c and then pumped to a fermentation tank or a vessel.

FERMENTATION :-

To the cooled yeast wort is added specially cultured yeast for fermentation the yeast breaks the sugar in to carbon-dioxide and alcohol. During the fermentation the temp. goes to beyond 32 c the temp, is controlled by cold water pipes called attemperators at the bottom of the tank which carry cold water in them continuously to keep the temp at the a particular level . Fermentation is rapid and completed within three days .the fermented liquid is called as wash and is similar to beer but without the flavoring the hops .the fermented wash has an alcoholic strength of 7-10gl the fermentation tank is known as washback.

DISTILLATION (POT STILL)/WASH STILL:-

The fermented wash is then transferred to a pot still which is generally made up of copper.

This pot still is called wash still .this pot still can be of various sizes and shapes. At 78.4 the alcohol parts from the alcohol water mixture get evaporated while the water is still in the liquid state. The evaporated alcohol passes through a tank of cold running water. When the evaporated alcohol pass through this part of the pipe which is immersed in the tank of cold water the decline in temp results in the conversion of alcoholic vaporous in to liquid alcohol .the first distillation produces three parts.

1. Head also called as foreshot .

2. Heart also called as low wines because of the low alcoholic content.

3. Tall also called as aftershot.

The foreshot and aftershot together are called Feints.

The head contains methyl alcohol which is not conducive for consumption. The tall contains the heavier alcohols which are also not suitable for consumption. The head and tall are put back in the first pot still for re-distillation with fresh batch of wash (alcohol and water mixture).

The heart goes in to the spirit still for second distillation. The heart contains around 40% of alcohol.The heart is also called as low wines because of the low alcohol content.

The then goes into spirit still for second distillation like the first distillation in the first pot still or wash still the heart in the spirit is heated by a source of fire from underneath or mechanical coils present in the still itself. The heart also produces.

1. HEAD

2. HEART

3. TALL

The head and tall are put back in to spirit still for re-distillation where as the heart is the required spirit that is whisky/whiskey.

The heart which is whiskey is also called as high wine because of the high alcohol content.

The whiskey now has an alcoholic strength of 70%. In Ireland the low wine is distilled twice and the last distillation in the spirit still. When the whiskey comes out from the spirit still it has an alcoholic strength of around 86%. Pot still whiskey is also known as malt whiskey, as this process is generally used to make whiskey from malted grains.

The single malts or the malt whiskeys as this process is normally used to male whiskey from malted grains.

PATENT STILL METHOD OF DISTILLATION

Whiskey made by the method of distillation is also known as grain whiskey as this process is used to prepare whiskey from a combination of grains, generally comprises of barley (both malted and unmalted), corn, rye, etc.

The patent still comprises of two cylindrical columns. One is called as the reflector and the other is known as the analyzer. Both columns are divided into horizontal chambers by perforated plates. The wash or the alcohol, water mixture in introduced in the rectifier at the at the top of the column through an inlet.

1. As the fermented wash descends down the pipe it comes in contact with mildly heated steam which is injected in the rectifier through an inlet.

2. The mildly heated steam just increases the temperature of the wash. The warm wash travelling through the pipe reaches the analyzer column through an inlet.

3. The extreme separates the alcohol from the water. The alcohol gets evaporated while the water is still in the liquid state. The water is taken out through an outlet.

4. The evaporated alcohol is trapped in another pipe. Passing through the pipe the evaporated alcohol reaches the bottom of the rectifier column. As the evaporated alcohol moves upwards in the pipe which remains in contact with the pipe through which the cold wash is continuously fed, there is a decline in temperature which coverts the vapors into liquid alcohol. The heavier form of alcohol is taken out at the base through an outlet.

5. The lighter form of alcohol continues to move upwards and the potable alcohol i.e. ethyl alcohol gets converted into liquid alcohol towards the top of the reflector and is taken out through an outlet

6. The lightest form of alcohol i.e. methyl alcohol gets converted in liquid alcohol at the top of the reflector and taken out through an outlet.

7. The head and the tall are mixed with afresh of batch of wash whereas the heart is required spirit or whiskey. Unlike post still distillation the whiskey does not require another distillation. The distillation can be regulated to produce whiskey at any alcoholic strength, but commonly the whiskey comes out the still at around 16 U.S. proof or 80% alcoholic strength.

Most whiskey of the world is produced by patent still method of distillation. Scotch blended

whiskeys are blend of pot still whiskey or malt and grin whiskey.

MATURING

The whiskey is now raw and colorless but with a pungent aroma. It is pumped into spirit store vats and reduced in alcoholic strength by filtered water ti between 03 to 72% GL At this strength it is felled into oak casks under excise supervision and stored in bonded wire houses often underground at least for three years in Scotland and Five years in Ireland to mature. As the whiskey mature in the cask air penetrates through the pores of the wood to mellow the raw whiskey. Age is important and as the whiskey matures in the wooden cask it gets mellower. Some whiskeys mature in the cask for a period of 15 years and sometimes more. Left too long in the casks the whiskey may smell woody. The age which eventually appears on the label of a bottle indicates the youngest whiskey in the blend.

BLENDING

The marrying together of different single whisky or malt whisky with grain whiskey is very much a part and parcel of the Scottish whisky industry for the last 70 years. The blender, a person with tremendous amount of experience and judgment noses the whiskeys under selection approves the exact proportion of the different whiskies to be blended. The blending takes place in a blending vat. The air jets present inside the vats mixes the whiskies thoroughly and finally pumped into oak casks where they remain for some more time to harmonies.

FINAL STAGES

After blending and harmonizing the whisky is filtered through asbestos or carbon sheets and its strength is greatly reduced by the addition o f metallic free water to suit different markets. It is then tasted for

colour, colour generally comes from the cask as the spirit matures but some amount of caramel is also added to give the correct tone. Finally the whisky is bottled and sent to the market.

SCOTCH

A Whisky distilled in Scotland is Scotch.

By law, scotch whisky means whisky that has been

- **Distilled at a distillery in Scotland from malted barley to which whole grains ofother cereals may be added**
- **Distilled at an alcohol strength less than 94.8 per cent by volume so that the distillate has an aroma and flavour of the raw materials**
- **Matured in an excise warehouse in Scotland in oak casks of a capacity not more than 700 litres for a period of not less than three years** Bottled at the minimum alcohol of 40 per cent by volume

Scotch is basically divided into two categories …..

1. Malt Scotch
2. Blended Scotch

MALT SCOTCH: These are the authentic Usqebaugh. They are also known as Single Malt. They are so called because they are made from only malted barley and the entire process of distillation is carried out in one single distillery. The malt Scotch or the single malt are all distilled by the pot still method of distillation. They are all made from malted barley, hence called as malt whiskey. The barley used in the production of these whiskey are preferably but not necessarily grown in Scotland.

The grains used in the production of Single malt are heated on perforated steel plates by peat fire. There are 100 malt whiskies produced Scotland right now, each of this the product of a single distillery.

Malt whiskies are produced form four different regions in Scotland. They are……

1. Highland

2. Lowland

3. Islay (pronouced as Eye-Luh)

4. Campbeltown

Highland malts : 1. Cardhu 2. Balvenal 3. Glenfiddich (World's most popular bottled

malt) 4. Glenlivet 5. Dufftown Glenlivet 6.Glen Morangle 7. Glen Faclas 8. Glen

Drounach 9. The Glen 10. Macallan 11. Mortlach 12. Tomatin

Lowland Malts :

1. Auchentoshan 2. Roseba

Islay & Cambeltown :

1. Lahorolg 2. Tallskar 3. Bowmore 4. Lagavulln

APPLICATION: Malt Whisky may be enjoyed neat or splash of water to liberate the bouquet.

They are also interesting and agreeble in a sniffer as an after dinner digestive as an alternative to Cognac.

They don't go well mixed with drinks.

BLENDED SCOTCH:

Blended whisky is a mixture of both malt and grain whisky.

Grain whisky is made from a mash of several grains, predominantly corn with small amount of both malted and unmalted barley added to that. In this case the barley is not heated by peat fire. Grain whisky is made by patent still method of distillation. Grain whisky are generally very light as they tend to run off the still at around 180_0 proof.

These light grain whiskies are then blended with Malt whiskles in different proportions.

Blended scotch is divided into two categories-

1. Bulk

2. Bottled in Scotland

BULK SCOTCH

They are shipped in barrels and bottled at the destinations. They are the cheapest quality of whisky with the minimum malt whisky to grain whisky ratio. Blending is not very painstaking which leads to lack of inconsistency in quality.

The label on a bulk scotch usually reads "Distilled and Blended in Scotland".

Bulk scotch examples- 1. Clan Mac Gregor, 2. Inver House 3. Old Smuggler, 4. Passport, 5.Usher's Greenship, Vat 69

BOTTLED IN SCOTLAND

These scotches are often labeled as “Distilled and Bottled in Scotland” and makeup around two third of the total Scotches available in the world. They are more expensive than the Bulk. Apart from the higher production cost involved in filling , labeling and shipping bottles the whiskies in the blend are older and more expensive which are more carefully selected and maintained. The percentage of malt whisky in the blend is more than less expensive bulk.

The bottled in Scotland Scotch is further divided into

(1) Regular

(2) Premium

(3) Deluxe Premium

They are sometimes called “Standard” in Scotland. The minimum age of the youngest whisky in the blend is around 10-12 years.

Brand Names

1. Ballantine,

2. Bell’s,

3. Black &

White, 4.Cutty

sark

5. Dewar’s White Label,

6. Grant Stand Fast,

7. Haig

8. J & B (Justin and Brooks),

9. Johnnie Walker’s Red Label,

10. Long John,

11. Teacher’s highland Cream,

12. Whyte & Mackay,

13. White Horse PREMIUM

The minimum age of the youngest whisky in the blend is 12 to 15 years, better than the regular whisky.

Brand names

1. Chivas Regal,

2. Halg Panch,

3. Johnnie Walker's Black Label,

4. Hankle Bannister,

5. Glamis Castle Reserve,

6. Usquebaugh

DELUXE

PREMIUM

Sometimes referred to as Ultra Premium. The hallmark of this group is that the minimum

age of the youngest whisky in the blend is 20 years and above. They are the best and the most expensive among all Scotches.

Deluxe Premium Scotches are generally packaged in artful ceramic or crystal decanters.

Brand names

1. Ballantine 30 years,

2. Ballantine 17 years,

3. Chivas Royal Salute,

4. Usquebaugh,

6. Bell's Royal Reserve,

7. Johnnie Walker's Blue Label,

8. James and Martin's Fine and Rare,

9. Whyte and Mackay's 21

APPLICATION

Bulk Scotches are eminently mixable, ideal for cocktails, highballs and mists. Regular Scotches are also used in mixed drinks but show themselves well over Ice.

Super Premium Scotches add an extra dimension to cocktails but considering their reach mellow tone are better poured over Ice or with a splash of water.

Ultra Premium

Scotches are best enjoyed with meat or splash of water.

IRISH WHISKEY

By definition Irish whiskey is a distinctive product of Ireland made ether in the Republic of Ireland or in the Northern Ireland. The majority of the Irish whiskey is distilled primarily from barley but originally from malted barley. Now a days both malted & unmalted barley are being taken in the mash. Irish pot still through both pot still & planet still.

Irish call blending as Vatting.

Most Irish whiskeys are bulk shipped & bottled at destination. Paddy & Old Bushmill are the only exception which are bottled in Ireland itself.

1. Durphy
2. Murphy
3. John Jameson
4. Old Bushmill
5. Old Bushmill's Black Bush
6. Paddy
7. Power's Gold Label

APPLICATION:

The most famous Irish Whiskey drink is Irish Coffee. However Irish whiskey is enjoyed most when drunk on the rocks or with a light splash of water.

DIFFERENCE BETWEEN SCOTCH AND IRISH WHISKEY

1. Scotch is made from home grown cereal as well as cereal grown in other countries whereas whiskey is made from home grown cereal only.

2. Pot still scotch is made from only malted barley whereas Irish pot still whiskey is made from malted as well as unmalted barley and also other grains.

3. Pot stills used in Scotland are much smaller than the Irish pot stills.

4. Scotch pot still whisky is distilled twice whereas Irish pot still whiskey is distilled thrice. 5. Scotch is matured for a minimum period of three years. Irish whiskey is matured for a period of five years.

6. Most Irish whiskey used to be made by pot still method but now a day they are made by both pot as well as patent still method of distillation Scotch single malts are made by only pot still method.

AMERICAN WHISKEY

American whiskey are a diverse lot & essentially classified by the variety of grains in the mash, the proof at which they run off the still and the length and manner of ageing. Virtually no US whiskey fall into three category

1. Straight

2. Light

3. Blended

1.STRAIGHT WHISKEY-

A. Bourbon Whiskey- It is the predominant example of U.S straight whisky. It is named after the Bourbon county of Kentucky. Eltjah Craig of Bourbon Country is credited with the achievement of first making a bourbon style whiskey.

By law a bourbon whiskey is made from a mash containing at least 51% of corn. Some are made by a process called as sourmash process. Sourmash process refers to a technique in which a part of the previous fermination is added to the next batch of mash as a start to get it going. Alternatively sweetmash process is the addition of fresh yeast.

Although initial bourbons used to be pot still distilled but now almost all bourbon are produced by patent still distillation. Despite the govt. regulation that they should be aged for a minimum period of two years in oak barrels, most bourbons are aged for four years and above.

Brand names:-

1. Ancient Age

2. Benchmark
3. Early Times
4. Henry Makenna
5. Hiram Walker's10 High
6. Jim Beam
7. Maker's Mark
8. Old Grand Dad
9. Old Grand Dad
10. Eagle Rare
11. Ezra brooks
12. Grand Dad Barrel Proof
13. Old Weller
14. Wild Turkey.

