

# KIT WINEMAKING

## The Illustrated Beginner's Guide to Making Wine from Concentrate



DANIEL PAMBIANCHI



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All products and additives referenced in this book have applications in winemaking and are considered safe. Manufacturers' instructions provided with kits or other products should be used as specified.

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# Preface



Congratulations!

You have decided to start making your own wine at home ... from a kit—basically concentrate or a blend of concentrate and grape juice packaged in a box with all the necessary additives to make wine. Whether it is out of pleasure of crafting your own wine or to consistently replicate your favorite style and at a low cost, making wine at home is easy. And your wine will definitely impress your friends and family, many who will not believe that the wine is from a kit; indeed, the quality of wine kits has improved in leaps and bounds over the last decade. Wine judges at amateur competitions are repeatedly impressed by the increasing quality of homemade kit wines, often indistinguishable from their fresh juice or grape counterparts.

If you ever doubted the ability to make great wine from kits while investing little time and equipment, there is no better time to jump on the kit-winemaking bandwagon. Statistical data show that not only is wine consumption on the rise, increasing at a faster pace than other alcoholic drinks, but also that the number of home winemakers is ever increasing. And with the plethora of wine kits and styles now available, all indications are that this has become a very serious hobby.

If you have never made wine and are not familiar with what is involved but you want to start slow and easy, this book is for you—it is for the true beginner. It is intended to supplement the instructions provided with kits. Detailed, step-by-step instructions and illustrations will lead you through the process of making great wines at home and answer questions that may come up but which are not addressed in the manufacturers' instruction sheet. And if you run into problems, rest assured, we will also help you fix those.

Specifically:

Chapter 1 provides an overview of winemaking concepts and an introduction to the important terminology, and why you should make wine from a kit.

Chapter 2 describes the different kinds of wine kits to shed light on the differences in quality between, for example, a four- and an eight-week kit. It also provides an overview of what you will find in a kit and what kind of wine styles you can expect to make from it.

Chapter 3 lists and explains the use of all the necessary equipment you need to make your first batch of wine from a kit.

Chapter 4 provides day-by-day, step-by-step instructions on making your first batch of wine from a kit.

Chapter 5 lists common problems often encountered by new and sometimes also seasoned winemakers, and gives instructions on how to avoid or correct such problems.

Chapter 6 discusses important advanced topics, such as sulfite management, cold stabilization and blending, to help you transition to the next level of winemaking.

A handy glossary is available at the back of this book to help you become a knowledgeable winemaker.

When you do make the leap to bigger winemaking projects, particularly if you decide to tackle winemaking from grapes, please refer to my other publication, *Techniques in Home Winemaking: The Comprehensive Guide to Making Château-Style Wines* (Montréal: Véhicule Press, 2008).

