



Product Information Sheet

Benzaldehyde

FCC grade

Global leading position in benzaldehyde.

Emerald Kalama Chemical is the leading producer of benzaldehyde. We produce benzaldehyde using the toluene oxidation process in the largest plant in the world in Rotterdam and our world-scale operation in Kalama, WA USA.

In contrast to benzaldehyde produced by other manufacturers via the toluene chlorination process, benzaldehyde produced by Emerald Kalama Chemical at both our operations contains no chlorine.

Our global leading position as benzaldehyde producer enables us to set the standard for quality, reliability and security of supply.

Emerald Kalama Chemical Rotterdam produces a high quality Benzaldehyde (FCC) suitable for the most critical applications.

Applications for Benzaldehyde:

- aroma chemicals
- pharmaceuticals
 - phenylglycine
 - (pseudo) ephedrine
 - anti-hypertensives
 - and more
- agrochemicals
- various other applications

The right quality for your applications.

Benzaldehyde is a versatile building block in the synthesis of many different complex molecules for use in products ranging from pharmaceuticals to plastic additives.

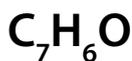
Its unique sweet, aromatic note, reminiscent of the taste and odor of almonds, makes benzaldehyde an important component in the formulation of F&F products. The almond flavor and fragrance are found in soft drinks and in all kinds of perfumes. It is also a building block in the synthesis of fragrances like rose and jasmine, which are used in soaps and perfumes.

Benzaldehyde is an FDA-sanctioned synthetic flavouring substance, generally recognized as safe for foods (GRAS). Benzaldehyde is used for the production of pharmaceuticals guarding against high blood pressure and for pseudo-ephedrine, the active ingredient in most cough syrups. It is also used in a range of insecticides (pyrethroids), marketed under some well-known trademarks, and in the synthesis of the malachite green pigment.

Benzaldehyde is further used as a building block for a range of amino acids like phenylglycine, that is used as a side chain in various antibiotics.

Benzaldehyde

FCC grade



CAS No. 100-52-7

EINECS No. 202-860-4

PRODUCT SPECIFICATION

| Characteristic | Spec. Range | Unit |
|---------------------------|-------------|-------|
| Assay | 99.5 min. | wt % |
| Toluene | 0.01 max. | wt % |
| Acidity (as benzoic acid) | 0.2 max. | wt % |
| Chlorine | 1 max. | mg/kg |

This material meets the requirements of FCC is certified Kosher and Kosher for Passover  and certified  Halal.

About Emerald.

Emerald Kalama Chemical is Division of Emerald Performance Materials, a manufacturer of additives and polymers which make your products last longer, look, taste, smell, or perform better. Emerald is headquartered in Cuyahoga Falls, Ohio. The company has 4 business units, eight operations and approximately 700 employees. The Emerald Kalama Chemical Division is a world-scale producer of a variety of toluene oxidation products, with production facilities in the US and Europe. Products include benzoic acid, and various benzoate and dibenzoate ester, alcohol and aldehyde derivatives for food preservatives, flavor and fragrance ingredients, plasticizers and industrial applications. For more about Emerald, visit www.emeraldmaterials.com.

ADDITIONAL PRODUCT INFORMATION

| | |
|-----------------------|---|
| Appearance | Colorless liquid |
| Odor | Almond-like |
| Density | 1043 - 1049 g/dm ³ (20 °C) |
| Refractive index | 1.544 -1.546 (20 °C) |
| Solubility (in water) | 6.55 g/l (25 °C) |
| Solidification point | -26 °C |
| Packaging | In bulk, PE drums and IBCs |
| PE drum information | Net weight 210 kg, tare weight 8.5 kg, 58X58X93 cm |
| IBC information | Net weight 1000 kg, tare weight 60 kg, 120X100X116 cm |
| Storage | Under nitrogen |
| Shelf life | 2 years |
| Stabilizing agents | None |
| Additives | None |



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