To be defined as a straight American whiskey

1. It should be produced from a combination of grains (mach) in which one particular grain has to contribute 51%.
2. It must come out not more than 160 US proof.
3. It should be aged for minimum period of 2 years.
4. To be defined as Bourbon which comes under the category of straight whiskey.
5. The following combination must be complied with
6. It is made up of grains in which corn contributes to a minimum of 51 %.
7. It must come out of still at not more than 160 US proof.
8. It must be aged for a minimum period of 2 years in channel oak barrels.
9. Any whiskey prepared in this manner in US can be called as Bourbon.

10. To be called Kentucky Bourbon it should be aged for a minimum period of one year in

B.Kentucky.

It is obviously produced in Tennessee. It is not bourbon although it is quite similar in process and style to bourbon. Tennessee has an extra step, the spirit is filtered through charcoal immediately after distillation. This process is not carried in cases of bourbon.

Brand names:

1 Jack Daniel's Old no. black label

2 Jack Daniel's Green Label

3 George Dickel's Old # 12

4 George Dickel's Old # 8

5 Lem Motlow

c. RYE WHISKEY

Must be made from mash of grains containing at least 51% of rye. Distillation< cooperage &ageing requirements are the same as bourbon.

Brand names:

1. Old overholt

2. Wild turkey

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d. CORN WHISKEY

To qualify as a corn whiskey a corn whiskey must be made from a mash of grains which should have a minimum of 80% of corn in it. Should be distilled at less than 160 degree U.S proof & aged for a minimum period of 2 years in uncharred oak barrels.

2.LIGHT WHISKEY

Light whiskey is relatively a new type of American whiskey having being officially declared as a category on 1_{ST}July 1972. it is a lighter whiskey than the other U.S whiskey.

Brand names:

1. Barton QT Premium

2. Jacquin light

3. Park & Tilford American light

3.BLENDED WHISKEY

The basic requirement for any U.S blended whiskey is that it must contain atleast 20% of straight whiskey at 100 degree, the remainder being neutral grain spirit.

Brand names

1. Seagram 7 crown

2. Calvert Extra

3. Schenley

4. Flelschmann preferred

5. Kessler

6. Imperial

CANADIAN WHISKY

The Canadian government closely regulate its whisky industry but does not set requirement for the proportion of grain to be use distilling proof or type of cooperage for ageing. Almost all the producer use continuous still to produce light bodied whisky. Ageing take place in use barrels.

There are to main type of Canadian whisky.

1. Bulk

2. Bottle in Canada

Bulk: - They are shipped in barrels and bottled at destination and they comprise majority of the Canadian whiskey.

Brand name: - 1.Canadian mist

2. Black velvet

3. Lord Calvert

4. Windsor supreme

Bottle in Canada: - these are much better whiskey than bulk.

Brand name: - 1. Canadian club

2. Crown royal

3. Schenley OFS

4. Seagram VO

INDIAN

WHISKY

Premium Regular

Bagpiper-gold Bagpiper regular

Royal challenge Mac Dowell no.1

Peter Scot Royal knight Antiquity

Officer choice

Aristocrat premium Rock and roll

Mac Dowell premium Solar no.1

Indian no.1

Indian salute

Gold rebind

Look for the following term

1.Usque Baugh

2.Sourmash bole born

3.Bultied in bond

4. Foint

5. Folishot

6.Firshot

7.Vachale

8.Wackstil

9.Spintstill

Japanese whisky

Japanese whisky is a style of whisky developed and produced in Japan. Whisky production in Japan began around 1870, but the first commercial production was in 1924 upon the opening of the country's first distillery, Yamazaki. Broadly speaking the style of Japanese whisky is more similar to that of Scotch whisky than other major styles of whisky.

There are several companies producing whisky in Japan, but the two best-known and most widely available are Suntory and Nikka. Both of these produce blended as well as single malt whiskies and blended malt whiskies, with their main blended whiskies being Suntory *kakubin* (角 瓶 , square bottle), and Black Nikka Clear. There are also many special bottlings and limited editions.

History

Two of the most influential figures in the history of Japanese whisky are Shinjiro Torii and Masataka Taketsuru. Torii was a pharmaceutical wholesaler and the founder of Kotobukiya (later to become Suntory). He started importing western liquor and he later created a brand called "Akadama Port Wine", based on a Portuguese wine which made him a successful merchant. However, he was not satisfied with this success and so he embarked on a new venture which was to become his life's work: making Japanese whisky for Japanese people. Despite the strong opposition from the company's executives, Torii decided to build the first Japanese whisky distillery in Yamazaki, a suburb of Kyoto, an area so famous for its excellent water that the legendary tea master Sen no Rikyū built his tearoom there.

Torii hired Masataka Taketsuru as a distillery executive. Taketsuru had studied the art of distilling in Scotland, and brought this knowledge back to Japan in the early 1920s. Whilst working for Kotobukiya he played a key part in helping Torii establish the Yamazaki Distillery. In 1934 he left Kotobukiya to form his

own company—Dainipponkaju—which would later change its name to Nikka. In this new venture he established the Yoichi distillery in Hokkaidō.

The first westerners to taste Japanese whisky were soldiers of the American Expeditionary Force

Siberia who took shore leave in Hakodate in September 1918. A brand called Queen George, described by one American as a "Scotch whiskey made in Japan", was widely available. Exactly what it was is unknown, but it was quite potent and probably quite unlike Scotch whisky.

The blind tasting organized by *Whisky Magazine* in 2003, the results of which are published in WM #30, the winners of the category "Japanese Whiskies" were:

1. Hibiki 21 YO 43% (blend)
2. Nikka Yoichi 10 YO SC 59.9%
3. Yamazaki Bourbon Cask 1991 60%
4. Karuizawa 17 YO 40% (pure malt)

Question & Answer

1. What is whisky?

To define simply, Whisky is a distilled spirit made from cereals and malted barley. It develops its typical flavor during its maturation process in wooden casks. The Scottish spell it as ‘Whisky’ but the Irish are particular about adding an ‘e’ to their spelling, making it “Whiskey’

2. How is whisky made?

Whisky is made by grinding barley and/or other grains. To this is added hot water and, from this mash, a sweet liquid known as wort is extracted. Yeast is added to the *wort* and fermentation produces a *wash* with 7-10 % alcohol. The wash now goes into a pot still and the resulting low wines are redistilled to produce whisky, high in alcohol. The raw colorless whisky is put in oak casks. The whisky matures in these casks for a number of years. Once bottled it will not improve further.

3. How do we classify whiskies based on regions?

- Scotch
- Irish
- Canadian
- American
- Rest of the world

4. What is Scotch whisky so important?

Even though it was the Irish monks who brought the art of distilling from Ireland to Scotland, the real credit for elevating whisky to the position of being the most internationally enjoyed spirit must go to the Scots. It was their vision which saw the possibilities of blending grain and malt whiskies, the results of which are now so successful on world markets. Today, copying the Scots, most of great commercial whiskies are a blend of 50% malt and 50% grain whiskies.

5. What are the different types of Scotch whiskies?

- **Malt Whisky** is made from malted barley and distilled in a Pot still. They are matured from between 3 to 50 years in oak casks
- *Single Cask Malt*- It is specially selected single malt matured in a single cask for a specified number of years. They are also called 'Specials'
- *Single Malt*- This is the product of a single distillery
- *Vatted Malt*- The marriage of single malts from different distilleries • **Grain Whisky** is a lighter style of whiskey in body and is made using Patent still. • **Blended Whisky** is made from a mixture of malt and grain whisky. The more the malt in the blend, the more expensive the product. The age on the label refers to the youngest whisky in the blend. 90 % of all Scotch whisky is blended whisky
- **Finish Whisky** is a single malt aged for a long period (usually 12 years or more) in a one type of cask (mainly ex-bourbon), then decanted and given a short period of ageing in a different type of cask(mainly ex-sherry or ex-port). This final 'finish' gives whisky some new character and sweetness.

All of the above whiskies come from any of the 5 main regions in Scotland, of which *Speyside* (Spey River's valley) is most important. Other regions are *The Lowlands, Campbeltown, The Highlands* and *Islay* (pronounced "EYE-lah)

6. Why has single malt become so popular?

Single malts are among the most complex and exciting of all spirits. Single malts have achieved cult status over the past 25 years. The prosperous 80's and 90's saw an entire new generation being introduced to this expensive pleasure.

Knowing one Glen from another became a sign of surefire sophistication among twenty something drinkers. It is said that your choice of single malt also peaks volumes about your personality: graceful Speyside malt for the sensitive art lover; an aggressive, masculine Islay for the ruthless CEO, and so on.

7. What should be understood about Irish whiskey?

Irish whiskey uses a mixture of malted and unmalted barley, wheat, rye and oats in the mash. It is triple distilled and has more malt in the blend than some other blended whiskies. They are aged for atleast 5 years in cask and very often up to even 15 years.

8. How do the Canadians do their whiskey?

There are only a few Canadian whiskey makers. They produce whiskeys using mainly rye and maize. Generally the patent still is used and whiskey produced in very light in character and ideal for cocktails. It is mature for a minimum of 3 years in charred oak casks. The whiskies are soft and mellow.

9. What are the kinds of American whiskey?

The three main styles of American whiskey are as follows:

- **Bourbon**- It comes from Bourbon County, Kentucky. It is made from a mash that contains a minimum of 51% corn to which rye, wheat and malted barley is added. It is matured in new, charred oak casks. This process gives it a mildly sweetish, orange-honey character
- **Tennessee**- Tennessee distillers filter the new spirit through beds of maple charcoal to remove flavors, and give their whiskey a mellow quality
- **Rye**- A whisky made with mash that contains a minimum of 51% rye. It is considered as a contrast to bourbon as it is dryish bite to it

The other less popular styles of American whiskey are Corn whiskey, Straight whiskey, Sourmash and blended whiskies

10. How to enjoy Whiskey?

Scotch is actually a very versatile spirit. Blended scotch can be used in simple mixed drinks like 'Scotch and soda' or in more complex cocktails such as the *Rob Roy* (Scotch and Vermouth).

Most drinkers will prefer it neat. This applies not only to single malts but also better blends. Drink scotch on it own, maybe a splash of mineral water or perhaps over ice. This allows the intriguing flavors of this unique spirit to speak clearly without being covered by other flavors.

Just make sure that the glasses are clean and free of any dish-detergent residue. These days specialty glass makers like Reidel, have specially shaped whisky glasses designed for single malts.

Brands

Single-MAlt Scotch

From Highlands region

j. Glengoyne Limited Edition Scottish Oak Wood Finish
k. Glenmorangie Cote de Nuits Finish
l. Highland Park 18 Year Old
m. Talisker 25 Year Old

From Speyside region

n. Aberiour 21 Year Old
o. The Balvenie Vintage Cask 1966 & 25 Year Old
p. The Glenrothes 1979
q. The Macallan 25 Year Old Anniversary Malt

From Islay region

r. Bowmore 21 Year Old, 25 Year Old & 30 Year Old Ceramic
s. Laphroig 30 Year Old

Blended AND VATted Scotch whisky

t. Ballantines 12 Year Old
u. Chivas Regal 18 Year Old & Royal Salute
v. John Barr 17 Year Old Premium Reserve
w. Johnnie Walker Blue Label
x. Johnnie Walker Gold Label

Irish whiskey

15. Bushmills 10 Year Old Single Malt, 16 Year Old Single Malt & 21 Year Old Madeira Cask
16. Connemara Peated Single Malt
17. Jameson Master Selection 18 Years Old
18. Knappogue Castle Special Reserve 1993
19. Tullamore Dew 12 Year Old Blended Irish Whiskey

Bourbon whiskey

20. Baker's Kentucky Straight Bourbon Whiskey
21. Eagle Rare 10 Year Old & 17 Year Old
22. Even Williams 1993 Single Barrel Vintage
23. Four Roses Bourbon
24. Jim Beam Distiller's Masterpiece
25. Knob Creek 9 Years Old
26. Maker's Mark Bourbon
27. Old Forrester Bourbon & Birthday Bourbon
28. Old Whiskey River Bourbon
29. Wild Turkey Russell's Reserve & Rare Breed
30. Woodford Reserve Kentucky Straight Bourbon Whiskey

Other AmericAn whiskey

A. Jack Daniel's Old No.7 Tennessee Whiskey & Single Barrel Tennessee Whiskey B. Old Poterero Single Malt Straight Rye Whiskey

Canadian whisky

31. Canadian Club Classic 12
32. Crown Royal Canadian Whisky & Special Reserve
33. Forty Creek Barrel Select Canadian Whisky

B. Rum

The origin of the rum is not known. It could be a contraction of a Latin word **saccarum** meaning sugar or sweetness. Rum is a derivation of the mala brum meaning sugar drink, a word that could have arrived via the Dutch travelers.
Others think that it is from the word "**Rumbuliom**" which is derived from rheu (stem). Since the market demanded sugar, more people were needed to produce sugar cane, which by then was planted on every island in the Caribbean. Caribbean is the true home of Rum. The main areas of production are Jamaica, Trinidad, Cuba and Barbados. As the sugar refineries demanded more and more cane, the distillers decided to make from the by- product of sugar – **molasses.**

History

The precursors to rum date back to antiquity. Development of fermented drinks produced from sugarcane juice is believed to have first occurred either in ancient India or China, and spread from there. An example of such an early drink is brum. Produced by the Malay people, brum dates back thousands of years. Marco Polo also recorded a 14th-century account of a "very good wine of sugar" that was offered to him in what is modern-day Iran.

The first distillation of rum took place on the sugarcane plantations of the Caribbean in the 17th century. Plantation slaves first discovered that molasses, a by-product of the sugar refining process, fermented into alcohol. Later, distillation of these alcoholic by-products concentrated the alcohol and removed impurities, producing the first true rums. Tradition suggests that rum first originated on the island of Barbados.
Regardless of its initial source, early Caribbean rums were not known for high quality. A 1651 document from Barbados stated "The chief fuddling they make in the island is Rumbullion, alias Kill-Divil, and this is made of sugar canes distilled, a hot, hellish, and terrible liquor".

