

MATERIAL SAFETY DATA SHEET

Lonza

EMERGENCY TELEPHONE 800-424-9300 (Chemtrec)

Lonza Inc. 90 Boroline Road Allendale NJ 07401

800-777-1875 (9am - 5pm) 309-697-7200 (After 5pm)

Health : 2

Flammability : 1

Reactivity : 0

98328 Glycoserve LAD Preservative

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MATERIAL Glycoserve LAD Preservative	DATE ISSUED 10/30/04 - Rev.	DOT HAZARD CLASSIFICATION 9, PG III (BULK ONLY)
CAS NO. Mixture	SUPERSEDES 05/03/01	DOT SHIPPING NAME Environmentally Hazardous Substance, Liquid N.O.S.
FORMULA Mixture		DOT LABEL Class 9 (BULK ONLY)

CHEMICAL NAME (Active): 1,3-Dihydroxymethyl-5,5-dimethylhydantoin;
1,3-Dimethylol-5,5-dimethylhydantoin; 1,3-Bis(hydroxymethyl)-5,5-dimethyl-2,4-imidazolidinedione

SYNONYMS (active): DMDM Hydantoin (CTFA [INCI] name)

***** I - INGREDIENTS *****

	APPROXIMATE WEIGHT %	TWA/TLV
1,3-Dihydroxymethyl-5,5-dimethylhydantoin (CAS No. 6440-58-0)	*	None established
1-Hydroxymethyl-5,5-dimethylhydantoin (CAS No. 116-25-6)	*	None established
3-Hydroxymethyl-5,5-dimethylhydantoin (CAS No. 16228-00-5)	*	None established
5,5-Dimethylhydantoin (CAS No. 77-71-4)	*	None established
Formaldehyde (CAS No. 50-00-0)	2	0.75 ppm (OSHA-PEL) 2 ppm (OSHA-STEL) C 0.3 ppm (ACGIH-Ceiling)
Water (CAS No. 7732-18-5)	45	None established

* The sum of the four asterisked components is approximately 53%. These four components, along with Formaldehyde, are present as an equilibrium mixture. The total available Formaldehyde moiety in this product is approximately 17%, of which up to 2% is present as free Formaldehyde in solution.

***** II - PHYSICAL AND CHEMICAL PROPERTIES *****

APPEARANCE Clear, colorless liquid	pH 6.5 - 7.5
VISCOSITY Not known	ODOR Slight formaldehyde
BOILING POINT Not known	MELTING OR FREEZING POINT Not known
VAPOR DENSITY (Air=1) Not applicable	VAPOR PRESSURE (mm Hg) Not known
PERCENT VOLATILE (by weight) 45	SPECIFIC GRAVITY (WATER = 1) 1.16 @ 25°C
EVAPORATION RATE (Butyl Acetate=1) <1	SOLUBILITY IN WATER Soluble

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***** III - FIRE AND EXPLOSION INFORMATION *****

FLASH POINT	>200°F	AUTO IGNITION TEMPERATURE	Not known
LOWER EXPLOSION LIMIT (%)	Not applicable	UPPER EXPLOSION LIMIT (%)	Not applicable
EXTINGUISHING MEDIA	FOAM X	ALCOHOL FOAM	CO ₂ X
	DRY CHEMICAL X	WATER X	OTHER

SPECIAL FIRE FIGHTING PROCEDURES:

Must wear NIOSH approved self-contained breathing apparatus and protective clothing. Cool fire-exposed containers with water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Products of combustion are toxic. Heating this product in the open will release Formaldehyde. When this product is spread over a large area, irritating levels of gaseous Formaldehyde may be produced.

***** IV - HEALTH EFFECTS INFORMATION *****

PRIMARY ROUTES OF ENTRY - SKIN CONTACT	X	EYE CONTACT	X
INHALATION	X	INGESTION	

EFFECTS OF OVEREXPOSURE

Based upon animal toxicity information available for this product, it is anticipated that direct contact will produce mild eye and skin irritation, and inhalation may produce mild, reversible irritation to mucous membranes. No information found for human overexposure. This material contains up to 2% Formaldehyde. Heating this material in an open vessel will result in the release of Formaldehyde. Formaldehyde has been shown to cause sensitization reactions in some sensitive individuals. Therefore, repeated contact should be avoided. Formaldehyde is listed by IARC, OSHA and NTP as a possible human carcinogen by inhalation. Epidemiological studies, however, do not document any increased incidence of human cancers directly attributable to Formaldehyde exposure.

OVEREXPOSURE MAY AGGRAVATE EXISTING CONDITIONS:

May cause allergic response in persons with pre-existing sensitivity to Formaldehyde.

EMERGENCY AND FIRST AID PROCEDURES:

Eyes: Flush eyes with plenty of water for several minutes. Seek medical attention if irritation develops.

Skin: Wash affected areas with plenty of water, and soap if available, for several minutes. Seek medical attention if irritation develops.

