

## Technical Bulletin

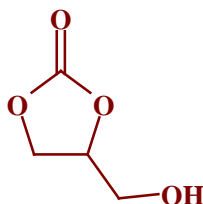
# JEFFSOL<sup>®</sup> Glycerine Carbonate

### ALTERNATIVE NAMES

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



**JEFFSOL<sup>®</sup> Glycerine Carbonate** is a clear, mobile liquid at room temperature.



### APPLICATIONS

The hydroxyl functionality of JEFFSOL<sup>®</sup> 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<sup>®</sup> ethylene carbonate and JEFFSOL<sup>®</sup> propylene carbonate find use.

The hydroxyl group of JEFFSOL<sup>®</sup> glycerine carbonate (GC) may be reacted with anhydrides<sup>1,2</sup> to form ester linkages or with isocyanates to form urethane linkages.<sup>3,4</sup> 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.<sup>5</sup> 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.<sup>4,6</sup>

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.

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### 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

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

**ADDITIONAL INFORMATION****Regulatory Information**

INCI Name Hydroxypropylene Carbonate

See SDS for all regulatory information.

**Bio-based Content, %** > 73  
(as measured by ASTM D6866-11)**Typical 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 Safety Data Sheet prior to use of this product.

**AVAILABILITY**

JEFFSOL<sup>®</sup> 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**

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

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For more information, go to [www.biopreferred.gov](http://www.biopreferred.gov).

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