Rum in colonial America

After rum's development in the Caribbean, the drink's popularity spread to Colonial America. To support the demand for the drink, the first rum distillery in the colonies was set up in 1664 on current day Staten Island. Boston, Massachusetts had a distillery three years later. The manufacture of rum became early Colonial New England's largest and most prosperous industry. The rum produced there was quite popular, and was even considered the best in the world during much of the 18th century. Rhode Island rum even joined gold as an accepted currency in Europe for a period of time. Estimates of rum consumption in the American colonies before the American Revolutionary War had every man, woman, or child drinking an average of 3 Imperial gallons (13.5 liters) of rum each year.

To support this demand for the molasses to produce rum, along with the increasing demand for sugar in Europe during the 17th and 18th centuries, a labor source to work the sugar plantations in the Caribbean

was needed. A triangular trade was established between Africa, the Caribbean, and the colonies to help support this need. The circular exchange of slaves, molasses, and rum was quite profitable, and the disruption to the trade caused by the Sugar Act in 1764 may have even helped cause the American Revolution.

The popularity of rum continued after the American Revolution with George Washington insisting on a barrel of Barbados rum at his 1789 inauguration. Eventually the restrictions on rum from the British islands of the Caribbean combined with the development of American whiskey led to a decline in the drink's popularity.

THE PROCESS

The sugarcane is crushed between roller mills to produce **bagasse**; it is a puree of cane and sugar. It is crushed again to extract the leftover juice. This juice is then concentrated into a syrup by boiling. The syrup is put into a centrifugal machine which crystallizes the sugar. This is the sugar that is used at homes at a domestic level. The by- product of sugar is a dark liquid called molasses. it is from this dark sticky solution that rums are fermented and distilled. Before fermentation, this thick molasses will be diluted with water and clarified. The yeast used in fermentation will be either natural or a secret strain of cultured yeast.

Fermentation: There are two types of fermentation used – quick and slow. It is the type of fermentation that

will decide the style of rum the distiller wants to produce.

(a) **Quick fermentation –** This take about two days or less. White and light flavoured rums are produced by this method.

(b) **Slow fermentation –** This may last up to 12 days. Dark and heavy flavoured rum are produced by this method. **Dunder** is the residue from the previous distillation. It may be added to the slow fermentation process to impart a certain flavour. The liquid or the wash known as '**final molasses'** will have an alcoholic strength of about 7% by volume after fermentation.

Distillation: To produce light flavoured rums, it is distilled in patent still. It will have 91% alcohol by volume. For dark rum production, it is distilled in pot still. The alcoholic strength will be 86% by volume. This rum will be rich in flavor and aroma.Maturing:

(a) If Light rum is matured in uncharred oak cask for one year, it will be sold as white rum. If it is matured in charred oak casks for three years with the addition of little caramel, it is sold as gold rum.

(b) For dark rum, the aroma and flavor becomes prominent if it is matured in an oak cask. More colour will be added through caramel Before bottling, rums are reduced to a potable strength of around 40% by the addition of demineralised water.

STYLES OF RUM

White and light flavoured rums

These are may be termed as white, silver, gold or amber. The brand that is mainly associated with is Bacardi. White or silver describe clear-coloured rums. Gold or amber rums are deeper coloured, older, sweeter and more flavorsome. They are served as long cooling drinks with mixers such as cola, lemonade and fruit juices or as prime ingredients for cocktails.

Dark rums

These are heavy, pungent, flavorsome rums. It is mainly produced in Martinique, Haiti, Barbados There was an Admiral in the Navy known as "Old Grog" because of the dirty coat. He mixed "three water rum" and it was very unpopular. It was called **grog –** a name still used to describe a spirit served with an addition of water.

BRAND NAMES

Dark Rum White Rums

Capt. Morgan Bacardi

Appleton Ron Rico

Mount Gay Rhum St James

Woods Barilla

Lambs Navy Dry Cane

Question & Answer

1. **What is Rum?**
   Rum is a distilled beverage made from sugarcane by-products such as molasses and sugarcane juice.

2. **How is Rum made?**
   Rum is made by a process of fermentation of sugarcane juice and/or sugarcane by products like molasses followed by distillation. This distilled, clear liquid is then usually aged in oak and other casks.

Good rums are produced mostly in the countries of the Caribbean. The molasses method is preferred in the ex- British colonial countries such as West Indies. The ex-French colonial countries such as Haiti and Brazil make rums from sugarcane juice.

In the country of Martinique is famous for it aromatic *Rhum Agricole* (Agricultural rum) - a type of rum produced when the producers by pass the sugar refinery and distill their own rum from juice of sugar cane.

3. How can we enjoy drinking Rum?

Rum tastes great when mixed with juices. White rum is the foundation for the famous cocktail- Daiquiri. Dark rum can indeed be sipped and enjoyed neat.

4. Why is it called Rum?

Rum owes its names to many competing stories of origin. Some say, it is a short version of *saccharum*,
Latin for sugar, as well as shortening of *arome*, French for aroma. Some says it is named after an old English word *rumbustion* which means a great commotion or uproar. There is also a theory that rum comes from *ron*, Spanish for rum, as the Spanish were the first to distill rum in their Caribbean colonies.

5. What are the typical styles of Rum?

The grades and variations used to describe rum depend on the location that rum was produced. Despite these variations the following terms are frequently used to describe various types of rum:

- **White rums** also referred to as light and white rums. In general, light rum has very little flavor aside from a general sweetness, and serves accordingly as a base for cocktails. It comes from Puerto Rico, Cuba and Martinique
- **Gold rums**, also called amber rums, are medium-bodied rums which are generally aged. It comes from Cuba, Puerto Rico and Barbados
- **Dark rum**, also known as black rum, is sweetish and heavy bodied from ageing. It comes from Jamaica and Martinique
- **Flavored rum**: Some manufacturers have begun to sell rums which they have infused with flavors of fruits such as mango, orange, citrus, coconut, and lime.

- **Over proof rum** is rum which is much higher than the standard 40% alcohol. Most of these rums bear greater than 75.
- **Premium rum**: These are generally expensive boutique brands which sell very aged and carefully produced rums. They have more character and flavor than their "mixing" counterparts, and are sipped neat

Brands

2 Angostura 1824 Limited Reserve Rum Aged 12 Years, Trinidad and Tobago
3 Appleton Estate V/X Rum, Jamaica
4 Appleton Estate Rum 21 Years Old, Jamaica
5 Appleton Estate Extra Rum, Jamaica
6 Bacardi Reserva Rum Superior 8 Years Old, Puerto Rico
7 Bacardi Gold Rum, Puerto Rico
8 British Royal Navy Imperial Rum, British Virgin Islands and South America (World's most expensiverum) 9 Charbay Rum, USA
10 Clarkes Court Superior Light Rum, Grenada
11 Cruzan 2 Year Old Rum, Virgin Islands
12 Cruzan Single Barrel Estate Rum, Virgin Islands
13 Diplomatico Reserva Exclusive, Venezuela
14 Gran Blason Anejo Especial Reserva, Costa Rica
15 Inner Circle Green Dot, Australia
16 Matusalem Patino, Dominican Republic
17 Matusalem Clasia, Dominican Republic
18 Matusalem Gran Reserva, Dominican Republic
19 Montecristo Rum, Gautemala
20 Mount Gay Extra Old Rum, Barbados
21 Myer's Legend Rum Aged 10 Years, Jamaica
22 Pusser's Rum, Virgin Islands
23 Pyrat XO Reserve Planter's Gold Rum, Anguilla
24 R. L. Seale's Rum Aged 10 Years, Barbados
25 Rhum Barbancourt Estate Reserve, Haiti
26 Rhum Negrita Rhum, Guadeloupe, West Indies
27 Santa Teresa Ron Antigo de Solera 1796, Venezuela
28 Sea Wynde Pot-Still Rum, Jamaica/Guyana
29 Zeya 12 Yea Old, Gautemala

Flavored Rums

1.Bacardi Coco Original Coconut Rum, Puerto Rico
2.Bacardi Vanilla Original Vanilla Rum, Puerto Rico
3.Bacardi Razz Original Raspberry Rum, Puerto Rico
4.Bacardi Limon Original Citrus Rum, Puerto Rico
5.Charbay Tajitian Vanilla Bean Rum, USA
6.Cruzan Vanilla Rum, Virgin Islands

C.BRANDY

WHAT IS BRANDY:

Brandy is a spirit made by fermenting and distilling fruits. When made from fruits other than grapes the word brandy is linked with the name of the fruit. When the label reads brandy alone without any qualifying description it should be understood that it is made from grape wine.

Brandy in fact has been characterized as then soul of wine. The word Brandy has originated from the Dutch word "Brandewijn" meaning burnt wine when eventually got shortened to Brandy.

BRANDIES OF FRANCE:

Regardless of where brandy was originally distilled France was the first country to produce brandy for widespread commercial use . Brandy is made all over France, but the country is noted for two examples.

COGNAC – Cognac is the most renowned brandy of the world

ARMAGNAC – Armagnac is the oldest brandy of the world

To this date they remain as the benchmark of all brandies no matter where they are produced.

Cognac

Cognac is defined as the brandy produced from the Charente and Charente Maritime department of West Central France comprising roughly an areas of 2,50,000 acres enclosing the city of Cognac squarely in between which lends it's name to the brandy produced in the region. So from the above mentioned definitation it can very well be understood that all Cognacs are brandy but not all brandies are Cognac.

History

cognac was created out of necessity back in the 16th century when Dutch settlers traveled to France to purchase salt, wood, and wine. The merchants ran into trouble preserving their wine on the long journey back and decided to distill it into eau-de-vie, a colorless fruit brandy, to maximize its quality

THE GROWING AREAS OF COGNAC

The growing areas of the Cognac region is subdivided into six zones based mainly on oil and climatic factors. They are as follows:

Grand Champagne – (Large meadow) Covers around 14% of the entire Cognac district

Petit Champagne – (Small Meadow) Covers around 14.7% of the entire Cognac district. Jarnac is the best known city.

Borderies (Edges) -Considered as equal to Petit Champagne in quality and covers around 4.7% of the entire Cognac region. Burie is the most important city of the area. The best firms generally use the grape grown in these regions. Sometime the grape grown in Fins Boisrgion is also used.

Fin Bois - (Fine woods) Constitutes 35.5% of the area

Bons Bois – (Ordinary woods and Earth woods) Constitutes 6% of the area. The word Champagne has got nothing to do with the celebrated sparkling wine of France. It has originated from the word. Champ which means field.

Bons Ordinairies-Part of this area are coastal area and the soil is sandy.Lt produces harsh Cognac suitable for cheap blend.

GRAPES

Eight different varieties of grapes are allowed by the Law to be used for the manufactured of Cognac. Only three varieties are in cultivation They are Saint Emillon:- This is a thick skinned, sturdy grape which produces a rather sour testing wine.

Now some of the total yield for Cognac is this grape.

St E'milion(Ugni blanc)-It is the best grape which gives good yield.

Folle Blanche - Very thin skinned grape, prone to many diseases and yields a very high acid wine.

Colombard - It is sensitive to oidium and needs heavy sulphuring. It also produces a very harsh wine with a high alcohol content.

MANUFACTURE OF COGNAC

Only the first pressing of the grapes is used for making good quality cognac. After fermentation the wine has around 7 to 9 % of alcohol. Cognac is made by pot still distillation by law.

Production of Cognac

Wine making: The 'must' of approved grapes is allowed to ferment naturally without addition of yeast for 7-10 days which result in dry and high acidic wine with ;ow alcoholic content of 8-10 percent.

Distillation: The wine is Pot distilled twice in copper pot stills called charente

Maturing : The young cognacs which are raw, fiery, and colourless are matured in weathered *Limousin* or *tronÇais* oak casks. It is aged at least for a period of one and half years, though most are aged for two to four years

Blending: Cognac of various delimited regions are blended to ensure consistency

Bottling: The alcoholic strength of *cognac* is brought down to 40–45 per cent abv by adding distilled water. The colour is adjusted with a little caramel. It is then filtered, rested, and bottled.

READING A COGNAC LABEL

The Cognac industry finally settled down to the following general guidelines in their use of stars, letters, and names on the label of a Cognac bottle.

Three starts or the letter VS or VSP indicates that the minimum age of the youngest Cognac in the blend is 2 years. In practice average age of 3 to 5 years.

The letters VO, VSO, VSOP, or VSEP – indicate that the minimum age of the youngest Cognac in the blend is 4 years with the average age going upto 10 to 15 years.

The full form of VSOP – Very Superior Old Pale. But some noble heads in France give the full form as Versez Sans Oublier Personne which means pour without omitting anyone.

Cognac labeled with special names such as Napoleon Cordon Bleu, Triomphe, Vlelle Reserve, XO, Extra Anniversaire, etc. indicate that the minimum age going upwards of 20 years. On the occasions the words Age Income appear on the bottle label which means Age unknown. This means that the Cognac is of logical age even though no figure may appear on the label of the bottle.

When the Cognac is labeled as “Napoleon” it does of mean that the Cognac is from Napoleon’s own cellar or dates back to the time of Napoleon. The name simply pays tribute to the little corporals devotion to Cognac shared by his less illustrious nephew Napoleon III. In fact there is some doubt as to which of the two actually inspired the designation except Courvoisier which proudly asserts that Napoleon I visited the Chateau Courvoisier and sampled the pride of the house

Types of Cognac.

Grand Champagne-It is cognac produced entirely from brandies made from the grapes grown in the grand champagne region

Petit Champagne-Made entirely from brandies produced from grapes grown in the petit champagne region.

Fine Champagne – Cognac bottled labeled as Fine Champagne indicate that the grapes have been obtained from the premier growing areas of Grand and Petit Champagne but a minimum of 50% from the Grand Champagne area.

SHIPPERS

1.Armand Roux 2. Bisquit 3. Camus 4. Chateau de Fontpinot 5. Courvoisier 6. Delamain 7.

Demse Mounie 8. Gaston de LaGrange 9. Hardy 10. Hennessy 11. Hine 12. Leyrat 13.