Ingestion: If swallowed, give 3-4 glasses of water but DO NOT induce vomiting. If vomiting does occur, give fluids again. Get medical attention to determine whether vomiting or evacuation of stomach is necessary. Do not give anything by mouth to an unconscious or convulsing person.

Inhalation: Remove from area to fresh air. If not breathing, clear airway and start artificial respiration. If victim is having trouble breathing, give supplemental oxygen, if available. Get immediate medical attention.

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***** IV - HEALTH EFFECTS INFORMATION (continued) *****

CHEMICALS LISTED AS CARCINOGEN BY:

NATIONAL TOXICOLOGY PROGRAM - Yes* (Formaldehyde)
I.A.R.C. MONOGRAPHS - Yes* (Formaldehyde)
OSHA - Yes* (Formaldehyde)

* Formaldehyde is listed by IARC, OSHA and NTP as a possible human carcinogen by inhalation. Epidemiological studies, however, do not document any increased incidence of human cancers directly attributable to Formaldehyde exposures.

***** V - REACTIVITY INFORMATION *****

STABILITY: STABLE X
UNSTABLE

CONDITIONS TO AVOID
Temperatures above 90°C (to avoid decomposition with release of Formaldehyde). Heating in an open vessel (which will release additional Formaldehyde).

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition may produce toxic vapors/fumes of Formaldehyde, other organic materials and oxides of carbon and nitrogen.

HAZARDOUS POLYMERIZATION
MAY WILL NOT X
OCCUR OCCUR

CONDITIONS TO AVOID
None known

INCOMPATIBILITY (MATERIALS TO AVOID)

WATER OTHER X Strong acids and alkalis (stable between pH 4 and 9)

***** VI - SPILL AND DISPOSAL INFORMATION *****

STEPS TO BE TAKEN IN CASE OF MATERIAL SPILL OR RELEASE

CAUTION! Floors may become slippery. Wear appropriate protective equipment and NIOSH approved respirator where mists or vapors of unknown concentrations may be generated (self-contained breathing apparatus preferred). When spilled, and liquid spreads over a large area, irritating levels of gaseous Formaldehyde may be produced. In such cases, self-contained breathing apparatus should be used.

Dike and contain spill with inert material (sand, earth, etc.) and transfer the liquid and solid separately to containers for recovery or disposal. Keep spill out of sewers and open bodies of water.

WASTE DISPOSAL METHOD

Dispose of in compliance with all Federal, state and local laws and regulations. Incineration is the preferred method.

***** VII - PERSONAL PROTECTION INFORMATION *****

ENGINEERING CONTROLS

In processes where mists or vapors may be generated, proper ventilation must be provided in accordance with good ventilation practices.

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***** VII - PERSONAL PROTECTION INFORMATION (continued)*****

RESPIRATORY PROTECTION

In processes where mists or vapors may be generated, a NIOSH approved respirator is advised in the absence of proper environmental controls.

PROTECTIVE GLOVES

Rubber or neoprene, when needed, to prevent skin contact.

EYE PROTECTION

Wear chemical splash goggles where there is a potential for eye contact. Use safety glasses with side shields under normal use conditions.

OTHER PROTECTIVE EQUIPMENT

Eye wash; safety shower; protective clothing (long sleeves, coveralls or other, as appropriate), when needed, to prevent skin contact.

***** VIII - STORAGE AND HANDLING *****

PRECAUTIONS FOR STORAGE AND HANDLING:

Store at or near room temperature. Keep containers tightly closed until used. Do not store below 60°F, to avoid formation of crystals in this material. Preparation of formulations with this material should be carried out in closed vessels. While formulating under these conditions, temperatures as high as 80°C can be tolerated for a short period of time.

***** IX - TOXICOLOGY & ECOTOXICOLOGY INFORMATION *****

TOXICITY

The toxicity information provided below is for this material and similar material(s) containing the same components.

ACUTE

For Glycoserve LAD:

- oral LD₅₀ (rat): 3300 mg/kg
- dermal (rabbit): mild irritant.
- eyes (rabbit): mild irritant.
- inhalation LC₅₀ (rat - 4-hours): >5 mg/l

For Glydant, a formulation which contains up to 2% free formaldehyde in solution:

- skin sensitization (human): Low incidence of contact sensitization reported, potentially attributable to levels of dissolved Formaldehyde present.

For Glydant 2000, a formulation which contains up to 0.09% free Formaldehyde in solution:

- oral LD₅₀ (rat): 2890 mg/kg
- dermal LD₅₀ (rabbit): >2000 mg/kg
- inhalation LC₅₀ (rat - 4 hours): >2 mg/l
- eye irritation (rabbit): Mild to moderate irritant.
- skin irritation (rabbit): Mild irritant.
- skin sensitization (guinea pig - Buehler test): Not a sensitizer.

