



DISTILLATION PROCESS

Prize piece in the museum is the 19th century distillery plant from the former Servais distillery in Géromont-Malmédy. A steam engine and grain mill from the same period completed the facility. The full distillery was expertly restored and put back in service. The distillery is fully run on steam. In it, the museum distils its museum jenever after a 19th century recipe.

How do you make Jenever?

The preparation of jenever starts with the choice of raw materials. The basic rule is quite simple. All agricultural products containing sugar or starch are suitable raw materials, since yeasts convert sugar into alcohol. Starch can be converted into sugars, which can subsequently be fermented. The alcohol, spontaneously created after fermentation, is concentrated through distillation and results in a 'strong' spirit.

For example, cognac is made on the basis of grape sugar, calvados with apple sugar, kirsch on the basis of cherries. Starch from grains are used for whisky and grain jenever.

The production process of grain jenever has barely changed over the centuries. But scientific insight increases gradually and production techniques change, allowing to improve production conditions, which leads to a tasty and cheaper product with a stable quality.

The Jenevermuseum's grain jenever as guideline

The National Jenever Museum distils a grain jenever in accordance with a 19th century recipe with three major production steps:

1. Malting process
2. Production of grain 'eau de vie' or maltwine
3. Preparation of grain jenever

1. Malting

Malting is a specialised activity, which contemporary distillers leave to specialised malting plants.

Grains are a source of starch

Barley, rye, wheat and maize are the most important raw materials in grain jenever. The starch content is primarily important for alcohol production. Grains also contain proteins and minerals, which allow the fermentation process to take place flawlessly. Rye, wheat, barley and maize contain flavouring components that contribute to the flavour and aroma of grain jenever.

Barley malt contains enzymes

The starch in grains is difficult to dissolve in water and owing to the yeast cells, cannot be converted into alcohol. That is why starch must be broken down by enzymes into fermentable sugars. These enzymes can be found in malt. Barley is primarily malted since this grain has a chaff husk that protects the radicle and cotyledon during germination.

Four steps

1. In the malting plant the barley is cleaned and sorted according to thickness.
2. Subsequently it is placed for roughly three days in soaking tubs where water is absorbed allowing the grains to germinate spontaneously.
3. Germination takes place in germination cases or on floors where the barley is spread out in layers.

This germinated barley or 'green malt' is subsequently dried on the kiln floor by applying hot air (80 to 90°C). This halts the germination process, creates aroma components and preserves the malt.

2. Production of grain 'eau de vie' or malt wine

The following steps in the production process can be fully monitored in the mill and distillation room of the National Jenever Museum.

Grain is ground

Rye, barley and barley malt are ground in the mill between the millstones. In order to prevent damage to the enzymes the temperature should not be excessive. The finer the grinding, the better the enzymatic breakdown of the starch will be.

Starch is converted into fermentable sugars

In the mash tun the ground grain (for example, 1/3 barley and 1/3 rye) is stirred with water into a mash, which is slowly steam-heated and slightly cooked whereby the starch grains are further released. Subsequently the mash is cooled to 68°C and the distiller adds the malt (1/3). At this temperature the starch is converted into fermentable sugars by the enzymes (amylases). The museum distiller follows this conversion with the help of iodine (iodine colours the starch blue, iodine is released, which then regains its original brown colour). The saccharification lasts approximately 90 minutes.

Sugars are fermented into alcohol

In contrast to beer and whisky production, the saccharified mash is not filtered, allowing for the aromas from the chaff to be preserved. The mash is cooled to 22-25°C after which yeast is added. In the fermentation vats the baker's yeast breaks

down the fermentable sugars into alcohol (circa 8% vol.) and carbon dioxide, and at the same time creates other aromatic products. Fermentation lasts 2 to 3 days.

Alcohol distillation starts with the low wines

Distillation takes place in two steps, the low wines and the refined alcohol. During the low wines in the distillation column the volatile components in the fermented mash are separated from the non-volatile components, which results in the colourless phlegm and rinse. Phlegm contains approximately 35% vol. alcohol. Rinse, which is very rich in proteins and contains starch and cellulose residues, is used as animal feed.

The phlegm then flows towards the special room with the measuring vat where excise clerks determine the strength of the alcohol and the distilled volume.

Refined alcohol produces grain 'eau de vie', malt wine

After the measurement by the excise clerks the phlegm is pumped into the still and redistilled. This is the refined alcohol. The art of refining consists in the separation of the phlegm in head, heart and tail.

- The 'head' contains the most volatile alcohols (methanol, among others), acetaldehyde, acids and esters.
- The heart or 'soul' primarily consists of drinkable alcohol, the desired ethanol.
- The 'tail' contains less volatile fusel oils.

The intensity with which this separation takes place determines the amount of aroma and taste components (originating from the grain, the malt and the yeast) remaining in the refined alcohol.

Ageing refines malt wine

The refined alcohol, which contains approximately 65% vol. ethanol, is aged for at least 6 months in oak vats. During this ageing the desired components (e.g., ethanol, aromatic esters and aldehydes) and unwanted components (e.g., dimethyl sulphide) evaporate and complex reactions with the oak take place.

Sometimes the vats are burned before they are filled to obtain a smoky colour and flavour.

The alcohol refined by ageing is called grain 'eau de vie' or malt wine.

3. Production of grain jenever

Jenever... at last

The richly scented and tasting malt wine is filtered, mixed with a grain distillate and diluted with water to 40% vol. It is then flavoured by the distiller with an alcoholic extract of juniper berries, caraway seed and gentian root. The proportions and alcohol concentration determine the aroma and flavour. These recipes are closely guarded distiller secrets.

Lastly the grain jenever of the Jenevermuseum is bottled in exclusive jars and sold in a limited edition of 1,000 bottles per year.