Martell 14. M. Tiffon 15. Monnet 16. Odeon 17. Otard 18. Prince Hubert de Polignac

19.Ragnaud 20. Remy Martin 21. Renault. 22. Salignac

SERVICE –

Brandy is generally served in a brandy balloon or a brandy snifter. V.S.O.P and above Cognacs are generally served as after dinner digestives like a liqueur. Hence these Cognacs which are served as liqueur are called as liqueur brandy but brandy liqueur is a liqueur with brandy as the base. Lesser categories of Cognacs can be served as High ball with soda and ice.

The best way to serve Cognac is to serve it as a liqueur after dinner.

Note: Fine maison is a cheap quality brandy which is generally served as a house brandy when the order is given by the guest without specifying the brand.

ARMAGNAC

Arnagnac Known as the “Brandy of Musketeers” Armagnac is produced from the department of gers ,which is situated 113 kms to the south east of Bordeaux. This delimited area is present in the heart of south western France, a part of which was once the ancient province of gascony.

History

Armagnac is probably the oldest known wine spirit in the world but the art of distillation was introduced by the Arabs between 1411 and 1441. In the department of France known as the Landes, they produced an agua ardente, or fire water, which was used initially as a therapeutic cure

The most commonly used grapes for the production of Armagnac are:

1. Folle Blanche- also called as the Picquepoult

2. Baco A22- Originated from a cross between Folle Blanche and Noah variety.

3. Colombar- Some growers prefer this grape variety.

These grapes are grown in three sub regions. They are

1. Bas Armagnac

2. Haut Armagnac

3. Tenareze

Only Bas Armagnao and Tenarez produce quality brandy.

The white wines which are distilled to make the brand come from completely natural fermentation and no addi~~tives are added. Normally the grapes are fermented and distilled within eight weeks of ha~~rvest **Production of Armagnac**

Wine making: The main grape varieties used in the production of Armagnac are *Saint-Émilion (Ugni Blanc),Folle Blanche, Colombard,* and *Baco Blanc (Baco A22)*The 'must' of approved grapes is allowed to ferment naturally without addition of yeast for 7-10 days which result in dry and high acidic wine with low alcoholic content of 8-10 percent

Distillation: It is distilled in 'continuous still'. Now, Armagnac is permited to use Cognac Pot still (Charente)

Ageing and Blending: The young Armagnac is matured in'*Monlezun*'oak casks. Addition of caramel or sugar is not permitted in *Armagnac* production.

Bottling: Most Armagnac is sold in a flat bottle called in French as basquaise

Difference between Cognac and Armagnac:

1. Cognac undergoes two separate distillation in pot stills where as Armagnac is produced by a single distillation in the alembic armagnacais which is unique version of patent still.

2. Cognac comes out of the still at a maximum alcoholic strength of 72 degree GL where as Armagnac comes out of the still between 52 to 55 degree GL.

3. Cognac is matured in wooden casks made from the limousineoak or troncais oak where as Armagnac is aged in wooden casks made from the Black veined oak of Gascony or Monlezun oak.

4. The minimum legal period of ageing in case of Cognac is 2 years where as armagnac remain in the cask for a minimum period of 12 years.

Table 33.1 Cognac vs *Armagnac*

Points of distinction	Cognac	Armagnac
Grapes	Ugni Blanc, Folle blanche, Colombard	Ugni Blanc, Folle blanche, Colombard, Baco Blanc (Baco A 22)
Distillation	Pot Still	Continuous Still (Pot Still also permitted since 1972)
Delimited areas	Grande Champagne, Petite Champagne, Borderies, Fins Bois, Bons Bois, Bois Ordinaires	Bas-Armagnac, Ténarèze, Haut-Armagnac
Ageing	Aged in *Limousin* or *Tronçais* oak casks	Aged in *Monlezun* oak casks
Addition of caramel or sugar	Permitted	Not permitted
Market position (Quality) amongst all brandies	First	Second

BRAND NAMES:

1. Janneau

2. Chabot

3. Sempe

4. Larresingle

5. Mattiac

6. Ryst

7. Marquis de Montesquiou

Note: Armagnacs are bottled in Basquais bottles.

FRUIT BRANDY

What are fruit Brandies?

Perhaps the most intriguing of all brandies are the ones which are produced from fruits other than that of grapes. These are generally colourless and often referred to as alcohol blanc or white alcohol. they are the true Eaux de vie. Apple brandies are the only major exceptions.

How the fruit brandies are made:

There is no single method of production of fruit brandies. Different producers have their own method of production of fruit brandies and different recipes. But it is safe to say that around 25 pounds of fruits are required to produce one bottle of fruit brandy. Each step in the production process is designed to heighten the bouquet.

Except in case of berries all other fruits are mashed and then fermented to make a kind of wine. A double distillation takes place when a patent is still is used. Berries which lack sufficient amount of sugar for proper fermentation and soaked in neutral spirit till all flavour is is extracted from the berries into the alcohol. then the infusion is distilled once even when a pot still is used. Regardless of the method of production the fruit brandies run of the still at a fairly slow alcoholic strength.

Unlike other brandies fruit brandies are never aged in wooden casks. wood imparts colour and a distracting taste. glass or glass lined containers have been traditionally used for aging but stainless steel tanks are now increasingly used. in any case fruit brandies are not usually aged long before bottling.

Examples of Fruit Brandies

Houx – Made from Holly berries in France.

Kirch – Made from wild cherries in France. It is the most popular fruit Eaux de vie. In Germany and Switzerland the same is known as Kirschwasser.

Poire – Made from William pear. Occasionally one sees a bottle of Poire containing a whole pear inside. Framboise – Made from Raspberries. In Germany and parts of Switzerland this is known as Himbeergeist. Mirabelle – Made from Yellow plums in France.

Quetsch – Made from Blue plums in France, Germany and Switzerland.

Slivovitz – Made from blue Sljiva plums in Yugoslavia and other East European countries.

Barack Palinka – Made from Apricot in Austria and Hungary.

How to drink fruit brandies – Fruit brandies should be served chilled in tulip shaped glasses.

Grades include

VS (Very Special) or *** (three stars), where the youngest brandy is stored at least two years in cask.

VSOP (Very Superior Old Pale), Réserve, where the youngest brandy is stored at least four years in cask. XO (Extra Old), Napoléon, Hors d'Age, where the youngest brandy is stored at least six years incask.

Each cognac house also produces its own premium-level cognac.

Richard Hennessy

L'Esprit de Courvoisier

Moyet Antiques

Louis XIII Remy Martin

Question & Answer

1. What is brandy?

Brandy is a term used for distilled wine. Wine is a an alcoholic liquid produced by fermentation of either fruit juice or fruit products like lees (sediments), dried fruit or pomace (skin and pulp of fruit left after juice is removed). Brandy is generally drunk as an after dinner drink.

2. Why is it called brandy?

Brandy is short for *brandywine*, from the Dutch word *brandewijn* which means burningwine.

3. What fruitslfruit products can be used to produce brandy?

Different fruits can be used form making brandy, some of the common ones are

- **Grape-** *Cognac, Armagnac, Grappa, Marc, Pisco* and *Brandy de Jerez*
- **Apple-***Calvados Paye d'Auge AOC* (100 % Apples) and *Calvados Domfrontais AOC* (70 % Apples+ 30 % Pear), *Applejack* (American)
- **Cherries-** *Eau-de-vie de Cerise* (Kirsch)
- **Raspberry-** *Eau-de-vie de Framboise*

4. What are the different grape brandies?

- **Cognac**- Spirit distilled from white grapes made in the Charentes region of France. It is entitled to be so designated by the laws and regulations of the French Government
- **Armagnac**- Spirit distilled from white grapes made in a part of Gascony, France. It is covered by a controlled appellation of origin similar to Cognac • **Brandy de Jerez**- Spanish brandy aged using the famous S*olera* system

The next three are brandies made from pomace (grape skin)

- **Grappa**- Grappa is a distillation of grape skins. It is made in Italy
- **Marc**- Short for Eau-de-vie Marc. It is made from pomace throughout France
- **Pisco**- Chilean brandy based on white grapes and made by distilling fermented grape must

c) What is so special about cognac compared to other brandies?

Location, Location, Location!

The cognac producing region is sixty miles north and just to the east of the vest vineyards of Bordeaux. Cognac region itself is further divided into seven sub regions making different styles of brandy. Distilled twice in pot stills, cognac comes in a wide range of designations, and prices.

d) How can we enjoy drinking brandy?

The classic way is to enjoy it neat at room temperature (or even slightly warm) to appreciate the aroma. However, brandy is being drunk around the world with sparkling water, ginger ale and even tonic water. Brandy also serves a place in the kitchen as a flambé base, adding flavor to sauces, gravies and even desserts like ice-creams and soufflés. Adding lime juice and Cointreau to cognac gives a cocktail called *Sidecar*.

Locals who live in the Cognac region of France and themselves work in the brandy business have actually confessed that they love their cognac on ice with a twist of lemon. In Italy, besides sipping it neat or slightly chilled, Grappa can often be served as *corretto*, floated on top of an espresso or *rasentin*, rinsing the coffee cup before adding coffee

Brands

2 Camus L'Espirit de Courvoisier
3 Courvoisier Initiale Extra
4 Courvoisier VSOP
5 Courvoisier XO Imperial
6 Courvoisier Napolean
7 Delamain Reserve de la Familie
8 Delamain Vesper
9 Frapin V.I.P. XO
10 Frapin XO ChateauFrapin VSOP Grand Champagne Fontpinot
11
12 Gabriel & Andreu Borderies
13 Gabriel & Andreu Petite Champagne
14 Gabriel & Andreu Grand Champagne
15 Hennessey Richard Hennessey
16 Hennessey XO
17 Hennessey Private Reserve
18 Hennessey Paradis Extra
19 Hennessey Timeless 2021

HineHine Rare Antique VSOP

22 Hine 1953
23 Jean Fillioux Tres Vieux Grand Champagne (GC)
24 Jean Fillioux Reserve Familiale Tres Vielle GC
25 Jean Fillioux XO Reserve Grand Champagne
26 La Fontaine de la Pouyade 1er Cru GC
27 Leopold Gourmel Age du Fruit

28 Leopold Gourmel Age des Fleurs

ArmAgnAC

a) Cerbois 1982, 1961 and 1900 Vintage Bas Armagnac
b) Château de Laubade 1984 and 1973 Bas Armagnac
c) Del Montal 1976 Armagnac de Montal
d) Laberdolive 1985 and 1942 Domaine de Jaurrey
e) Sempe Vieil Armagnac 15 Ans
f) Sempe Extra Grand Reserve Armagnac
g) Germain-Robin is available in Merlot, Syrah, and Viognier, USA
h) Jacopo Poli 1998 Amorosa di Vespaiolo, Italy
i) Luce Grappa, Italy
j) Michele Chiario Grappa di Barolo, Italy
Nonino Grap

k) Germain-Robin is available in Merlot, Syrah, and Viognier, USA
l) Jacopo Poli 1998 Amorosa di Vespaiolo, Italy
m) Luce Grappa, Italy
n) Michele Chiario Grappa di Barolo, Italy
Nonino Grap

D.Gin History

The credit for the discovery of Gin goes to a Dutch professor of chemistry Franciscus de le Boc (1614-72). He recogonised the properties of the oil of the juniper berry. First production of this gin was started in early 17century in Holland, it was assumed to have medical value and cure diseases like kidney problem. It is derived from a French word “Genever”. It was sold as a medicine under the name of “Genievre”. English contracted the word “Gin”. In 1689 when the Dutch William Orange came to English throne, He openly encouraged the distillation and consumption of Gin to combat the import of wine from France. Then onwards gin became the national drink of England.

Professional distillers were encouraged to enter the business in 3 centers of production; London, Bristol and Plymouth.

Gin is a spirit which is distilled from cereals and flavoured with juniper berries and coriander seeds THE

PROCESS

Gin can be made from any spirit that has alcohol volume of 96%. Gin is distilled from the fermented mash of molasses or grain. It is always flavored with some botanicals like cassia bark, fennel, almonds, orange peel, orris, angelica root, liquorice, coriander seeds etc. The spirit is distilled/refined. The spirit is diluting by added pure water to reach an alcoholic percentage of 45%, pumped into stills; normally copper still and flavoring agents are added.

Botanicals are added in 3 ways:

1. The traditional and the best way involve the distillation of the pure spirit with the flavouring agents. It is done in a pot still and the flavour of the botanicals used is always a secret recipe.

2. The distillate of the botanicals can be added in concentrated form to the spirit.

3. Gin flavouring can be added to neutral spirit. It is heated using a steam coil, to remove ingredients, botanicals. Then it is brought to the required alcoholic level 37.5% to meet Europe community regulation. Then water is added. Rye is the main cereal used in production of **Genever Gin** and other Dutch Gin. Maize is used in Gin production in UK.

TWO TYPE OF GIN DISTILLATION IS

Distilled Gin

Compound Gin

Distilled Gin-

The production of gin starts from a pure or neutral spirit distilled from any kind of grains like malted barley, corn, rye or wheat. This is then rectified(redistilled) by the gin distiller in a patent still with various botanicals and juniper berries. The recipe is a guarded secret. The base spirit used in UK is slightly lower in alcoholic strength than the base spirit used in US.

Alternative method-

1. The botanicals are steeped in a portion of the neutral spirit and the mixture is distilled in a pot still which result in the production of a highly flavorful and concentrated spirit

This is combined with the rest of the neutral spirit.

2. A basket of botanicals is hung near the mouth of the still and the alcoholic vapors are passed through the basket of botanicals as well as the cracked juniper berries which helps the vapors to carry the flavors along with it and the flavors remain in the final product.

Compound Gin

Compound gin is produced by mixing high proof neutral spirit with extracts of juniper berries and other botanicals and flavoring. This Gin is of a lower quality than the distilled Gin and therefore very little gin is produced using this method.