Daniel Pambianchi, April 2009

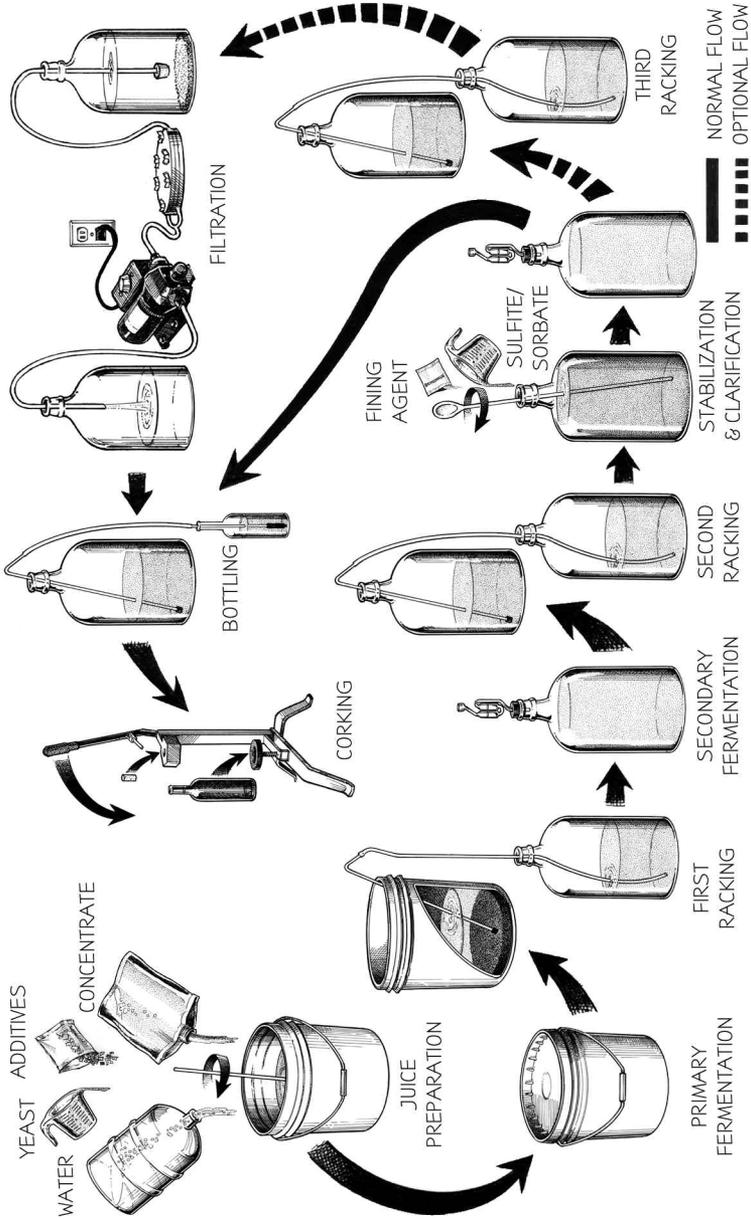


Figure 1.2. Kit winemaking process flowchart

# Glossary



**aging:** The practice of letting wine age, in bulk or in bottles, to allow it to develop its character, structure and to increase its complexity; also known as *maturation* or *cellaring*.

**air lock:** A device mounted on a bung that allows fermentation gas to escape from a carboy without letting air in; also known as a *fermentation lock*.

**alcoholic fermentation:** The chemical process of converting sugar in must into alcohol under the action of yeast with carbon dioxide (CO<sub>2</sub>) gas as a by-product of this process.

**amelioration:** A method of reducing acidity by adding water to wine.

**bench trials:** Tests carried out on small volumes of wine to determine the effects of adding an ingredient, such as sugar or a fining agent, at various, pre-determined rates. Once the desired result is achieved, the ingredient is added at the determined rate of addition to the whole batch of wine.

**bentonite:** A natural absorptive type of clay that binds to and precipitates suspended particles.

**blending:** The practice of mixing different batches of wine to achieve a desired style, to improve balance in color, taste, aromas, flavors and mouthfeel, or to “correct” a wine fault.

**blush:** The American word for *rosé* wine.

**bottle shock:** A condition that may alter—if only for a short period of time—the character of a wine immediately following filtration and bottling operations as a result of extensive handling.

**bottling:** The final winemaking operation when wine is transferred from bulk containers to bottles for further aging or for drinking.

**Brix (°B):** An absolute measure of the density of sugar in juice or wine where 1°B represents 1 g of sugar in 100 g of solution, or 1% wt/wt.

**bubbly:** Another term for *sparkling wine*.

**bung:** A silicone or rubber stopper used on carboys, and equipped with a fermentation lock to allow fermentation gas to escape without letting air in.

**Campden tablets:** Sulfite-containing tablets for dissolving in water to prepare a sulfite solution for sanitizing equipment or for adding to wine as a stabilizing agent.

**carbon dioxide (CO<sub>2</sub>):** A gas; a by-product of alcoholic fermentation.

**carboy:** A glass container used for making wine; usually 23 L (6 gal) in volume.

**cellaring:** The practice of letting wine age, in bulk or in bottles, to allow it to develop its character and structure, and to increase its complexity; also known as *aging* or *maturation*.

**champagne:** Sparkling wine produced strictly in the Champagne region



of France using the traditional method—that is, a second alcoholic fermentation occurs in the bottle to trap the gas—but also commonly (though legally not correct) used for referring to any sparkling wine produced in this method.

**chaptalization:** The practice of adding fermentable sugar to juice to increase the potential alcohol level of wine, or adding sugar or other sweetening agents to a finished wine to increase sweetness.

**Charmat:** A method for making sparkling wines by carrying out a second alcoholic fermentation in bulk in tanks; also known as *cuve close* method.

