

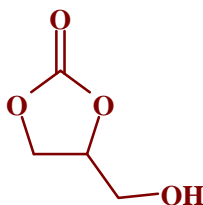
Technical Bulletin

JEFFSOL[®] GLYCERINE CARBONATE

ALTERNATIVE NAMES

Glycerin Carbonate
Glycerol Carbonate
Glyceryl Carbonate
4-hydroxymethyl-1,3-dioxolan-2-one

JEFFSOL[®] GLYCERINE CARBONATE is a clear, mobile liquid at room temperature.



APPLICATIONS

The hydroxyl functionality of JEFFSOL[®] glycerine carbonate allows the material to participate in a number of reactive processes in addition to the already exhaustive list for which simple alkyl-substituted alkylene carbonates such as JEFFSOL[®] ethylene carbonate and JEFFSOL[®] propylene carbonate find use.

The hydroxyl group of JEFFSOL glycerine carbonate (GC) may be reacted with anhydrides^{1,2} to form ester linkages or with isocyanates to form urethane linkages.^{3,4} With respect to the latter, GC may be reacted with polyisocyanates such as polymeric IPDI to create multi-functional alkylene carbonates. Alternatively, such species may be synthesized by insertion of carbon dioxide into epoxy systems.⁵ However, many of the epoxy starting materials are quite expensive, limiting the use of this technology to high-end applications only. The novel alkylene carbonate materials produced may be reacted with diamines to form polyurethane networks useful as protective coatings for wood and metal substrates.^{4,6}

It is anticipated that GC will also find use as a solvent in cosmetic, personal care, and medicinal applications. Due to its low toxicity, low evaporation rate, low flammability, and moisturizing ability, GC possesses the characteristics required of a wetting agent for cosmetic clays and a carrier solvent for medicinally active species.

TYPICAL PROPERTIES

<u>Property</u>	<u>Typical Values</u>
Appearance	Clear and free of suspended matter
Color, Pt-Co	75
Glycerine carbonate, wt%	93
Glycerine, wt%	2.0
Total carbonate, wt%	98.5
Water, wt%	0.05

*Methods of Test are available from Huntsman Corporation upon request.

ADDITIONAL INFORMATION**Regulatory Information**

INCI Name	Hydroxymethyl dioxolanone
DOT/TDG Classification	Not regulated
HMIS Code	0-1-0
WHMIS Classification	Not regulated
CAS Number	931-40-8

Physical Properties

Boiling range, 0.1 mm Hg, °C	110-115
Freezing point**, °C (°F)	-69 (-92.2)
Flash point, PMCC, °C (°F)	> 190 (>374)
Molecular weight	118
pH (Acidified)	4-6.5
Density, g/mL, 25°C	1.4
Viscosity (Kinematic), cSt, 25°C (77°F)	61
Water solubility	Miscible

**becomes a glass

TOXICITY AND SAFETY

For additional information on the toxicity and safe handling of this product, consult the Material Safety Data Sheet (Safety Data Sheet in Europe) prior to use of this product.

AVAILABILITY

JEFFSOL[®] GLYCERINE CARBONATE is available in tank cars, tank wagons, and drums. Samples are available by contacting our sample department at 1-800-662-0924.

REFERENCES CITED

- ¹ D'alelio, G.; Huemmer, T.; *J. Poly. Sci. A.*, 5, 307, (1967).
- ² European patent 0 328,150.
- ³ U.S. patent 5,703,136.
- ⁴ U.S. patent 3,072,613.
- ⁵ Kihara, N.; Endo, T.; *Jour. Poly. Sci. A*, 31, 2765, (1993).
- ⁶ Patent pending

References to patent documents herein are provided as background information only, and should not be construed as a suggestion to make, use, or sell any invention claimed without authorization from the patent owner.

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