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***** IX - TOXICOLOGY & ECOTOXICOLOGY INFORMATION (continued) *****

GENOTOXICITY/MUTAGENICITY

For Glydant:

- Ames test - (Salmonella typhimurium): Equivocal results in repeated testing.
- unscheduled DNA synthesis (in vitro - rat hepatocytes): Equivocal results in repeated testing.
- chromosomal aberration assay (in vitro - CHO cells): Mutagenic.
- mouse lymphoma assay (in vitro - mouse lymphoma cells): Mutagenic.
- mouse micronucleus assay (in vivo - mouse): Not mutagenic.

REPRODUCTIVE/DEVELOPMENTAL

For Glydant:

- developmental toxicity (rabbit - oral): No evidence of developmental toxicity effects was observed at an exposure dose of 750 mg/kg/day administered from day 6 through 18 of gestation.
- developmental toxicity (rabbit - dermal): No evidence of developmental toxicity effects was observed at an exposure dose of 1000 mg/kg/day administered from day 7 through 18 of gestation.

SUBCHRONIC

For Glydant:

- oral toxicity (rat - 90 days): No systemic toxicity or target organ effects were observed at a dose regimen of 400 mg/kg/day for eight weeks, followed by a dose regimen of 600 mg/kg/day for an additional five weeks.
- dermal toxicity (rabbit - 90 days): No systemic toxicity or target organ effects were observed at dosage levels of approximately 1000 mg/kg/day.

ECOTOXICITY

AQUATIC

For Dantogard XL-1000, a solid mixture of the components:

- LC₅₀ (rainbow trout - 96-hours): 236 mg/l
- LC₅₀ (bluegill sunfish): 95 mg/l
- EC₅₀ (Daphnia Magna): 20 mg/l

***** X - MISCELLANEOUS AND REGULATORY INFORMATION *****

FEDERAL LEVEL REGULATIONS:

TOXIC SUBSTANCES CONTROL ACT (TSCA INVENTORY) STATUS:

This product is currently listed on the EPA TSCA 8(b) inventory list.

TSCA Section 12(b) Export Notification:

Components present in this product which, if exported, could require either annual or one-time reporting under this regulation are as follows:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
None known		

EPA REGULATION ON PESTICIDES:

This is an EPA FIFRA registered pesticide (EPA Registration No. 6836-111).

This material can only be used commercially in the EPA registered application(s) noted on the product label.

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***** X - MISCELLANEOUS AND REGULATORY INFORMATION (continued) *****

FEDERAL LEVEL REGULATIONS (continued):

OSHA Hazard Communication Standard:

Occupational exposures to Formaldehyde above specified threshold levels are regulated by the Hazard Communication Standard for Formaldehyde in the Code of Federal Regulations (29 CFR 1910.1048).

CERCLA (Comprehensive Environmental Response, Compensation and Liability Act of 1980 requires notification of the National Response Center (Telephone 800-424-8802) in the event of a release of quantities of the following hazardous materials contained in this product, if the release is equal to or greater than the Reportable Quantities (RQs) listed in 40 CFR 302.4:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde	50-00-0	2%

SARA Title III, Sections 302/304 (Superfund Amendments and Reauthorization act of 1986) - This act requires emergency planning, including agency notification, for possible release of the following components of this material, based upon the Threshold Planning Quantities (TPQs) and release Reportable Quantities (RQs) listed for the Components in 40 CFR 355:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde	50-00-0	2%

SARA Title III Sections 311/312 - This act requires reporting under the Community Right-to-Know provisions due to the inclusion of the following components of this material in one or more of the five hazard categories listed in 40 CFR 370:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Hazard *) Categories</u>
Formaldehyde	50-00-0	A, C, F

*) The five hazard categories are as follows: F=FIRE HAZARD; S= SUDDEN RELEASE OF PRESSURE; R=REACTIVE; A=IMMEDIATE (ACUTE) HEALTH HAZARD; C=DELAYED (CHRONIC) HEALTH HAZARD

SARA Title III Section 313 - This act requires submission of annual reports of the releases of the following components of this material if the threshold reporting quantities as listed in 40 CFR 372, are met or exceeded:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde	50-00-0	2%

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***** X - MISCELLANEOUS AND REGULATORY INFORMATION (continued) *****

STATE RIGHT-TO-KNOW REGULATIONS:

CALIFORNIA PROPOSITION 65 - Components present in this material which the State of California has found to cause cancer, birth defects or other reproductive harm are as follows:

AS A CANCER HAZARD

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde (gas)	50-00-0	Trace

MASSACHUSETTS Right-to-Know - The following components of this material are included in the Massachusetts Substance List and are present at or above reportable levels:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde	50-00-0	2%

MICHIGAN Critical Materials - The following components of this material are included in the Michigan Critical Materials List:

<u>Chemical Name</u>	<u>CAS Number</u>
Formaldehyde	50-00-0

NEW JERSEY Right-to-Know - The following components of this material are included in the New Jersey Hazardous Substance List and are present at or above reportable levels:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde	50-00-0	2%

PENNSYLVANIA Right-to-Know - The following components of this material are included in the Pennsylvania Hazardous Substance List and are present at or above reportable levels:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Typical Maximum Concentration</u>
Formaldehyde	50-00-0	2%