**chitosan:** A shellfish-derived fining agent used in conjunction with kieselsol.

**clarification:** The process of removing particles still in suspension that affect clarity and limpidity in wine. Racking, fining and filtration are specific clarification processes.

**CO<sub>2</sub>:** Chemical formula for *carbon dioxide*, a gas by-product of alcoholic fermentation.

**cold stabilization:** The process of ensuring that wine does not throw crystals, or *tartrates*, when subjected to cold temperatures; also known as *tartrate stabilization*.

**concentrate:** The term used for referring to concentrated juice or a blend of concentrated juice and grape juice.

**conditioner:** Liquid-invert sugar with, most often, a yeast inhibitor, such as potassium sorbate and sulfite, used for sweetening wine.

**counterfining:** The practice of adding a fining agent, such as bentonite, before fermentation, to help wine clarify in the later stages of wine-making.

***cuve close:*** A method for making sparkling wines by carrying out a second alcoholic fermentation in bulk in tanks; also known as *Charmat* method.

**cuvée:** A batch of wine.

**DAP:** Abbreviation for *diammonium phosphate*.

**diammonium phosphate (DAP):** Yeast nutrients for boosting the yeast's fermentation ability, thereby reducing the risk of a stuck or sluggish fermentation.

**disulfides:** Foul-smelling compounds that cause wine to spoil.

**dry:** A wine style that has almost no residual sugar and no perceptible sweetness; cf. *off-dry*, *medium-dry*, *medium-sweet* and *sweet*.

**enzymes:** Proteins that break down pectin, which occur naturally in wine but are often the cause of cloudiness.

**ethanol:** The type of alcohol produced when sugar in grape juice is fermented.

**fermentation:** In winemaking, it refers to *yeast* or *alcoholic fermentation*, the chemical process whereby yeast converts sugar in must into alcohol with carbon dioxide (CO<sub>2</sub>) gas as a by-product; it can also refer to *malolactic fermentation*.

**fermentation lock:** A device mounted on a bung that allows fermentation gas to escape from a carboy without letting air in; also known as an *air lock*.

**fermenter:** Any container, such as a pail, carboy, or oak barrel, which is used for fermenting juice into wine.

**filtration:** The process of passing wine through a filter medium by mechanical means to separate particles in suspension.

**fining:** The specific clarification process accomplished by adding a fining agent to wine.

**free SO<sub>2</sub>:** The specific form of the sulfur dioxide (SO<sub>2</sub>) compound that provides protection against oxidation and microbial spoilage in wine.



**fructose:** A monosaccharide, or simple sugar, which can be fermented into alcohol. Sugar in grape juice is a source of fructose and glucose.

**fruit wine:** Usually refers to wine made from fruits other than grapes; for example, peach wine.

**gelatin:** A fining agent often used in conjunction with kieselsol.

**glucose:** A monosaccharide, or simple sugar, which can be fermented into alcohol. Sugar in grape juice is a source of fructose and glucose.

**glycerin:** An additive used for increasing mouthfeel and body, or perceived sweetness; also called *glycerol*.

**glycerol:** An additive used for increasing mouthfeel and body, or perceived sweetness; also called *glycerin*.

**H<sub>2</sub>S:** Chemical formula for *hydrogen sulfide*, a foul-smelling compound responsible for imparting a rotten-egg smell to wine.

**hydrogen sulfide (H<sub>2</sub>S):** A foul-smelling compound responsible for imparting a rotten-egg smell to wine resulting from, for example, excessive use of sulfur-based products, from nutrient deficiency during fermentation, and from extended contact with the lees during fermentation.

**hydrometer:** A simple instrument to measure the density, or *specific gravity* (*SG* or *sp gr*), of sugar in juice and provides an approximate measure of *potential alcohol* (*PA*). It is also used for monitoring fermentation progress by measuring the drop in density of wine.

**ice wine:** A very sweet wine produced from harvested grapes that have frozen naturally on vines.

**inoculation:** The process of adding, or *pitching*, yeast to juice to enable fermentation.

**isinglass:** A pure gelatin prepared from the swim bladders of cichlids (tropical spiny-finned freshwater fish) used as a fining agent.

**J-tube:** A rigid, inverted J-shaped tube used for racking wine; also known as a *racking cane*.

**juice preparation:** The process of reconstituting the concentrate by adding water, if required, to bring it to the required volume, and allowing the must (juice) to warm up or cool down to within the recommended range in preparation for fermentation.

