Fermentation

Fermentation is the first step in the process of producing your own spirits and liqueurs. A good fermentation requires several things:

- A clean and sterile environment.
- The correct concentration of sugar.
- A good, live, alcohol yeast.
- The correct nutrients to allow the yeast cells to multiply and stay healthy throughout the fermentation process.
- A stable temperature within the yeast's operating range, throughout fermentation.

Step 1 – Cleaning and sterilizing equipment.

- All equipment used in the fermentation process must be clean and sterile. This includes the fermentation vessel, fermentation vessel tap, stirrer, hydrometer and airlock.
- A chlorine based cleaner/sterilizer is ideal for cleaning and sterilizing the fermentation vessel. This item can be obtained from your specialist home brew store.
- All equipment must be thoroughly rinsed with cold tap water following sterilization before being used to ensure no trace of sterilizer remains. **Remnants of cleaners or sterilizers can destroy your wash.**

Tip:

- To keep your fermentation and distillation tools (hydrometers, stirrers, trial jars etc) sterile between uses you could keep them in a bucket of Sodium Metabisulphite and water solution. A large bucket with a sealable lid is ideal for this. This will allow you quick and easy access to sterilized equipment. Simply remove them from the bucket as required, rinse well with cold water, use, rinse again and return them to the bucket for next time.

Step 2 – The Wash.

1. Pour approx. 10 L (2.5 gal) of hot tap water into a 30 L (8 gal) fermentation vessel. Add the required amount of white sugar as specified on the yeast packet, while stirring. Keep stirring the mixture until **all** the sugar is dissolved and the solution is clear.

2. Once the sugar has been **completely** dissolved, top the fermentation vessel up to 25 L (6.6 gal) with cold tap water and stir vigorously.

3. Check the temperature of the mixture. It should be between 28ºC (82ºF) and 35ºC (95ºF). Provided it is within these limits the yeast must now be added.

Note: The amount of hot tap water required will vary depending on the temperature of your hot water and the temperature of the cold tap water. While the temperature of your hot water will stay the same, the temperature of the cold water can vary greatly between summer and winter. The important thing is that immediately after adding the cold water, the temperature of the mixture is close to 30ºC (86ºF).

It is **very important** that the yeast is added **without delay** following the addition of the cold water. This is because once the temperature of the mixture is down to the level at which you can add your yeast, it is also at a temperature where a wild yeast from the environment can get in and start growing. If this happens your wash will be destroyed.

Tip:

- It is a good idea to keep a record throughout the year of the hot water amounts used to achieve a mixture close to 30ºC (86ºF). In the future you will be able to refer back to a similar time of year when the cold water temperatures were approximately the same.

4. Stir the mixture to create a gentle circular flow then sprinkle the contents of one sachet of yeast onto the surface of the mixture. Once the entire contents of the sachet have been added, give the wash a brief stir.

5. Fit the lid and airlock to the fermentation vessel immediately. Provided the ambient room temperature is **below** 26ºC (78ºF), wrap the fermentation vessel in a blanket or similar to insulate it against changes in temperature (leave the airlock protruding through the wrap and make sure you have put water in the airlock).

6. Within 2 hours carbon dioxide should start bubbling through the airlock indicating that fermentation has started correctly.

7. Throughout fermentation it is important to keep the wash temperature as constant as possible.

In cold conditions the use of a heater pad is strongly recommended. It is important that the wash temperature does not drop below 20ºC (68ºF). Below 20ºC (68ºF) yeast can become inactive and fermentation will stop. If this occurs you will need to get the wash temperature back above 20ºC (68ºF) and give it a good stir. Fermentation should start again after this.

You should not need to use the heater pad during the first 24–48 hours of fermentation because the wash will generate its own heat through this period.

Ideally, during the first 48 hours, the wash temperature will very slowly drop to around 28ºC (82ºF). You then want to try and keep it as close to this temperature as possible until fermentation has finished.

In warmer conditions it is very important to keep the wash temperature down around 28ºC (82ºF). Although the yeast can tolerate a temperature of 35ºC (95ºF), it is important to note that when fermentation occurs at a high temperature (above 28ºC (82ºF)), a lot more impurities will be produced, which will reduce the quality and amount of spirit.

Note: If the wash temperature exceeds 35ºC (95ºF) the yeast will be killed and fermentation will stop.

Tip:

- One easy way to keep the wash temperature down is to keep some clean PET plastic bottles ¾ filled with water in the freezer. Remove any labels from the bottles and clean with a sterilizer cleaner before placing them in the freezer. Simply place a frozen bottle into the wash to keep the wash temperature under control. After removing the bottle from the wash simply clean and sterilize the outside of the bottle and put it back in the freezer for next time.

8. Fermentation will take around one week. Once bubbling in the airlock has stopped for several hours remove the lid, give the wash a good stir and replace the lid. Once fermentation is complete you will see the wash start to clear.

Note: if the wash hasn't started to clear on its own, it hasn't finished. When fermentation has finished the reading on the hydrometer should be 988 or below.

9. Once fermentation has finished, use *essencia* Ultra Clear two part finings to completely clear the wash prior to distillation **or** filtering and carbon treatment.

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