MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 08/20/2013 Version 1.1

SECTION 1. Identification

Product identifier

Product number	801756
Product name	Benzaldehyde for synthesis

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Chemical for synthesis

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | SDS Phone Support: +1-978-715-1335 | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Acute toxicity, Category 4, Oral, H302

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word
Warning

Hazard Statements
H302 Harmful if swallowed.

Precautionary Statements
P262 Do not get in eyes, on skin, or on clothing.

OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR

1910.1200).

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula	C_6H_5CHO	C_7H_6O (Hill)
CAS-No.	100-52-7	
Molar mass	106.12 g/mol	

Hazardous ingredients

Chemical Name (Concentration)
CAS-No.
benzaldehyde (>= 90 % - <= 100 %)
100-52-7

SECTION 4. First aid measures

Description of first-aid measures

Inhalation
After inhalation: fresh air. Consult doctor if feeling unwell.

Skin contact
After skin contact: wash off with plenty of water. Remove contaminated clothing.

Eye contact
After eye contact: rinse out with plenty of water.

Ingestion
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

irritant effects, Shortness of breath, Dermatitis, Drowsiness, Dizziness, Unconsciousness, narcosis, Headache, Convulsions

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media
Water, Foam, Carbon dioxide (CO2), Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Combustible material, Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system. Remove container from danger zone and cool with water.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Tightly closed. Dry. Protected from light.

Store at +15°C to +25°C (+59°F to +77°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Contains no substances with occupational exposure limit values.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Change contaminated clothing. Application of skin- protective barrier cream recommended.
Wash hands after working with substance.

Eye/face protection
Safety glasses

Hand protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:
protective clothing

Respiratory protection
required when vapors/aerosols are generated.
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless to light yellow
Odor	bitter almond-like
Odor Threshold	No information available.
pH	ca. 5.9 at 1 g/l
Melting point	-26 °C
Boiling point/boiling range	354 °F (179 °C) at 1,013 hPa
Flash point	147 °F (64 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.4 %(V)
Upper explosion limit	8.5 %(V)
Vapor pressure	1.3 hPa at 68 °F (20 °C)
Relative vapor density	3.66

Relative density	1.05 g/cm³ at 68 °F (20 °C)
Water solubility	3.3 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 1.48 (20 °C) (experimental) Bioaccumulation is not expected (log Pow <1). (IUCLID)
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	1.39 mPa.s at 77 °F (25 °C)
Explosive properties	No information available.
Ignition temperature	374 °F (190 °C)

SECTION 10. Stability and reactivity

Reactivity

auto-flammable
Vapor/air-mixtures are explosive at intense warming.

Chemical stability

Sensitivity to light
Sensitive to air.

Possibility of hazardous reactions

Violent reactions possible with:

bases, Alkali metals, Aluminum, Iron, performic acid, phenols, Oxygen, Oxidizing agents

Conditions to avoid

Heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

Aluminum, various plastics

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Inhalation, Eye contact, Skin contact

Acute oral toxicity
LD50 rat: 1,300 mg/kg (RTECS)

absorption

Acute inhalation toxicity
LC50 rat: > 3 mg/l; 4 h (External MSDS)
Symptoms: narcosis

Acute dermal toxicity
LD50 rabbit: > 1,250 mg/kg
(IUCLID)

Skin irritation
rabbit
Result: slight irritation
(External MSDS)

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation
rabbit
Result: Eye irritation
(Regulation (EC) No 1272/2008, Annex VI) (External MSDS)

Genotoxicity in vitro
Ames test
Result: negative
(Lit.)

Reproductive toxicity
No impairment of reproductive performance in animal experiments. (IUCLID)

Teratogenicity
Did not show teratogenic effects in animal experiments. (IUCLID)

Specific target organ systemic toxicity - single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or

	equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

After absorption:
Damage to:
Kidney
Systemic effects:
Headache, Drowsiness, Convulsions, Dizziness, Shortness of breath, Unconsciousness
Further data:
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish
LC50 Lepomis macrochirus (Bluegill sunfish): 1.07 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): 50 mg/l; 24 h (IUCLID)

EC5 E.sulcatum: 0.29 mg/l; 72 h (maximum permissible toxic concentration) (IUCLID)

Toxicity to algae
IC5 Scenedesmus quadricauda (Green algae): 34 mg/l; 8 d (maximum permissible toxic concentration) (IUCLID)

Toxicity to bacteria
EC5 Pseudomonas putida: 132 mg/l; 16 h (maximum permissible toxic concentration) (IUCLID)

Persistence and degradability

Biodegradability
66 %; 14 d
OECD Test Guideline 301C
Readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water
log Pow: 1.48 (20 °C)
(experimental)
Bioaccumulation is not expected (log Pow <1). (IUCLID)

Mobility in soil

No information available.

Additional ecological information
Biological effects:
Forms toxic mixtures in water, dilution measures notwithstanding.
Further information on ecology
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 1990
Proper shipping name	BENZALDEHYDE
Class	9
Packing group	III
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 1990
Proper shipping name	BENZALDEHYDE
Class	9
Packing group	III
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 1990
Proper shipping name	BENZALDEHYDE
Class	9
Packing group	III
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-A

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Combustible Liquid
Toxic by inhalation.
Harmful if swallowed.
Harmful by skin absorption.

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312 Hazards

Fire Hazard
Acute Health Hazard

SARA 313
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

DEA List I
Listed
Ingredients

benzaldehyde	100-52-7

DEA List II
Not listed

US State Regulations

Massachusetts Right To Know
Ingredients
benzaldehyde

Pennsylvania Right To Know
Ingredients
benzaldehyde

New Jersey Right To Know
Ingredients
benzaldehyde

California Prop 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

TSCA:	All components of the product are listed in the TSCA-inventory.
DSL:	All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date08/20/2013

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.
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