Borregaard

TECHNICAL DATA SHEET

3-CHLORO-1,2-PROPANEDIOL (CPD)

CPD is synthesized by reacting Epichlorohydrin and water using sulfuric acid as a catalyst. Afterwards, the product undergoes a series of purification steps.

Description

Product name: 3-Chloro-1,2-propanediol

Synonyms: CPD, 3-chloropropane-1,2-diol, Chloropropanediol, Glycerol alpha-monochlorohydrin

CAS No: 96-24-2

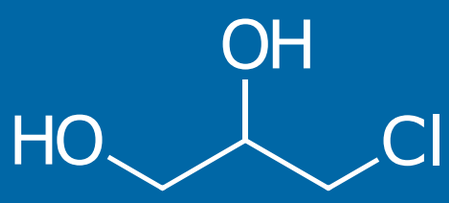
EC No: 202-492-4

REACH Reg. No.: 01-2119490066-37

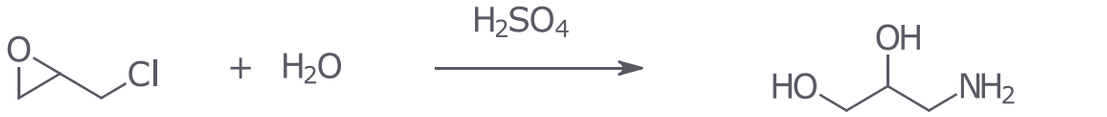
Formula: $C_3H_7ClO_2$

Molecular weight: 110.5

STRUCTURE



ROUTE OF SYNTHESIS



Epichlorohydrin

3-Chloro-1,2-propanediol

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Enterprise No.
NO 895 623 032 vat

PHYSICAL AND CHEMICAL PROPERTIES

State of aggregation
Colorless

Color
Colorless

Smell
Weak

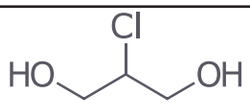
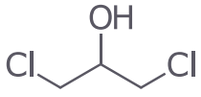
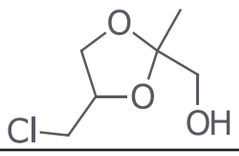
Solubility
Miscible in:
Alcohols

Boiling point
~213 °C

Flash point
~142 °C

Density
1.32 g/ml

TYPICAL QUALITY

Parameter	Structure	Typical values
Appearance		Clear colorless/weak yellow viscous liquid.
Assay (Chloride content)		~31.5 %(w/w)
Water content		~0.1% (w/w)
GC analysis (by area percent):		
2-Chloro-1,3-propanediol		~0.15
1,3-Dichloro-2-propanol		~0.05
Dimers - Higher boiling impurities		~0.01
Cyclic "Dimer" (4-Chloromethyl-2-methyl-1,3-dioxolan-2-yl) methanol)		~0.9

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GC INSTRUMENT CONDITION

Column	Crosslinked Methyl Silicone, 25-meter x 0.2 mm ID. Film thickness 0.33 µm.
Carrier gas	Helium at constant flow 0.5 ml/min
Injector	210°C, split flow: 40 ml/min
Detector	250°C, FID
Injection volume:	1 µL
Temperature program	45°C, 5°C/min to 80°C, kept for 2 min, 25°C/min to 100°C. 7.5°C/min to 200°C, hold at 200°C for 10 minutes.

PACKAGING AND TRANSPORT

CPD can be supplied in dedicated, heated ISO containers. The containers are lined with Sakaphen lining to prevent corrosion. CPD can also be supplied in drums of 200 kg and 1000 l PE IBC.

STORAGE AND SHELF LIFE

The shelf life of 3-chloro-1,2-propanediol is at least 6 months on storage at 22 °C or colder.

Retest date
6 months after production when stored at 22 °C or colder.

Retesting is also highly recommended if the product has been exposed to extreme temperatures.

LEAD TIME

Readily available from stock.

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SAFETY

CLP-classification: Met. Corr. 1; H290 Acute Tox. 3; H301 Skin Irrit. 2; H315 Eye Dam. 1; H318 Acute Tox. 2; H330 Carc. 2; H351 Repr. 1B; H360 STOT SE 1; H370 STOT RE 1; H372

Most serious harmful effects: May be corrosive to metals. Toxic if swallowed. Causes skin irritation. Causes serious eye damage. Fatal if inhaled. Suspected of causing cancer. May damage fertility or the unborn child. Causes damage to organs. Causes damage to organs through prolonged or repeated exposure.

Signal word: Danger

CERTIFICATIONS

Borregaard Pharma Intermediates is certified in accordance with several standards:

- ISO 9001 Quality Management
- ISO 14001 Environmental Management
- ISO 50001 Energy Management

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BSE/TSE
No material of animal origin is used during the manufacture of CPD. This includes all starting substance, reagents and solvents.

KOSHER
Not formally verified.

HALAL
CPD does not contain any ingredient of animal origin. Pork origin or parts there of (enzymes, hair, bacon, etc.) are not used in the manufacturing of the product. No processing aid, additive or carrier of animal origin has been used in the production of this product.

ALLERGENS
Our product is free from allergens.

GMO
CPD does not contain material of Genetically Modified Organism origin.
The above material is not manufactured using any materials derived from GMOs.
The above material was not exposed to any material of GMO origin including media, Lubricants and plasticizers during manufacture.

MELAMINE
This product is not at risk for Melamine contamination.

METAL CATALYSTS
No metal catalysts are used in the production of CPD.

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ABOUT US

Borregaard has one of the world's most advanced and sustainable biorefineries.

By using natural, sustainable raw materials, Borregaard produces advanced and environmentally friendly biochemicals that can replace oil-based products. Borregaard also holds strong positions within ingredients and fine chemicals.

Borregaard employs 1100 man-years in plants and sales offices in 16 countries throughout Europe, Americas, Asia and Africa.

BORREGAARD - PHARMA INTERMEDIATES

Borregaard's business segment Pharma Intermediates manufactures pharma intermediates for global pharmaceutical and related markets. We are located in Sarpsborg, Norway where we have two large commercial plants.

Our core products are 3-Chloro-1,2-propanediol (CPD), 3-Amino-1,2-propanediol (APD), 3-Methylamino-1,2-propanediol (MAPD) and 1,3-Diamino-2-propanol (DAP). Our expertise allows us to concentrate on such applications as contrast media and advanced intermediates. Our plants are operating 24/7 365 days a year, and Borregaard ensures our customers a stable manufacturing process which gives high quality products.

SUSTAINABILITY

Borregaard Pharma Intermediates has a high focus on continuous improvements to reduce our environmental impact, lower our energy consumption and increase the capacity in our plants. Our energy comes from renewable Norwegian hydroelectric power and internally generated steam generated from burning household garbage and waste from our biorefinery.

Life cycle analysis of comparable processes has proved CPD, APD and MAPD from Borregaard to have a substantially better environmental profile compared to Asian producers mainly due to waste treatment and not using steam/energy originating from coal.

Up to 50% of carbon in final formulated contrast media may have its origin from Borregaard – and we are in a unique position if our customers in future would like to enforce strict sustainability. Half of the amount of carbon in formulated contrast media like Iohexol originates from Borregaard products - we are well positioned if our contrast media customers show increased interest in sustainability.

The key raw material for CPD, APD and MAPD is oil-based epichlorohydrin. Epichlorohydrin can be produced from renewable raw materials and Borregaard is running annual campaigns using renewable epichlorohydrin.

For more info please visit www.borregaard.com

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