Aging

Gin can be consumed or consumable after the rectification is over. However three months of wood aging may be allowed for the spirit and the botanicals to harmonies properly.

U.S federal regulation does not allow any age mention on the bottle. Finally it is tasted for taste, clarity and strength before it is bottled.

TYPES OF GIN

London Dry Gin: - Made in London, unsweetened, classic gin is now made else where under license and marketed under brand names as Booths, Beefeaters.

Plymouth Gin; - This pungent, aromatic gin is made by the Devonshire firm of Coater and Co, in Plymouth. Because of its naval connections it is the standard gin used in making of a pink gin.

Old Tom Gin: - Made in Scotland mainly for the export market, sweetened with addition of sugar syrup.

Dutch Gin: - Also known as Holland or Schiedam, it is often sold in stone jars. Some grain flavours are retained as the original spirit is not rectified. It is made from barley and rye and double distilled in pot still.

Steinhaeger: - A German gin made in Westphaila. It has a distinct personality and is usually drunk for Schnapps, neat with ice.

Sloe Gin: - This is made by steeping sloe in basic gin and includes addition of sugar syrup, bitters and almonds. Fruit

Gin: - These are usually artificially flavored with orange, lemon or other appropriate essence.

BRAND NAMES

Beefeaters

Bellows

Bombay sapphire

Gordon's

Booths

House of lords

Gilbeys

Boodles

Question & Answer

1) **What is Gin?**
   Gin is a distilled spirit made mainly from maize, barley and rye. It is flavored with a mash of juniper berries and other botanicals (cassia bark, coriander seeds, angelica rot, fennel, orange peel etc.)

2) **How is Gin made?**
   An almost pure grain based spirit is the base for gin. It is then reduced in strength by the addition of distilled water and re-distilled in a patent still together with the flavoring botanicals. The resulting liquid is gin. It is approximately 40% alcohol.

3) **How can we enjoy drinking Gin?**
   Chilled gin and dash of dry vermouth give us the popular cocktail *Martini*. Gin & tonic water is a match made in heaven. Gin can also be had with lime juice (*Gimlet*); Angostura bitters (*Pink Gin*).

4) hy is it called Gin?

Gin was first made in 1577 by a Dutch (Holland) chemistry professor called Sylvius Van Leyder, as a medicinal cure for gouts and kidney illnesses. It was then called *Genever* after its main flavoring ingredient-Juniper berries. Year later, after a war, English soldiers returning back from Holland later took a liking to it while taking it to England, shortened it first to *Geneva* and then to *Gin.*

5) What are the typical styles of Gin?

A large number of countries now produce gin. Some typical styles are as follows:

1. **Dutch/Holland gin** is also called Geneva gin. It is made in a pot still and therefore has some malty flavors. It should be drunk ice-cold and are often followed by a lager chaser. It comes in three styles, *Oude* is ripe, heavy and sweet; *Jonge* is delicate and clean; *Corenwijn* is aged in cask
2. **London dry gin** was originally made in London, hence the name. It is now made elsewhere under license. It is unsweetened
3. **Plymouth gin** was made originally by Coates & Company in town of Plymouth. It is more aromatic than London dry gin and should be used for *Pink Gin* cocktail
4. **Old Tom** is the name given to the old English style; a juniper spirit sweetened with sugar and glycerine. It gets its name from an interesting real-life story of a cat's picture!
5. **Sloe gin** is made by steeping sloes (the fruit of blackthorn) in London dry gin, together with sugar syrup and a small amount of bitter almonds
6. **Fruit gins** are mostly made from artificial essences like orange or lemon

Brands

(c) Beefeater London Dry Gin, England
(d) Bombay Dry Gin, England
(e) Bombay Sapphire, England
(f) Broker's London Dry Gin, England
(g) Citadelle Gin, France
(h) Damark Amsterdam Original Gin, Netherlands
(i) Hendrick's Gin, Scotland
(j) Junipero Gin, USA
(k) Leyden Dry Gin, USA
(l) Martin Miller's London Dry Gin, England
(m) Martin Miller's London Dry Gin Westbourne Strength, England
(n) Mercury Gin, England
(o) Plymouth Gin, England
(p) Reval Dry Gin, Estonia
(q) Tanqueray No.10 Gin, England (Considered to be the most perfect gin in the world)
(r) Tanqueray Gin, England
(s) Van Gogh Gin, Netherlands

E.Vodka History

Vodka was originated in the 12th century in eastern Europe. It is the national drink of Russia and Poland and it could have originated from either of the 2 countries then. In technical terms, Vodka is a pure spirit that has been diluted with water and filtered before bottling. This spirit can be made from anything that contains starch – primarily it can be made from grains, maize, potato and sugar beat.

Vodka is an alcoholic spirit of Russian origin made by distillation of rye, wheat, or potatoes

THE PROCESS

1. It starts with the liquid from the fermented "mash" which can be made from anything that has starch.

2. The mash is then heated. Since alcohol evaporates at a lower temperature, distillers carefully monitor the temperature to boil of just the alcohol Pot Still Method (E.g.: Smirnoff Black , Ketel One) and Patent still method (E.g.: Absolut Vodka)

3. The 1st distillation is called "low wines". It contains impurities known as congeners. It may also contain fusel fuels.

   Their elimination is the key to a good Vodka

4. The 1st distillate is further purified. It can be distilled again to remove congeners and produce purer spirit. Some distilleries distill up to 6 times

5. The final stage for any Vodka is filtration process. After the distillation process, it is diluted with water and then filtered. Filtration is a secret. Hence, in most distilleries filtration rooms are not open to public.

6. Early filtration process was to rest the vodka while the solid particles settle to the bottom. Years later, coagulants such as milk or solidified eggs were used.

7. The finest qualities of vodka are filtered through activated layers of charcoal or fine sand. This ensures absolute purity. Some distillers also filter through quartz sand (Altai Distillery) or through diamonds (Suhoi Distillery). Most of the vodka is naturally flavourless.

8. The specialty of vodka is that is that it is ready to drink the moment it has been filtered. Unlike wine and other spirits that are aged to acquire the "character"of the wood, Vodka s recognized for the absence of such flavours.

BRAND NAMES

Name Country

Finlandia Finland

Luksusowa Poland

Nordoff Ireland

Saratov Ireland

Smirnoff Russian

FLAVOURED VODKA

Herb and fruit infused vodkas have been around for hundreds of years, because it is not a very complicated task. But the phenomenal commercial rise of flavored vodkas is attributable to Stolichnaya. In 1996, Stoli Limon was introduced. Its popularity prompted other distillers to add everything from peppermint to pineapple to their vodkas. Today there are over 500 brands of flavored vodkas, with some popular flavors based on Vanilla, Berries, Citrus fruits, Herbs and spices.

Brands

STARKA

Has hints of brandy, honey, vanilla, port, leaves of several types, apples and pear.

ZUBROVKA

its aromatic with a green tinge has a slightly nutty flavour. A long blade of grass floats inside each bottle.

PERTSOVKA

Infusion of red, white, black pepper, aged for a month in wood or metal cask. Brown colour. SKYY

CITRUS

Lemon Flavour

SVEDKA

Raspberry flavour

OKHOTNICHYA

Herbal aroma, infusion of sugar, ginger, cloves red and black pepper, juniper, coffee

Question & Answer

1) **What is Vodka?**
   Vodka is a distilled alcohol made from a fermented mash primarily of grain or starch which is distilled high proof and filtered through activated carbon and vegetal charcoal. It's due to its filtration process that vodka is almost neutral in taste, color and flavor.

2) How is Vodka made?

Vodka is distilled and rectified in a *patent* still, which produces an almost pure spirit that is passed through layers of vegetal charcoal and activated carbon. This process removes all traces of color and flavor. Because now this is a neutral spirit it doesn't require maturing and it is reduced in strength to about 40 % for bottling.Vodka can be made from any form of starch (carbohydrates) that will ferment. Grains such as Rye, Corn or wheat or tubers such as potatoes, beets or sugar beets can be the mash base for vodka. But a very small percentage of vodka is actually made from tubers.

3) Why are flavored vodkas so popular?

Herb and fruit infused vodkas have been around for hundreds of years, because it is not a very complicated task. But the phenomenal commercial rise of flavored vodkas is attributable to Stolichnaya. In 1996, Stoli Limon was introduced. Its popularity prompted other distillers to add everything from peppermint to pineapple to their vodkas. Today there are over 500 brands of flavored vodkas, with some popular flavors based on Vanilla, Berries, Citrus fruits, Herbs and spices.

4) How can we enjoy drinking vodka?

Any mixer or fruit juice goes well with vodka. Indeed a very large number of cocktails can be prepared by using vodka as the base alcohol. The top quality ones (both flavored and straight), are, however, best drunk neat and straight from the freezer. The Russians like to drink vodka this way, in small tumblers, straight from the fridge.

5) Why is it called Vodka?

Vodka originally came from Poland and Russia where it was presented under such names as *wodka*, *wodki*, *votku*, *votky* and *vodka*, all meaning 'little water'.

6) What are the typical styles of vodka?

A large number of countries now produce vodka. Some typical styles are as follows:

1. **Dutch (Holland)** are famous for their full-flavored pot-still vodkas

2. **Flavored** vodkas as discussed in question 3 on this page
3. **Polish** vodka is considered the best and it tends to be majorly rye based
4. **Russians** use wheat and rye
5. **Swedish** vodkas tend to be wheat based and are very pure in character

Vodka

* 3 Vodka, USA
* Absolut Vodka, Sweden
* Belvedere Vodka, Poland
* Blue Ice Potato Vodka, England
* Brilliant Vodka, Scotland
* Charbay Vodka Clear and Dry, USA
* Charodeik Vodka, Russia
* Chopin Vodka, Poland
* Ciroc Vodka, France
* Citadelle Vodka, France
* Cristall Vodka, Russia
* Effen Vodka, Netherlands
* Finlandia Vodka, Finland
* Fris Vodka, Denmark
* Grey Goose Vodka, France
* Jazz Vodka, Poland
* Ketel One Vodka, Netherlands
* Krolewska Vodka, Poland
* Level Vodka, Sweden
* Mezzaluna Vodka, Italy
* Mishka Vodka, Israel
* Original Polish Vodka, Poland * Pearl Vodka, Canada
* Polar Ice Vodka, Canada
* Polska Vodka Extra, Poland
* Rain Vodka, USA
* Rodnik Vodka, Russia
* Shakers Original American Vodka, USA
* Shakespeare Vodka, Poland
* Skyy Vodka, USA
* Stolichnaya Vodka, Russia
* Stolichnaya Vodka Gold, Russia
* Ston Vodka, Estonia
* Teton Glacier Potato Vodka, England
* Three Olives Vodka, England
* Tito's Handmade Vodka, USA
* Vertical Vodka, France
* Vox Vodka, Netherlands
* Wodka Wyborowa Vodka, Poland * Zyr Vodka, Russia

Flavored Vodka

Berry Cherry Fruit Flavors

* Effen Black Cherry Vodka, Netherlands
* Absolut Kurant, Sweden

* Citadelle Raspberry Vodka, France
* Vox Raspberry Vodka, Netherlands

Citrus Fruit Flavors

* Skyy Citrus Vodka, USA
* Danzka Grapefruit Vodka, Denmark
* Absolut Citron, Sweden
* Grey Goose Le Citron Vodka, France
* Miskha Citron Vodka, Israel
* Vincent Van Gogh Citroen Vodka, Netherlands
* Charbay Key Lime Vodka, USA * Fris Lime Vodka, Denmark
* Hangar One Kaffir Lime Vodka, USA
* Absolut Mandarin, Sweden
* Grey Goose L'Orange Vodka, France
* Vincent Van Gogh Oranje Vodka, Netherlands
* Zone Tangerine Vodka, Italy
* Wokka Sake (Vodka & Sake Infused with Asian Fruits), England
* Hampton's Banana Vodka, USA
* Zone Melon Vodka, Italy

White Fruit Flavors

* Citadelle Apple Vodka, France
* Fris Apple Vodka, Denmark
* Stolichnaya Persik (Peach) Vodka, Russia

Vanilla Flavored Vodkas

* Absolut Vanilla, Sweden
* Olifant Vanilla Vodka, Netherlands
* Skyy Vanilla Vodka, USA
* Smirnoff Vanilla Twist, USA
* Vincent Van Gogh Vanilla Vodka, Netherlands

Spice, Herb and Miscellaneous Flavors

* Absolut Pepper, Sweden
* Shaker's Rose Vodka, USA
* Skyy Spiced Vodka, USA

F.Tequila & Mezcal

Tequila is made by distilling the fermented juice of Agave plant in Mexico. It is the favourite alcoholic drink made up of Agave plant called tequiliana weber (blue variety), it resembles cactus. It must be bottled in the region from which the spirit is distilled. The Agave is not harvested before it is 10-12 years old. The sour juice after fermentation is called pulque. Which is distilled.

History

Tequila was first produced in the 16th century near the location of the city of **Tequila**, which was not officially established until 1666. A fermented beverage from the agave plant known as pulque was consumed in pre-Columbian central Mexico before European contact.

THE PROCESS

Tequilana plant is harvested when they are *8–10* years old. The spiky leaves of the agave are pulled out to get the heart of the fruit that closely resembles a huge pineapple It is called *piña*and weigThe following steps are involved in the production of tequila

2. The *agave* weighs approximately 35–70 kg.

3. The *piñas* are cooked ,cooled and crushed to extract the juice called *aguamie*l, either in the traditional stone wheel, or steel rollers.

3. The juice is transferred to vat and yeast is added to induce fermentation. Fermentation produces wash of 5–7 % alcohol

4. The wash is distilled twice in pot still. The first distillation produces *ordinario* which is about 20 % abv and the second distillation results in tequila of higher strength.

5. The tequila at this stage may be diluted and bottled as '*silver tequila*' or aged in oak casks. Aged tequila is then diluted to 40 % abv and bottled

Types of Tequila

There are basically two types of tequila.

