

EL CENTRO COLLEGE
Food and Hospitality Services Institute

RSTO 1319 Enology and Viticulture – Spring 2004

(2) CLASS NOTES: Fermentation/Distillation

- There are three types of Alcoholic Beverages:
 - (a) Fermented beverages: Beers and wines fermented from agricultural products such as fruits and grains.
 - (b) Distilled sprits or just Spirits: produced by the distillation of fermented liquids.
 - (c) Compounded beverages: produced by combining either fermented or distilled products with herbs/spices/flowers etc.
- Definition: **Alcohol**=A volatile, colorless liquid with an ethereal odor, obtained through the fermentation of a liquid containing sugar or from agricultural products containing starch converted into sugar.
- Definition: **Fermentation**=A totally natural process that does not require man's participation. As grapes are crushed, yeasts-tiny one cell organisms that exist naturally on the skin of the mature grape-come into contact with the sugar in the grape's juice and gradually convert that sugar into alcohol. Yeasts also produce carbon dioxide, which evaporates into the air. Heat is the third by product. The yeast no longer exists, the sugar of the juice is now alcohol. Here is a short formula to remember:

Fruit(grape/sugar) + Yeast? Fermentation= Alcohol + Carbon Dioxide and Heat

- **Beers are made from fermented grains**
- **Wines are made from fermented fruits-primarily Grapes**

- **Distilled spirits are made from fermented beverages.** Thus, distillation must be preceded by fermentation.
- Definition: **Distillation**= The fermented liquid is heated in an enclosed container called the **still**, to a temperature of at least 173°F. At this point the alcohol in the liquid changes into gas which rises. Most of the water of the liquid remains behind-remember that water vaporizes at 212°F. This gas is channeled off and cooled and is converted back into a liquid-which is a distilled spirit or just **spirit**.
- **What is a beer?** An alcoholic beverage fermented from cereals, usually barley, first converted into **malt**, and flavored with **hops**.
- Beer production requires four basic ingredients:
 (a) Water (b) Grains (c) Yeast (d) Hops
 Because 90% of most beer is water, its source is a major concern to brewers.
- All beers are malt beverages and vary in alcoholic content from 4.5% alcohol by volume to as high as 10-12% . Beers do not mature once fermentation has been completed.

Two broad beer categories:

(a) Lager Beer: fermented at cooler temperatures and it is bottom fermented.

Examples: Pilsners, Light Beers, Malt Liquors, Bock Beers, Wheat Beers.

(b) Ale Beer: fermented at warmer temperatures(60-70°F and it is top fermented).

Examples: Pale ales, Porters, Stouts, Seasonal ales, Wheat Beers

And there is a third smaller category: Hybrid Beers, which are made with wheat and barley.

Examples: Wheat beers, Lambics, Blonde Beers

A unique beer: **Steam Beer**. A beer that is bottom fermented just like lager, but at ale yeast temperatures, which gives it the crispiness of lager and the fullness of ale.

- **What is Wine?** The naturally fermented juice from ripe fruits- mostly grapes. Prior to being fermented the grape juice is known as **must**. The US Government definition requires the fruit name to be part of the label-except for grapes. Example: apple wine, pear wine etc.
- **Wine classifications:** There are red wines and white wines.
 - (a) Table or still wines, either white or red with alcohol content from 8% to 14% by volume. The blush/rose wines are considered a category of red wines.
 - (b) Sparkling wines, Champagnes, Asti Spumante, Sekt, Cava, Prescco. Alcohol content similar to still wines-8% to 14%.
 - (c) Fortified/Dessert wines, Sherry, Porto, Madeira, Marsalla. Alcohol content is more than 14% but not more than 24% by volume. These have neutral brandy added to them.
 - (d) Aromatized wines, Vermouths, Dubonet, Billet and others with alcohol content from 15.5% to 20%. These are fortified wines to which herbs, roots, flowers, barks, etc. have been steeped in order to change the natural flavor of the original wine
- **What is a Spirit?** A potable alcoholic beverage obtained from the distillation of a liquid containing alcohol. As alcohol is separated from the fermented liquid certain other flavors remain with the alcohol. These are known as ‘congeners’ and give the spirits their distinct characteristics. Aging spirits and the containers in which they are aged give additional unique characteristics to distilled spirits

