

## Renewable Ethanol for Beverage and Industrial Uses

Significant volumes of renewable ethanol are produced for the beverage and industrial markets from agricultural feedstock, such as grains and sugar beet. Renewable ethanol produced for these industries differs from ethanol for fuel only in its strength, which can vary between 96% and 99.9% and in its purity, depending on the end use.

### DID YOU KNOW?

Ethanol is also referred to as **ethyl alcohol**, **neutral alcohol** or simply **alcohol**.

## A versatile and high quality product

**Ethanol has many useful properties which allow it to be used by a range of different industries:**

The ethanol used as an intermediary product by the chemical, pharmaceutical or cosmetics industry is in many cases of the highest and purest possible quality. These are premium markets due to the additional steps in the alcohol production process that are necessary to achieve the required purity. The same high standards and processes apply when alcohol is used for the production of spirit drinks.

**Ethanol is a valuable ingredient in the production of:**

- **Alcoholic beverages:** Spirits and alcohols (e.g. vodka & gin). Neutral alcohol is mixed with water, aromas and flavourings to produce the final product.
- **Food and non-alcoholic beverages:** Flavours and aromas. Ethanol is used as a natural product to extract and concentrate flavours and aromas, which are then used by the food & drink industry. No alcohol is contained in the final products.
- **Chemicals:** Paints, thermometers and anti-freeze. It is also a widely used solvent and is increasingly used as a renewable alternative to fossil-based chemicals for creating a large range of products, such as **bioplastics**.
- **Cosmetics:** It is contained in perfumes, deodorants, and other cosmetics.
- **Pharmaceutical:** Medicines, medical wipes and as an antiseptic in most antibacterial hand sanitiser gels.

### DID YOU KNOW?

Ethanol produced in the EU and used as a key ingredient by European spirits producers has a positive contribution to the EU's overall trade balance. European vodkas, gins and liquors are exported around the world.



## Denatured or undenatured

In the EU, ethanol used in the alcoholic beverage sector is subject to high excise duties, therefore its consumption generates significant tax revenues for governments. For this reason, the production and circulation of beverage alcohol is subject to very strict controls in EU member states. These constraints can be much lighter when alcohol is denatured for certain uses in the industrial sector. The process of denaturation (e.g. alcohol is mixed with chemicals) is intended to render the alcohol unsuitable to human consumption in an irreversible manner.

To facilitate its regulation, ethanol is classified into two categories: **undenatured** and **denatured**.

### Undenatured ethanol

For health and safety reasons, the alcohol intended for human consumption, mostly in the form of spirit drinks, needs to be pure.

To ensure that the highest possible level of purity is maintained, no chemicals are permitted to be mixed with this kind of alcohol.

This unmixed, pure type of alcohol is referred to as **undenatured ethanol**.

### Denatured ethanol

To prevent fraud and to respond to customers' needs in the non-beverage sector, ethanol is mixed with various chemicals, a process which is referred to as denaturation. Denatured ethanol is widely used as a component in chemicals, cosmetics or pharmaceuticals.

The type of chemicals added during this process depends on the planned end-use, but most importantly, once denaturation is complete, it is irreversible.

#### DID YOU KNOW?

Ethanol is a pillar of the bioeconomy and is widely used as a bio-based substitute for fossil-based raw materials in many products, such as transport fuel and increasingly in chemicals and plastics.

## A key ingredient for the bioeconomy

The production of chemicals and plastics depends heavily on fossil-based raw materials with a high carbon footprint, but this is slowly changing. The search for alternatives to the fossil materials used in many day-to-day products is vital to secure Europe's competitiveness and transition to a carbon neutral "bioeconomy". Renewable ethanol, made from renewable biomass, has a significant contribution to make as a replacement for fossil sources and as a green and renewable feedstock in industrial & chemical processes.

Replacing fossil sources with renewable ethanol brings distinct advantages in terms of reducing dependency on finite fossil resources, reducing the carbon footprint of the end product and supporting growth and green jobs in rural areas where the biomass is sourced and often processed.



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