Mixto (mixed) :Distilled from wash obtained from a minimum of 51 per cent of *agave tequilana sugar and* maximum of 49 per cent of other sugar.

100 per cent agave : This tequila has 100 per cent distillate from agave tequilana weber

.

STYLES OF TEQUILA

Blanco (silver): - it is the original style. It is clear with little or no aging. It is usually bottled immediately after distillation. Blanco can be 100% agave in mixto. It is used primarily for mixing.

Gold: - it is un-aged Blanco that has been coloured or flavoured with additives. The gold colour does not come typically from added caramel.

Reposado (Rested): - tequila is aged in wooden casks for a period of at least 2 months and no more than 11 months.

Aňeio (old): - aged in wooden barrels for legal minimal of one year.

Colour examples of tequila

BRAND NAMES

- Don Emilio
- Sauza
- José Cuervo
- Montezuma
- Olmeca

MYTHS ABOUT TEQUILA

1. Tequila and mezcal are made from a cactus.

WRONG. Cactus plants grow in the desert and are of a different genus than the agave. There is no known liquor obtained from the cactus.

2. The worm is part of the tequila or mezcal process.

This is a nice legend, but not true at all. The worm is placed in some mezcal bottles as a marketing gig. However the maguey grows worms that are a delicacy in Mexico fetching astronomical prices at luxury restaurants. The best known are “Gusanos de Maguey” and “Chinicuiles”. Tequila has medicinal properties. There is no scientific evidence about any medicinal properties of either the agave plant, mescal or tequila.

IMPORTANT TERMS

Adobe Ovens: Used to slow cook the aguamiel in small batches. Agave:

Member of the lily family, not a cactus as commonly thought.

Aguamiel: (honey water) The quartered steamed crushed, piña's and water mixture that is fermented and then distilled to make tequila.

Añejo: (aged) Gold tequila aged a minimum 1 YEAR by law which makes for a smooth savory flavor which should be enjoyed like a single malt scotch.

Autoclave: Industrial kilns used in the boiling stage to cook large amounts of aguamiel. Blue

Agave: The best member of agave family for fine tequila production.

Gold: Tequilas that are aged and or see wood. Tasting smooth, vibrant and herbaceous. Jimador:

Workers who tend the growing agave plants on a daily basis.

Mezcal: Beverage produced of less than 51% of extracted sugars used is blue agave.

Piña: (pineapple) heart of the agave plant

Reposado: (rested) Tequila aged 3 - 6 months in wood barrels which mellows the taste giving hints of vanilla, spice and pepper.

Silver: Tequila not influenced by wood or aging.

Tequila: Beverage produced of more than 51% blue agave and grown

Mezcal

History

400 years ago, when the Spanish conquerors arrived in Mexico, they taught distillation techniques to the native inhabitants and the first distilled spirit in the Americas was born: **Mezcal**. **Mezcal** can be made from 11 different types of agave that are native to Oaxaca, which is where these are mostly made

- Mezcal is produced from about 30 species of agave certified by the Mexican government
- To be classified as mezcal, the drink must come from any of the state-approved areas of production, which are Oaxaca, Durango, Guanajuato, Guerrero, San Louis Potosi, Tamaulipas, and Zacatecas. Oaxaca has the highest number of mezcal producers.

- Mezcal is very strong and has a smoky flavour. Worms that live in agave plant are hand-picked and added to mezcal while bottling, especially in the mezcal produced in the southern state of Oaxaca, Mexico **Brand names of Mezcal**

  Gusano Rojo Mezcal

  Monte Alban Miguel

  de la Mezcal.

DIFFERENCE BETWEEN TEQUILA AND MEZCAL

Tequila is distilled from agave tequiliana whereas mescal is distilled from about 30 certified varieties of agave Tequila is no bottled with worm while some mescal is bottled with worm.

Question & Answer

2 What is TequilalMezcal?

Tequila is a Mexican liquor distilled from the fermented juices obtained from the hearts of blue Agave plants grown in the Tequila Region. All liquors distilled from any Agave plant are "*Mezcal*", but only those made from the blue Agave are branded as Tequila, all the others are Mezcal. The liquor gets its name from the town of Tequila located in the state of Jalisco where production started more than 200 years ago.

3 How is it made?

The blue Agave (Agave azul tequilana weber) has long bluish green spiny leaves with sharp points and a large heart (called piña or pineapple) from which the juices are extracted and then distilled twice. One liter of distilled tequila requires between 6 and 8 kilos of Agave pulp

4 What are the types of Tequila?

The NOM standard of Mexico defines four types of tequila:

4.1 BlAnco (Silver)

This is the traditional tequila that is clear and transparent. It has the true bouquet and flavor of the blue Agave. It is usually strong and is traditionally enjoyed in a "*caballito*" (2 oz small glass).

4.2 Oro (Gold)

Is tequila Blanco mellowed by the addition of colorants and flavorings, caramel being the most common. It is the tequila of choice for frozen Margaritas.

4.3 Reposado (Rested)

It is Blanco that has been kept (or rested) in white oak casks or vats for more than two months and up to one year. The oak barrels give Reposado a mellowed taste, pleasing bouquet, and its pale color.

These tequilas have experienced exponential demand and high prices.

4.4 Añejo (Aged)

It is Blanco tequila aged in white oak casks for more than a year. The amber color and woody flavor are picked up from the oak, and develop the unique bouquet and taste. A 'Reserva' is an expensive and special *Añejo* that certain distillers keep in oak casks for up to 8 years.

A special note on '100% Agave'

Made in any of the above styles, these are the best tequilas produces from pure blue Agave juices.

5 How can we enjoy drinking Tequila?

Tequila is a fine and complex liquor and as such it must be sipped slowly. It should be served at room temperature; although some like it ice cold keeping a bottle in the freezer (alcohol does not freeze). Traditionally most people serve it in a "*caballito*", a 2 ounce glass made exclusively for this purpose.

The traditional "*caballito*" still is the favorite glass to enjoy *Blanco* and *Reposado*. *Añejo* is preferably served in a snifter so that its aroma is fully appreciated.

The tequila shot with salt on one hand and a bite of lime is Hollywood stuff and few people drink it that way, mostly tourists and non-Mexicans. However, some people do put some lime juice in the tequila or bite the lime before sipping it. In many restaurants throughout Mexico they bring you a small tray with your favorite brand, a *caballito* with tomato juice, salt and half a lime

1.4 Alcoholic Strength

Proof

Long before distillation became a science, the early distillers had a unique and entertaining method of testing alcoholic strength. They mixed equal quantities of spirit and gun powder and applied flame to it. If the mixture failed to ignite, the spirit was too weak; if it exploded or burned too brightly, it was too strong. If it burned evenly with a mild blue flame, it was "proved" suitable safe to drink. Hence the word **"proof"**.

In the year 1816, from the Board of Excise a person by name Mr. Sykes introduced a hydrometer. He determined that 100o was "proof" of pure alcohol.

A French chemist by the name Joseph Gay-Lussac invented a system that was much easier to understand. The Gay-Lussac or GL system concluded that 0o indicates no alcohol and 100o is pure alcohol. Thus, degree equals percentage.

Meanwhile Americans decided that proof spirit was the balance of spirit and water and that pure alcohol should be 200o. Each degree of proof equals one-half percent of alcohol by volume. So, in simple words, a spirit marketed at 90o proof would contain 45% of alcohol by volume

Proof Alcoholic Strength

. There have been traditionally three main scales used in measuring the alcoholic strength of the drinks. They are in the following.

1. The Sikes scale
2. The Gay–Lussac (GL) scale
3. The American scale:Range 0 degree to 200degree alcohol by volume
4. OIML Scale(European scale):Range 0% to 100% alcohol by volume

Conversion formula

A. To convert US proof to GL-US proof /2

B. To Convert US proof to Skies-175xUS proof/200

C. To Convert GL to US proof-GLx2

D. To Convert GL to Skies-175xGL/

E. To ConvertSkies to US proof-200xSikies/175

F. To Convert Sikies to GL-x Sikes/175

Now-a-days spirit bottles indicate both alcoholic content and proof with abv stated first and the proof in brackets

Example: 40% abv (80* proof)

Proof Alcoholic Strength

Alcoholic Drink	**Strengths in abv.**
De-alcoholized	0.05-0.5%
Low alcohol	0.5-1.2%
Cider	4-6%
Beer	3-6% some go upto 11%
Table wine	10-14%
Sparkling wine	10-14%
Fortified wine	16-24%
Aromatized wine	15.5-20%
Spirits	40%
Liqueurs	17-55%

1.5 Other Spirit

Pastis: Pastis is a generic name for aniseed or liquorice-flavoured aperitifs made in the style of absinthe but without high alcohol content or the woodworm flavouring. Most of these drinks are colourless, but they turn milky when water is added through the precipitation of the volatile oils. In other words the water brings the oils out of the solution into suspension. The amount of water added depends on personal preference but is usually between three and five parts of water to one part of pastis. These drinks are particularly popular in bordering countries of Mediterranean.

In France, they are also known as Pastis de Marseilles, with Ricard and Pernod being the most favoured brands. Other countries make their own styles – Spain makes Ojen, Greece makes ouzo and Mastikha, Turkey – Raki and

Italy – Anesone. The non-alcoholic brands are Balncard and Pacific made by Pernod Company.

Ouzo: Alcoholic drink of exclusively Greek origin. In earlier times, ouzo was prepared from the distillation taken from the liquid resulting from the fermentation of grape skins (common name in Greek: souma) by double distillation, with the addition of various aromatics.

Ouzo today is generally manufactured by mixing pure alcohol, water and anethol, with the addition sometimes of small quantities of other essential oils. The clouding of today's product is exclusively and solely to the separation of the anethol, which often, and commonly on the cold days of the year, is precipitated even without the addition of water in the form of very fine crystals, particularly in those products which have a relatively low alcohol content or are relatively rich in anethol. Thus, the harmfulness of ouzo is due solely to the quantity of alcohol in it, which usually ranges from 40 to 45%.

Aquavit(Akvavit) and Schnapps: Aquavit(Akvavit) is a spirit native to Scandinavian countries. It is distilled from grain or potatoes and flavoured with caraway, cumin, dill, fennel and bitter oranges. In Germany it is known as Schnapps ,schnap – the word means to grab or to snach.

Aquavit is served well chilled in a small glass taken straight from the freezer and is drunk in one gulp. Traditionally, aquavit or schnapps is served to accompany the Scandinavian smorgasbord as it cuts through the oiliness of the fish dish on the presentation. Popular brands are Aalborg (Denmark), Linie (Norway), O.P.Anderson (Sweden) and Bommerlünder (Germany). In Germany, hard drinkers always take schnapps before settling into a session of beer drinking. They claim its warms the stomach for the beer which follows.

Describe “Schnapps” in relation with liqueurs?

A. Schnapps, a German word, "is the generic term for all white (clear) brandies distilled from fermented fruits. Apparently, schnapps are different from liqueurs on two major fronts, they being both fermented

and distilled, whereas liqueurs are simply fruits steeped in an alcohol which has already been fermented and distilled. We will also hear the words *eau de vie* in the context of liqueurs, which is a French expression for an unsweetened fruit brandy, very similar in nature to Schnapps. It has come to be used to mean an unsweetened liqueur as well, probably because of the similarity of taste and texture

.**Note-Schnapps in germany is made by fermentation and distillation of fruits.similar to Eau-de-vie(Brandy) of France**

Arrack: Arrack is a raw spirit, a distillate of fermented palm tree sap to which rice and molasses is sometimes added. It is often also made from dates, rice, grape juice, sugar cane and milk. Although the distillation of arrack or arak is still disputed, it claims that it might have been made in India around 800 B.C.

Eau de vie: It is a French term for a colorless fruit brandy that is prepared via fermentation and double-distillation. A typical scenario would involve growing the appropriate fruit, harvesting when ripe, and fermenting the whole, crushed fruit prior to distillation. Unlike their cognac cousins, eau de vie are not typically aged in wooden casks, hence they remain clear. Instead, the young, ripe fruits or berries are fermented, distilled, and bottled rapidly to preserve the freshness and aroma of the parent fruit. While this is the general process for creating eau de vie, some variants exist and some distillers choose to age their products before bottling

1.6 LIQUEURS

To French any after-dinner drink is a liqueur brandy.**Liqueur is sweetened and flavoured spirit.** To the British, specifically a sweetish drink created from ready made spirit base into which is infused, macerated or redistilled flavoring agents such as roots, barks, flowers, fruits or seeds. The term Liqueur is also used in United States, though Americans more commonly call it cordial. In Britain, a cordial is flavored syrup with little or no alcoholic content.

LIQUEURS, the general term applied to perfumed or flavoured potable spirits, sweetened by the addition of sugar. The term "liqueur" is also used for certain wines and unsweetened spirits of very superior quality, or remarkable

for their bouquet, such as tokay or fine old brandy or whisky. The basis of all the "liqueurs" proper consists of (a) relatively strong alcohol or spirit, which must be as pure and neutral as possible; (*b*) sugar or syrup; and (*c*) flavouring matters.

Classification of Liqueurs

1. Proprietary liqueurs: Made by single distiller who has the exclusive rights to produce or sell that particular liqueur. E.g. Chartreuse, Bailey's Irish cream, etc.

2. Generic liqueurs: Type of liqueurs produced generally and has many proprietors. E.g. crème de cacao, crème de menthe, etc.

METHOD OF PREPARATION - Cold

Pressure: By applying mechanical presses the oil is extracted from the inngredients ,for examplle ,from citrus peel

Percolation: Process used in the manufacture of liqueurs, in which the spirit base, cold, hot or in vapor form is passed through the container filled with natural flavoring agents, which in this case maybe herbs. This process may have to repeat for weeks or months to achieve the desired level of extraction

Maceration: The steeping of fruit in alcohol in the production of liqueurs. This process may take as long as a year. Maceration refers to the steeping of the aromatic/flavoring agent which has usually been bruised in water or alcohol for a period of time in order to extract an essence from it. This essence, then, is added to the base as the flavoring agent.