**kieselsohl:** A silicate suspension that electrostatically binds to and precipitates proteins.

**KMS:** Common abbreviation for potassium metabisulfite—a common sanitizing and stabilizing agent, and preservative.

**lactic acid:** A significant type of acid found in wine but not in grape juice. When present in wine, it is the result of malic acid having been converted by malolactic fermentation.

**lactic acid bacteria (LAB):** Bacteria that convert—by malolactic fermentation—the sharper malic acid in grape juice to the softer lactic acid in wine. Some other types of LAB can also cause spoilage.

**lees:** Dead yeast sediment resulting from yeast activity during alcoholic fermentation.

**malic acid:** A significant type of acid found in grape juice and wine; it is often converted into the softer lactic acid by malolactic fermentation.

**malolactic fermentation (MLF):** A secondary fermentation—typically not performed (not possible) in kit wines—where the sharper, naturally occurring malic acid is converted to the softer lactic acid under the action of lactic acid bacteria.

**maturation:** The practice of letting wine age, in bulk or in bottles, to allow it to develop its character and structure, and to increase its complexity; also known as *aging* or *cellaring*.



**medium-dry:** A wine style that lies between off-dry and medium-sweet in terms of perceptible sweetness; cf. *dry*, *off-dry*, *medium-sweet* and *sweet*.

**medium-sweet:** A wine style, not quite sweet, but with considerable perceptible sweetness; cf. *dry*, *off-dry*, *medium-dry* and *sweet*.

**mercaptans:** Foul-smelling compounds that cause wine to spoil.

**metatartaric acid:** An ingredient added to wine just before bottling to prevent tartrate crystals, which are the result of wine being subjected to cold temperatures.

**méthode traditionnelle (traditional method):** A method of making sparkling wines, such as champagne, by carrying out a second alcoholic fermentation in the bottle to trap the gas.

**must:** Unfermented juice.

**oak:** A type of wood used extensively, particularly in red winemaking, to add oak flavors and aromas, and complexity.

**off-dry:** A wine style, not quite dry, but with just a hint of perceptible sweetness; cf. *dry*, *medium-dry*, *medium-sweet* and *sweet*.

**organoleptic:** A descriptor used (as in “organoleptic qualities of the wine”) for referring to the amalgam of color, taste, smell and mouth-feel.

**oxidation:** The chemical reaction between wine and air that causes premature aging or even spoilage if exposure to air becomes excessive.

**pasteurization:** A process for eradicating spoilage microorganisms, such as unwanted yeasts and bacteria, in juice destined for kits.

**Pearson Square:** An easy-to-use tool to calculate the number of parts of wine of a given concentration (i.e., alcohol content or TA) required to bring the concentration of another wine to a desired level.

**pectin:** A polysaccharide found in grape juice that can cause haze and cloudiness in wine.

**pH:** A measure of the strength of acids in a solution that provides an indication of the chemical stability of juice and wine. Water has a theoretical pH value of 7; anything less is acidic, anything higher is basic (alkaline).

**pitching:** The action of adding yeast to grape juice; see *inoculation*.

**port:** A fortified, sweet red wine made in the Oporto region in Portugal's Douro Valley.

**potassium bicarbonate:** An additive used for reducing acidity in wine.

**potassium metabisulfite (KMS):** A common sanitizing and stabilizing agent, and preservative.

**potassium sorbate:** A common food and beverage additive used for inhibiting growth of yeast and mold and prevent renewed fermentation in finished wines, most often in wines with residual sugar. It is often simply referred to as *sorbate* or *sorbic acid*.

**potential alcohol (PA):** The amount of alcohol that can be produced if all the fermentable sugar in the juice is allowed to ferment.

**primary fermentation:** The vigorous phase of alcoholic fermentation.

**racking:** The procedure for transferring wine from one container to another using a J-tube, or *racking cane*, to separate wine from sediment at the bottom of a container.

**racking cane:** A rigid, inverted-J-shaped tube used for racking wine.

**residual sugar (RS):** Unfermented sugar still remaining in a finished wine and which contributes sweetness.

**rosé:** A pink-colored wine made from red grape varieties using white winemaking techniques (although it can be a blend of white and red



wines), and can range from dry to medium-sweet in style; also known as *blush*.

