

BENZALDEHYDE

FORMULA: C₆H₅CHO (C₇H₆O)

MOLECULAR WEIGHT: 106.12

FEMA NUMBER: 2127

CAS REGISTRATION NUMBER: 100-52-7

EINECS REG. NUMBER: 202-860-4

GRADES AVAILABLE: F.C.C. and TECHNICAL

USES: The *F.C.C. grade* of benzaldehyde is widely used in flavors such as almond and cherry and in various fragrances for soap and toiletries. Benzaldehyde is an F.D.A. sanctioned synthetic flavoring substance (21 CFR § 182.60) generally recognized as safe for foods (GRAS). The *Technical grade* is a versatile chemical intermediate in the manufacture of pharmaceuticals, dyes, perfume and flavoring chemicals.

TYPICAL PHYSICAL PROPERTIES OF BENZALDEHYDE:

BOILING POINT	179° C	@ 760 mm Hg
	112.5° C	@ 100 mm Hg
FREEZING POINT	-26° C (-15° F)	
SPECIFIC GRAVITY	d 20°/4°	1.046
DENSITY	8.72 # / gallon	@ 20° C
REFRACTIVE INDEX	1.546	@ 17.6° C
FLASH POINT	148° F (64° C) T.C.C.	
	165° F (74° C) T.O.C.	
AUTOIGNITION TEMPERATURE	378° F (192° C)	
VAPOR PRESSURE	10 mm Hg	@ 62° C
	60 mm Hg	@ 99.6° C
	100 mm Hg	@ 112.5° C
	400 mm Hg	@ 154.1° C
VAPOR PRESSURE EQUATION	Log P = A - B / (t + C)	A = 6.6153 B = 1277 C = 164 P = mm Hg t = ° C
SOLUBILITY DATA @ 20-C	BENZALDEHYDE in WATER	0.6%
	WATER in BENZALDEHYDE	1.5%
HEAT OF VAPORIZATION	156 BTU / #	@ 179° C
SPECIFIC HEAT	0.70 BTU / # /° C	@ 29° C
HEAT OF COMBUSTION	14,300 BTU / #	@ 25° C
VISCOSITY	1.4 Centipoise	@ 25° C

(The above properties are typical of benzaldehyde, but should not be confused with, or regarded as, Sales Specifications.)

HAZARD RATINGS:

NFPA

HEALTH	2
FLAMMABILITY	2
REACTIVITY	0

HMIS (Hazardous Material Identification System of the National Paint and Coatings Assn.)

HEALTH	2
FLAMMABILITY	2
REACTIVITY	0

SAFETY: Benzaldehyde is a relatively non-toxic material. The Registry of Toxic Effects of Chemical Substances (NIOSH) lists the following data for benzaldehyde:

LD50 (orl rat)	1300 mg / kg
LD50 (orl guinea pig)	1000 mg / kg
Skn rbt	Moderate response @ 500 mg / 24 H
LDL0 (Scu rat)	5000 mg / kg

Benzaldehyde should be handled with the good manufacturing practices of avoidance of contact, adequate ventilation, and cleanliness normally accorded the handling of solvents and other organic compounds.

Prolonged exposure to the vapors of benzaldehyde should be avoided. A threshold limit Value (TLV), however, has not been established by the ACGIH. At temperatures of less than 25° C, saturated mixtures of air and benzaldehyde will contain less than 950 ppm benzaldehyde.

Contact with the skin and eyes should be avoided. Direct contact with benzaldehyde may cause contact dermatitis. Chemical worker's goggles, gloves, and face shields are recommended. In the event of skin contact, the skin should be washed with soap and water. Call a physician if irritation develops. In the event of eye contact, flush the eyes for 15 minutes with large amounts of water. Get immediate medical attention.

Benzaldehyde has a low autoignition temperature (378° F). Therefore benzaldehyde should be kept away from areas of high temperature, such as uncovered steam and hot oil lines.

Rags used to wipe up spills of benzaldehyde and activated carbon used to absorb vapors of benzaldehyde have been known to ignite spontaneously. Care Must be taken when disposing of these materials.

A Material Safe Handling Data Sheet (MSDS) is available for benzaldehyde.

HANDLING and STORAGE: The following information is based upon our experience. All suggestions or recommendations are made without guarantee.

STORAGE: We store benzaldehyde in uninsulated type 304 stainless steel tanks. If bulk storage is contemplated in cold climates, however, consideration should be given to insulating and steam tracing the tank. A baked phenolic resin lined tank is suitable, but 304 stainless steel is preferred. Copper or brass are to be avoided, since they are readily attacked by benzaldehyde.

In order to minimize oxidation of the benzaldehyde (to benzoic acid), a nitrogen pad should be provided for each tank. The tank openings should be inspected frequently, since benzoic acid can form, clogging the openings.

PUMPING: Satisfactory service has been received from ordinary centrifugal pumps with mechanical seals although the can-type centrifugal pump is often recommended. Purge with nitrogen before pumping through an empty line, and purge the pump case after the pump has been drained.

HANDLING and STORAGE (cont):

PIPING: 304 stainless steel is used to transport benzaldehyde. Teflon® insert-type gaskets are suitable for flanged lines. Unless temperatures below -15° F are expected, insulation is probably not required.

SHIPPING CONTAINERS: Benzaldehyde, Technical, is available in:

- 1) 55 gallon resin lined steel and HDPE (high density polyethylene) drums, 210 kG (463 #) net.
- 2) 5,000 gallon stainless steel tank trucks.

Benzaldehyde, F.C.C., is available in 55 gallon resin lined steel and HDPE drums, 210 kG (463 #) net.

SHIPPING INFORMATION: Benzaldehyde is classified by DOT and IMDG regulations as a Class 9 Hazardous Material (Other Regulated Materials). Benzaldehyde is also classified as a Marine Pollutant.

PROPER SHIPPING NAME:	Benzaldehyde
HAZARD CLASS:	9
I.D. NUMBER:	UN 1990
PACKING GROUP:	III
MARKS REQUIRED:	MARINE POLLUTANT
PLACARDS REQUIRED:	CLASS 9 (with 1990) For BULK shipments only

NOTE: The information presented herein is believed to be true and accurate. However, all suggestions and recommendations are made without guarantee. Our technical personnel are always ready to respond to inquiries regarding the safe handling of any of our products.

Emerald Kalama Chemical, LLC Sales Offices

**Customer Service
Kalama, WA**

**1-800-223-0035
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Fax 1-360-673-3564**

Stock Points

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