Infusion: The infusion method for fruit liqueurs is generally done by placing both, fresh fruit and dry fruit in a cask containing brandy. The fruit steeps from 6-8 months during which time the brandy absorbs the color, aroma and taste of the selected fruit. Straining then draws off the brandy and sugar syrup is added. The fruit may still have some brandy in it, so it is distilled to extract the last drop of flavor and this too, is added to the mixture. It is sometimes aged for up to a year in a vat or crock.

METHOD OF PREPARATION - Hot

Distillation;The extracted essences or oils are steeped in the base spirit until it is well impregnated with the flavour,and then distilled under vaccum to protect the delicate essences

Compounding;Compounding is blending of ingredients in strict sequences to produce a desired flavour.

Maturing:Liqueurs must bbe allowed to rest .The finest liqueurs are matured in oak caska,which assist in mellowing the liquid

Sweetening and Colouring:Sweetening agennt is addes according to the style and sweetness required.Liqueurs are coloured to harmonize with the flavour

Fining:Any suspended matter in the liquid must be removed by fining.the process is similar to fining of wine.

Bottling:Spirit is added to liqueur to bring it to rhe correct alcohollic strength.All liqueurs are given a final filtration to ensure star bright clarity before bottling

BRANDS WITH PREDOMINANT NAMES:

Advocaat: Dutch egg-and-brandy liqueur. Mistaken for avocado drink. Occasionally flavored with

cinnamon. Flavors such as mocha and chocolate are available in Germany.

Amaretto (g): After-dinner liqueur with almond flavour made from Italy from apricot kernels. It is sometimes called Amaretto di Amore (p).

Anis: The term broadly used to cover all aniseed-flavored drinks. In Spain, where the local Absinthe replacement is known as Ojen (g), the term anis specifically means liqueur in syrup type.

Anisette: French name for a sweet, aniseed-flavored liqueur. The most famous producer is Marie Brizard.

Apricot Brandy (g): Products labeled as apricot brandy are made by the infusion of the fruit in a spirit base. Offered by most of the major distillers in Europe, it is not a brandy, it is a liqueur. A true apricot brandy is not based on anything, it is distilled from the fruit.

Apry (p): An apricot liqueur of excellent quality made by the French liqueur house Marie Brizard.

Aurum (p): An unusual golden-colored liqueur of herbs and fruit with a tang of orange peel, based on brandy, produced in Italy. The Aurum distillery company also produces other liqueurs. **B and B** (p): "Bénédictine and brandy" liqueur. Although Bénédictine is based on cognac, it is sometimes taken with brandy.

Bailey's Irish Cream (p): It is made in Dublin (Ireland). The manufacturers try to sell it especially during the time of Christmas. Bailey's is a blend of Irish whiskey and cream flavoured with cocoa, bottled at 17% ABV

Crème de banane (g): Bananas macerated in spirit or artificial flavoring is udes. An excellent banana liqueur is made from Canary Islands from local fruit. The bottle is shaped like a bunch of bananas.

Bénédictine (p): Sometimes described as the world's oldest liqueur because it was formulated in 1510. 27 herbs, plants and peels go into Bénédictine. It is extracted by steeping and maceration. Bénédictine is made by a secret formulae , production takes 3 years and 4 years of aging.

Crème de cassis (g): Blackcurrant liqueur from Dijon area in France Made by maceration of blackcurrant in spirit.

Crème de cacao (g): Chocolate liqueur produced in colorless and brown spirit sometimes flavored with vanilla. It is sometimes through a layer of cream.

Calvados (g): A specialty of Normandy, one of the world's finest of apple distillates. The finest calvados comes

from the appellation contrôlée region known as Pay d'Auge and is double

distilled in a pot still before being aged for atleast 1 year. **Chartreuse** (p): Of the most famous liqueurs, this is the most sophisticated. It has 130 herbs and spices which are infused, macerated and distilled, aged in cask, watched over by monks. It is the oldest liqueur which is produced by monks.

Chocolate Suisse (p): Sweet chocolate liqueur is made sometimes with additional flavoring of coffee, mint,

nuts or fruits. This confection even contains floating chocolate pieces.

Cointreau (p): one of the most popular branded liqueurs of all, Cointreau is a variety of curacao. This means it is a brandy based spirit that has been flavoured with the rind of bitter oranges. When it was launched in 1849 by the Cointreau brothers it was sold under the brand name "triple sec white curacao" but so many other proprietary curacaos began to be sold as triple sec that the family decided to give it their own name instead. The center of operations as well as a distillery are located in the French Town of Angers in the Loire valley, although Cointreau is also made in the Americas. A variety of different bottling is available at different strengths, including a cream version but the best loved Cointreau is one that comes in a square dark brown bottle. Despite its spirit strength Cointreau tastes deliciously mild. It has a powerful fume of fresh oranges. The oranges used are a blend of bitter green varieties from the Caribbean and sweeter types from the south of France.

Curaçao (g): First invented by the Dutch, curacao was a white rum based liqueur flavoured with the peel of bitter green oranges found by the settlers on the Caribbean island of the same name. despite its specific name the liqueur has never been subject to anything like appellation regulations. It is made by different companies in a number of countries where brandy is used as the starter spirit instead. Another name for it is triple sec. the most famous example being Cointreau the bitterness of the oranges which are green because they are not ripe and not because they ate some exotic variety balances the sweetness. It comes in a range of colours in addition to the clear version.

Drambuie (p): The most famous whisky liqueur flavored with honey.

Galliano (p): It was invented in 1869 by a Tuscan inventor. The recipe is a guarded secret but it is said to be based on 30 herbs, roots, berries and flowers. Among the flavours is the strong presence of anise and there is a scent of vanilla as well. Galliano is used increasingly in mixed drinks. It comes in a distinctively tall bottle that stands well on a cocktail bar.

Grand Marnier (p): Is another of the world's most popular orange flavoured liqueurs. The original product is a little younger than Cointreau but the style is different. The house that owns it was founded in 1827 and Louis Marnier first founded the liqueur in 1880. Grand Marnier is a highly refined, mellow, full strength spirit that has a warm amber colour and an intense scent of ripe oranges.

Kirsch (g): Based in brandy, it's the most famous fruit liqueur in France, Germany and Switzerland.

Kümmel (g): Liqueur made with caraway, cumin seeds, fennel seeds, orris and other herbs.

Maraschino (g): Cherry liqueur originating from Dalmatia.

Crème de Menthe: Sweet liqueur flavored with various types of mint. The green version looks more interesting though the "white" version is just the same. Used extensively in cocktails.

Parfait Amour (g): Flavored with flower petals and a sweet citrus base, more specifically orange, flower of cinnamon and peach stones.

Pastis (g): It's a liquorice tasting liqueur. Popular in Province.

Poire Williams or Williamine (g): Pear flavour with brandy. It has a fine orchard bouquet and the most fragrant bottle plantations is said to be in Switzerland.

Kahlúa: The only liqueur to have been founded in Mexico Kahlúa is dark brown coffee flavoured essence. It is compared to Tia Maria but it is slightly thicker in texture and less sweet than Tia Maria. It included spices like vanilla and nutmeg. The spirit base of the drink is white cane rum.

Prunelle: French name for sloe berry, which is made into an eau-de-vie and a liqueur in Alsace and the

Loire.

Crème de rose (g): delicate rose-petal liqueur made with vanilla and sometimes citrus oils.

Sambuca (g): Coffee flavored liqueur and prepared by extraction method.

Southern Comfort (p): One of the American liqueurs. In addition to the peach, it has a hint of oranges and herbs. It is dry and strong. Based on whisky.

Strega (p): Italian liqueur, sweet and spicy made from more than 70 herbs. Useful in cocktail.

Tia Maria (p): Jamaica's contribution to the world of liqueurs, Tia Maria has turned into one of the best loved products. It's a deep brown coffee flavoured drink based on a recipe around 3 centuries old. It is based on good, dark Jamaican rum of atleast 5 year old and flavoured with the beans of coffee variety – Blue Mountain. Local spices like vanilla are also added.

Crème de Vanille: The beans are occasionally used in mixed drinks; it's a smooth and rich

Additional Information

Liqueurs

1. What are liqueurs?

A. Liqueurs are the sweetened alcoholic drinks which are flavoured with a variety of ingredients thereby resulting in different colors and aromas.

2. What is the origin of the word "liqueur"?

Liqueur is derived from the Latin word 'liquerfarce' and it means to dissolve or melt.

3. What are cordials?

A. Cordial is derived from the Latin word, cor or cordis meaning "heart" because the earliest cordials were administrated to the sick people to stimulate and lighten the spirit.

4. What is the difference between liqueurs and cordials?

A. Generally, liqueurs are accepted by Europeans and cordials are accepted by Americans. They are generally used synonymously.

5. What is the difference between Liqueurs and Spirits?

A. There are so many differences between Liqueurs and Spirits that, it is difficult to specify precise differences. However, the general differences between liqueurs and spirits or liquors are:

* A Liqueur generally has a lower alcohol content

* A Liqueur is often sweetened with sugar, syrup or honey
* A Liqueur is usually infused with woods, fruits or flowers with sugar in either water or alcohol or distilled from aromatic, flavoring or coloring ingredients
* Flavors are dissolved to make a Liqueur - they can therefore be referred to as flavored spirits.

6. How do we make liqueurs?

6. Liqueurs can be made by any one of the following three methods:

- Maceration (Cold method) 2. Percolation (Cold method) 3. Distillation (Hot extraction method)

7. List the differences between maceration, percolation and distillation?

1. Maceration- Ingredients are allowed to steep (soak) directly into the spirit and left to extract sufficient aroma, flavor, colour to the spirit and can take as long as a year. The final product is known as *"Tincture"*.

2. Percolation- Spirits kept at the bottom of the tank are pumped and sprayed mechanically to the top of the tank where botanicals are kept in a container and the spirit drips back at the bottom thereby re- percolating over and over until the desired flavor, aroma and color is extracted.

3. Distillation- Fruits and botanicals can withstand heat and benefit from a quicker extraction o f flavor; so, ingredients are first softened by soaking in spirits for several days before being transferred to a pot still for further extraction of flavors and colors.

8.. What is the classification of liqueurs?

A.1. Proprietary liqueurs: Made by single distiller who has the exclusive rights to produce or sell that particular

liqueur. E.g. Chartreuse, Bailey's Irish cream, etc.

2. Generic liqueurs: Type of liqueurs produced generally and has many proprietors. E.g. crème de cacao, crème de menthe, etc.

9. What are the different ways liqueurs can be served?

A. Liqueurs are made in nearly every country and come in a variety of flavors and colors. This makes a liqueur an extremely versatile drink. A liqueur can be served in following best ways:-

A. Straight-up - Perfect as a post meal drinks; served at room temperature. B. On the rocks-liqueurs can be chilled and served over ice C. Frappes - served over crushed or shaved ice.

D. Longdrink - liqueur can be served as long drink with water, soda, fruit juices, etc. E. Incocktails - Liqueurs are widely used as mixers for various cocktails.

10. When are the best times to serve liqueurs?

A. Liqueurs are known for their digestif properties, hence the best time to serve it is post meal, specifically after dinner. Moreover, owing to it's high sugar content it is consumed with or after desserts. Lastly,they can be also enjoyed with cigars since they contain many different aromatic botanicals.

11. How to storeliqueurs?

A. There is no need to refrigerate liqueurs either before or after opening, because of their alcohol and sugar levels. They have a very long shelf life and it does not get affected with the fluctuations in humidity. Moreover, it is advisable to keep them out of sunlight because rays could cause a slight change in color.

1.7 Apertifs & Bitter

The word aperitif originated from the latin work "aperitivers" which means to open up. It is a beverage served at the begining of meal to enhance appetite.

In our context it is to open up the appetite for the future course to come. Although hanger is the best appetizer, there are quite a number of alcoholic beverages that can be taken to stimulate the appetite. The dry fortified wines are some of the most commonly used aperitifs. Apart from the fortified wines, the most commonly used wine based aperitifs are:

1. Vermouth – aromatized fortified wine
2. Dubonnet
3. Lillet
4. Cap Corse
5. Byrrh
6. Pince de Chanante
7. Ratafia

Vermouth

The most popular of all wine based aperitifs are vermouth. Vermouth is German in origin.Vermouth is an aromatized wine which is fortified. The base wine is quite ordinary steeped in neutral alcohol till the correct degree of flavouring has been extracted in the alcohol. This may take place in seven days. The flavoured alcohol is then added to the wine and mistelle mixture. The entire lot is then thoroughly blended in huge tanks. There are mechanical devices present in the tank which thoroughly agitate and raise the mixture.
Some amount of cinnamon is added for depth an some amount of gelatin is added for clarity. The wine may be refrigerated to ensure that any tartrate remaining will form into crystals and fall to the bottom of the tanks. Then the wine is bottled. Vermouth does not mature in the bottle and should be drunk ;young and crisp.

Types of Vermouth:

Basically there are two types of vermouth, the sweet red variety and the dry white variety. The sweet variety has 130-160 gms of sugar per litre of vermouth and dry white variety has less than 40 gms of sugar per every litre of vermouth. Brand Names of Vermouth.

Cinzano(Italy): The house of Cinzino was first established by Carlo Steefano and his brother Giovanni Cinzano in 1757. Cinzano produces a dry white, a sweet red, a sweet white and a special called Antica.

NoillyPrat(France); Thehouseof Noilly Pratwas established when Claudius Prat joined hands with Louis Noilly in 1843. Both red and white varieties are produced.

St. Raphael(France) The houseof St Raphael was established in 1880 by a young Frenchman Dr. Pierre Juppet. Both red and gold varieties are produced mixed. With equal part of orange juice, it makes an excellent drink

Punt – E – Mcs (Italy) This Italian vermouth is from the Carpano family of Italy. Punt – EMcs history begins in 1786, in Pizza Catello in Turin where Antonio Benedetto Carpano, a well respected Bar and Restaurant owner who used to make his vermouth to fit the individual preference of the customer.