- **Proof** refers to a spirit's alcoholic strength. In the USA it is expressed as twice the alcoholic strength by volume.
Example: Most whiskies are bottled at 40-43% alcohol by volume and are labeled at 80-86°Proof.
Neutral spirits produced at 97% by volume are labeled 194°Proof.
- **Spirits Classified:**
 - (a) Brandies are distilled wines and the name means “burnt wine’ in Dutch. Cognac, is the most famous of brandies. We have both domestic and imported brandies. Brandy was perhaps the first product to be distilled in Western Europe. All brandies are bottled at 80°Proof or higher. Brandies made from fruits other than grapes must have the name of the fruit on the label.
 - (b) Whiskies, distilled spirits bottled at 80°Proof or higher and we have Bourbons, Scotches, Ryes, Canadian, Irish, blends, etc
 - (c) Gins, must be bottled at 80°Proof or higher and we have English, Dutch and American gins.
 - (d) Vodka, must be bottled at 80°Proof or higher, and we have Unflavored, flavored, slightly flavored vodkas
 - (e) Tequila, must be bottled at 80°Proof or higher and it is a unique product of Mexico
 - (f) Liqueurs/Cordials, are distilled spirits flavored or redistilled with fruits, spices, or other natural flavorings and sweetened with at least 2.5%(volume) or more with sugar or sugar cane by products. Their alcohol content is 18% to 20% by volume
 - (g) Cider, is a fermented product from apples with a 5% to 14% alcohol content by volume.
 - (h) Bitters, are spirits flavored with herbs with as many as 30 herbs and spices. These are unsweetened liqueurs whose alcoholic content varies from 48°Proof to 78°Proof.
- Spirits mature in porous containers such as wood casks/barrels. As soon as spirits are placed in glass containers such as bottles, with airtight closures, the aging process stops.

GRAPE VARIETIES

<i>Grape</i>	<i>Color</i>	<i>Body</i>	<i>Sweetness</i>	<i>Flavor Intensity</i>	<i>Region/Country of Use</i>
Barbera	red	medium to full	dry	medium to intense	California, Italy
Cabernet Sauvignon	red	medium to full	dry	medium to full	California, Bordeaux, Australia
Chardonnay	white	medium to full	dry	medium to full	California, Burgundy, Chablis, Champagne, Italy, Spain, Bulgaria, Australia, New Zealand
Chenin Blanc	white	medium	slightly sweet	medium	California, Loire
Gamay	red	light to medium	dry	delicate	Beaujolais
Gewürztraminer	white	medium	dry	spicy, full	California, Alsace, Australia, New Zealand
Grenache	red	light to medium	dry	light to medium	California, Rhône, Spain, Australia
Merlot	red	light to medium	dry	soft, delicate	California, Italy, Bordeaux
Müller-Thurgau	white	soft to medium	sweet	mild to medium	Germany
Muscat	black or white		medium to sweet	medium to full	Italy, Alsace, Bulgaria
Nebbiolo	red	full	dry	intense	Italy
Pinot Blanc	white	light to medium	dry	light	California, Italy, Alsace, Champagne
Pinot Noir	red	medium to full	dry	medium to full	California, Burgundy, Oregon, Champagne, Australia
Riesling	white	light to medium	slightly sweet	delicate	Germany, Alsace, Australia, California, Washington, Oregon
Sangiovese	red	medium to full	dry	medium to full	Italy
Sauvignon Blanc	white	medium	dry	medium	California, Bordeaux, Loire, Chile
Sémillon	white	light to medium	dry	medium	California, Bordeaux
Silvaner	white	light	dry	light	Alsace, Germany
Syrah, Shiraz	red	medium to full	dry	intense	Rhône, Australia
Trebbiano	white	light to medium	dry	light to medium	Italy
Zinfandel	red	medium to full	dry	medium to intense	California

THE WINE BUYER'S TOOLBOX

Don't worry if you don't know what any of these words mean, and by all means don't try to memorize this list. In Chapters 1, 2, and 3, we'll be doing the tastings that will stock your toolbox with the following terms. Once you know this basic terminology (and you will), you can confidently select and buy wines that you'll enjoy.

Body Styles

- Light-bodied
- Medium-bodied
- Full-bodied

The Big Six Grapes

- Riesling
- Sauvignon Blanc
- Chardonnay
- Pinot Noir
- Merlot
- Cabernet Sauvignon

Flavor Words

- Dry
- Crisp
- Oaky
- Tannic