***Saccharomyces bayanus***: A popular species of winemaking yeasts used for difficult fermentation conditions.

***Saccharomyces cerevisiae***: The most common species of yeasts that is well suited for a wide range of winemaking applications.

**sanitization**: The process of washing and sanitizing all equipment to eliminate or inhibit microbes and avoid the risk of microbial contamination of juice or wine.

**secondary fermentation**: The less vigorous phase of alcoholic fermentation following the primary fermentation; also used for referring to *malolactic fermentation*.

**second fermentation**: In sparkling wine production, this refers to an additional alcoholic fermentation that occurs in bottles or in bulk in tanks. It is often used interchangeably with *secondary fermentation* though the meanings are different.

**sherry**: A fortified white wine made in Spain's Jerez region than can range from dry to sweet depending on style.

**SO<sub>2</sub>**: Chemical formula for *sulfur dioxide*; often used interchangeably, though incorrect, with *sulfite*.

**sodium metabisulfite**: A common sanitizing agent also used, less commonly, as a stabilizing agent and preservative; see *potassium metabisulfite*.

**sparkling wine**: A style of wine with carbon dioxide (CO<sub>2</sub>) produced by enabling a second alcoholic fermentation through the addition of sugar and yeast; also called *bubbly*.

**specific gravity**: A measure of the density of sugar in juice or wine relative to the density of water. It is commonly abbreviated to *SG* although *sp gr* is the correct form.

**stabilization:** The process of readying wine for consumption or aging to ensure that clarity, freshness and balance of the wine are maintained; and to protect the wine from microbial spoilage, refermentation and premature oxidation while the wine is aging and once in bottle. When used in a general sense, it can also include *cold stabilization*.

**stuck or sluggish fermentation:** A fermentation (alcoholic or malolactic) that has unexpectedly stopped completely or which is struggling and is slow to progress.

**sulfite:** A common stabilizing agent used in the food and beverage industry as an antioxidant and preservative; short for *potassium metabisulfite* or *sodium metabisulfite*.

**sulfur dioxide (SO<sub>2</sub>):** The component of sulfite that provides protection although the term is often used interchangeably with *sulfite*.

**sweet:** A wine style with significant residual sugar (RS) content and, therefore, very sweet in taste; cf. *dry*, *off-dry*, *medium-dry* and *medium-sweet*.

**tannin:** A compound found or added to red wine to improve body, structure and mouthfeel by increasing astringency.

**tartaric acid:** The major and most important acid found in grape juice and wine.

**tartrates:** Deposits of harmless, colorless crystals—also known as *wine diamonds*—resulting from wine being subjected to cold temperatures.

**tartrate stabilization:** The process of ensuring that wine does not throw crystals, or *tartrates*, when subjected to cold temperatures; also known as *cold stabilization*.

**topping:** The practice of adding wine or water to bulk wine to reduce the headspace volume in carboys for minimizing exposure of wine to air.



**total titratable acidity (TA):** The concentration of titratable acids in juice and wine. The major contributing acids are tartaric, malic, lactic and citric acid; also called *total acidity* although not technically correct.

**ullage:** Headspace between the wine surface and the closure in a container.

**varietal:** Wine made from a single grape variety, for example, Chardonnay.

**wine:** An alcoholic beverage made by fermenting grape juice or other fruit juice. Wine from fruit juice is usually referred specifically to as *fruit wine*.

**wine diamonds:** Another term commonly used for referring to *tartrates*, the deposits of harmless, colorless crystals resulting from wine being subjected to cold temperatures.

**winemaking:** The process for producing wine, from juice preparation to bottling, by fermenting juice from grapes or other fruits.

**wine thief:** An elongated glass or plastic tube used for retrieving a small sample of wine from a container.

**yeast:** A fungus used for enabling fermentation of sugar into alcohol in winemaking.

**yeast fermentation:** Another term for *alcoholic fermentation*, the chemical process of converting sugar in must into alcohol under the action of yeast with carbon dioxide (CO<sub>2</sub>) gas as a by-product; cf. *malolactic fermentation* where fermentation is enabled by bacteria.

**yeast nutrients:** Nutrients for boosting the yeast's fermentation ability, thereby reducing the risk of a stuck or sluggish fermentation.

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