Some other Branhds of vermouth are – Martini and Rossi, Stock, Cora, Barbini,

Ricadonna, Boissiere, Duval

Dubonnet (France) 18% Alcohol first fermented by Joseph Duibonnet in 1846 in chambery of France. The red and white varieties of Dubonnet have a semi dry taste and fulol bodied flavour. Dubonnet was first introduced into California under the French Licence. It is best when served chilled from the refrigerated or poured over ice with a twist of lemon.

Byrrh: A proprietary Mistelle based aperitif which has a ruby red colour. Byrrh is best when served with soda over ice.

Lillet: This term was founded by Paul and Raymond Lillet, in 1872 in a small town of Poderrac near Bordeaux. Lillet both red and white is dry and full bodied. It is best served chilled from a refrigerator or on the rocks with a twist of lime or a slice of orangeor with a splash of soda.

Panache: Produced in California by Domain Chandon. It has an alcoholic strength of 18%. Penache is a Pinot Noir wine based aperitif. It is made by adding the must of Pinot Noir with Neutral spirit before the must starts to ferment. It is not aged in wood to retain the brightened colour and freshier flavour. This is best consumed either chilled from the refrigerator or over ice with a twist of lime.

Ratafia (France): it is exactly like a Panache but aged in wooden cask for one year which gives an oxidized taste and colour to the final product. US Federal regulation prohibits the use of the word Ratafia. Hence Domain Chandon calls it Ratafia as Panache.

Rosao Artico (Italian) : A concoction of wines from lake Garda I(Italy), blended with aromatic herbs. First produced in 1850. It is is brownish red coloured aperitif. Rosao Artico is best served chilled from the refrigerator with lemon or orange peel and a splash of soda.

Serving and Storing Aperitifs:

Aperitifs can be served either at room temperature or chilled from the refrigerator. (It is the best way) or with plenty of fresh ice. The shelf life of the aperitifs opened and un- refrigerated is not more than three weeks. Therefore, opened bottles are refrigerated and should be consumed within six weeks.

BITTERS

The term bitter refers to any spirit which is flavoured with bitter herbs or roots, which generally have medicinal properties

Generally spirits (and sometimes wine), flavoured and made bitter to serve as an aperitif or for flavouring cocktails.

POPULAR VARIETIES

- **AMER PICON** :

BLACK FRENCH BITTER.GRENADINE OR CASSIS IS USED TO MAKE IT MORE ACCEPTABLE

- **ANGOUSTRA BITTERS :**

– MOST FAMOUS

– RUM BASED – BRIGHT RED COLOURED

– GENETIAN ROOTS FLAVOURED

– INVENTED BY Dr. SEIGART

– FROM BOLIVAR

- **BYRRH :**

MADE IN FRANCE NEAR SPAIN.BASE OF RED WINE, QUININE FLAVOURED AND HERBS AND FORTIFIED WITH BRANDY.

- **CAMPARI :**

– ITALIAN APERITIF. FLAVOUR OF ORANGE(CHINOTTO) PEEL AND OTHER HERBS.

– DARK RED COLOURED

- **FERNET BRANCA :**

– ITALIAN ORIGIN

– PRIZED AS A HANGOVER CURE

- **UNDER BERG :**

– GERMAN BITTER

– SOLD IN MINIATURE BOTTLES (20ML) **OTHERS**

- AMORA MONTENEGRO
- RADIUS
- UNICUM
- ABBOTS
- PEYCHAUDS
- BOONE KAMP

SERVICE

- Served in liqueur glasses at room temperature before a meal.
- Mixed with soda or water and ice.
- In cocktails (pink gin) or in coffee. · As stomach reviver and anti-hangover.

Glossary

Menu terminologies.

Acidity-It is the level of acid in substances such as water, soil, or wine.

Aldeyhyde-It is an organic compound containing the group —CHO, formed by the oxidation of alcohols. Typical aldehydes include methanal (formaldehyde) and ethanal (acetaldehyde).

Ampelography-The science of description and identification of grapevine cultivars from the genus Vitis

Baume- being, calibrated in accordance with, or according to either of two arbitrary hydrometer scales for liquids lighter than water or for liquids heavier than water that indicate specific gravity in degrees.

Blanc de blancs-White wine from white grapes

Blanc de Noirs -"white wine from red grapes

Blush wine-A pale pink **wine** resembling white **wine** in taste, made from red grapes by removing the skins

Bodega-A wine shop or wine cellar.

Botrytis cinerea - **Botrytis cinerea** is derived from the Latin for "grapes like ashes"; although poetic, the "grapes" refers to the bunching of the fungal spores on their conidiophores, and "ashes" just refers to the greyish colour of the spores en masse.

Cap-a protective lid or cover for an object such as a bottle

Cask-a large container like a barrel, made of wood, metal or plastic and used for storing liquids, typically alcoholic drinks.

Centrifugation-**Centrifugation** is the process where a mixture is separated through spinning.

Chambrer-Spanish word which means bring to room temperature

Chaptalization - The correction or improvement of must by the addition of calcium carbonate to neutralize acid, or of sugar to increase alcoholic strength.

Cork-A bottle stopper.

Cotes-Côte (with accent) **means** coast and is used to describe some winemaking regions and estates throughout **France**.

Cuvaison-French term for fermentation

Cuve close-Tank Method is a name for a sparkling wine making process.

Cuvee-French term means Vat or Tank

Decanter- stoppered glass container into which wine or spirit is decanted

Decanting-gradually pouring (wine, port, or another liquid) from one container into another, typically in order to separate out sediment.

Degorgement-Disgorgement is the process of taking these dead lees or sediment out of the bottle,

Eau-de-vie-French term for Brandy

Estufagem-**Estufagem** is the process by which Madeira wine goes through its final aging process

Ellipsoideus - Species of polypore fungus in the family Hymenochaetaceae, a specimen of which produced the largest fungal fruit body ever recorded.

Eiswein-wine made from ripe grapes picked while covered with frost **Fining**-The

process of clarifying wine or beer.

Gyropalette-A **gyropalette** is a piece of equipment used in theproduction of sparkling wine, such as Champagne, made by the traditional method, where the second fermentation takes place in the bottle..... A **gyropalette** performs the same task automatically on many bottles at the same time, and in a shorter period of time

Lees-Sediment of wine in the barrel(especially dead yeast)

Malolactic fermentation- is a process in winemaking in which tart-tasting malic acid, naturally present in grape must, is converted to softer-tasting lactic acid

Must-Must (from the Latin vinum mustum, "young wine") is freshly crushed fruit juice

(usually grape juice) that contains the skins, seeds, and stems of the fruit

Mulled wine-Mulled wine, also known as spiced wine, is a beverage usually made with red wine along with various mulling spices and sometimes raisins. It is served hot or war

Negociant-French (neg►sjA a wine merchant or wholesaler; speciiically, one who buys grapes, grape juice, or partially fermented or iinished wine from others and sells the wine produced under his or her own name.

Oechsle-**Oechsle** is the name for the scale used in Germany to measure the amount of sugar and other solid particulates in grape juice

Oenology-The study of wines

Oenophile-A connoisseur of wines.

Organic wines-**Organic wine** is **wine** made from grapes grown in accordance with principles of **organic** farming, which typically excludes the use of artificial chemical fertilizers, pesticides, fungicides and herbicides

Pasteur Louis-A scientist who invented tthe process of Pasteurization

Petillant- slightly sparkling

Photosynthesis-The process by which green plants and some other organisms use sunlight to synthesize nutrients from carbon dioxide and water.

Punt-A punt, also known as a kick-up, is the dimple at the bottom of a wine bottle. It increases the strength of the bottle, allowing it to hold the high pressure of sparkling wine/champagne.

Racking- It is the process of moving wine or beer from one container to another using gravity rather than a pump,

Refractomete-An instrument for measuring a refractive index

Residual sugar-Residual Sugar is the sugar that remains in a wine after fermentation completes.

Rince cochon-Rince Cochon was a French lager that was originally brewed by the Annoeullin brewery, then was taken to Belgium and brewed, firstly, by the Huyghe Brewery, but now brewed by the Haacht Brewery in Flanders.

Saccharometer-An hydrometer for estimating the sugar content of a solution.

Saccharomyces-Saccharomyces is a genus of fungi that includes many species of yeasts

Sommelier-Wine waiter **Tastevin**-a small, shallow silver cup for tasting

wines, of a type used in France.

Tears-The phenomenon called **tears** of **wine** is manifested as a ring of clear liquid, near the top of a glass of **wine**, from which droplets continuously form and drop back into the **wine**

Tannin-A yellowish or brownish bitter-tasting organic substance present in some galls, barks, and other plant tissues, consisting of derivatives of gallic acid.

Vendange-in France) the grape harvest.

Vinification-The conversion of grape juice or other vegetable extract into wine by fermentation.

Vintage wine- wine vintage is the year in which the grapes were harvested. A **wine's vintage** can greatly affect the taste and quality, primarily because of the weather that affects the vines throughout the growing season

Viscosity-The state of being thick, sticky, and semi-fluid in consistency, due to internal friction.

Vitis vinifera-**Vitis vinifera**, the common grape vine, is a species of Vitis, native to the Mediterranean region,

Yeast -A microscopic fungus consisting of single oval cells that reproduce by budding, and capable of converting sugar into alcohol and carbon dioxide.

Yeast autolysis- Self destruction

Brands/Shippers

Whisky	***Scotland***	***Ireland***	***U.S***	***Canada***
India	**Single malt**	**Single malt**	**Bourbon**	Canadian Club
Macdowels	Glenfiddich	Bushmills	Old Forester	Crown Royal
Teachers	Glenlivet	Greenore	Old Crow	Forty Creek
Amrut	Bowmore	Locke's	Old grand dad	Gibson Finest
Royal challenge	jura	Tyrconnnell	Jacob well	Seagrams VO
Japan	**Blended**	**Blended**	**Tennesse**	
Nikka	Johnnie walker Red	Jameson	Jack Daniel	
Suntory	Johnniwalker Black	Bushmills	George Dickel	
Yamazaki	Johnnie walker Blue	Paddy	Pritchard's	
	Dewars	Kilbeggan	**Tennesee(Corn)**	
	Grants	Millars	Georgia	
	Cutty Sark	Black bush	Mellow corn	
	Famous Grouse	Powers	Dixie Dew	

	Single Grain	**Single Grain**	**Tennesee(Rye)**	
	Cameron Brig	Greenore	Jim Beam	
			Wild Turkey	
			Copper Fox	

Brandy	**Gin**	**Rum**	**Vodka**	**Vodka**
Cognac		**Dark Rum**	**Poland**	**England**
Hennessey	Tanqueray	Captain Morgan	Belvedere	Smirnoff
Camus	Gilbeys	Myers	Wyborowa	**Flavoured**
Bisquit	Booth	Lamb Navy	Chopin	Absolut Citron
Remy Martin	Beefeaters	Mount Gay	USA	Absolut Mandarin
Otard	Seagrams		Skyy	Absolut Citrus
Martell	Gordons	**White Rum**	**Russia**	Absolut peppar
Armagnac	**India**	Bacardi	Muskovskaya	Absolut vanilla
Janneau	Blue Ribbon	Ron Rico	Stolichnaya	Skyy Citrus
Chabot		10 Cane	**Ireland**	Skyyy Orange
Samalens		**India**	Saratof	
Laubade		Old Monk	Boru	
India			**France**	**India**
Doctors			Coroc	Fuel
Honey bee			Grey Goose	Romanov
			Sweden	
			Absolut	

			Svedka	

Tequila	**Port wine**	**Malaga wine**	**French wine**	**French wine**
Agavero	Croft	Larious	**Bordeaux(red)**	Burgundy(red)
Sauza	Terry	Jorge Ordonez	Ch.Lafite	Charmes-chambertin
paritada	Osborne	Manischewitz	Ch.Latour	Musigny
Chinaco	sandeman	**Dry Vermouth**	Ch.Margaux	La tache
patron	Lustau	Torella	Ch.Haut -Brion	Clos de vouget
Jose cuero		Martini	**Bordeaux(white**)	**Burgundy(white)**
Mezcal	**Madeira wine**	Cinzano	Ch.Bouscaut	Clos-des-mouches
Monte Alban	Balndy's	**Sweet Vermouth**	Ch.carbonnieux	Charmes
Gusano rojo	Leacock	Cinzano red	Ch.Oliver	Ruchottes
	Lomelino	Cinzano Bianco	Ch.Couhins	Morgeot
	Ferraz	Martini rose	**Champagne**	**Rhone(red)**
	Henriques	**Bitters**	Ayala	Cote Rotie
	Marasala wine	Angostura	Bollinger	Saint joseph
	Florio	campari	Lanson	Triscatin
	Ballor	cynar	Mercier	**Rhone(White)**
	Taylor	underberg	Krug	Condrieu
	Ingham	Suze		Chateau grillet
				St Peray

Italian Wine(white)	**Germany (white)**	**Indian wine**	**Portugal(red)**	**US(White)**
Pinot Grigo delle venezie vertiere ,Venoto	Piesporter michelsberg,Langenbach	Sula red	Luis pato	Screaning eagle
Frascati superior san Marco,Lazio	Nierstein gutes domtal,Langenbach	Sula white	Caves Alianaca	Chardonnay Badger Mountain
Gavi		Grover red	Sogrape	**US(Red)**
prosecco	Weingut Bernhard Huber 'Alte Reben' Spätburgunder 2014, Baden	Grover white	**Portugal(white)**	Merlot paradise point
Italian Wine(Red))	UgustKesseler Spätburgunder 2014, Rheingau.		Casa dos cunhas	Cabernet sauvignon Hahn estaates
Valpolicella	erd Anselmann Dornfelder 2015, lz.		Caves Alianca	
Chianti Classico,Tuscany				
Merlot del piave				

The volume of research to prepare this guide is sourced as follows:-

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