MATERIAL SAFETY DATA SHEET

MSDS Number: GLYC301-2
Supersedes: GLYC301-1

Revision Date: April 26, 2004
Issue Date: July 20, 2002

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

- **Product identification**

Synonyms: Glycerol
Trade Names: **Superol Glycerine USP, FCC**
Kosher Superol Glycerine USP, FCC

- **Product uses**

Multiple uses including as emulsifier, emollient, plasticizer, humectant, sweetner, anti-freeze, in surface coatings and paints, cosmetics, drug and food products. Intermediate for making glycerol derivatives.

- **Company/undertaking identification**

North America:
The Procter & Gamble Company
Procter & Gamble Chemicals
Sharon Woods Technical Center
11530 Reed Hartman Highway
Cincinnati, Ohio 45241

Department issuing MSDS: Product Safety and Regulatory Affairs
1-800-477-8899

Europe:
Procter & Gamble European Supply Company N.V.
P&G Chemicals – Europe
The Heights
Brooklands
Weybridge
Surrey
ENGLAND KT13 0XP
Telephone Number: 01932-896000

- **Emergency Telephone:**

P&G Ltd. - Brooklands, England: Tel 01932-896000 (day phone)
Emergency 0191-279-2000 (day phone)

CHEMTREC 1-800-424-9300 U.S. and Canada
1-703-527-3887 For calls originating elsewhere

U.S. Emergency, Quality or Service Issues: Call Customer Service
1-800-477-8899 or 513-626-6882

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation (mixture): Substance

	CAS No.	Wt/Wt %	EC-No.	EC Symbols	EC R-phrases
1, 2, 3-Propanetriol	56-81-5	99 - 100	2002895	Not applicable	Not applicable

Occupational exposure limits, if applicable, are listed in Section 8
LC/LD50 information is listed in Section 11.
Full text of R phrase(s) are listed in section 16.

3. HAZARDS IDENTIFICATION

European Hazard classification: This product is not classified as dangerous according to Directive 67/548/EEC.

- Potential Health Effects:

  Eye - Concentrated solutions may cause mild transient irritation.

  Skin - Unlikely to be irritant. Heated product may cause thermal burns if contacted.

  Inhalation - Not applicable at ambient temperature. Glycerine mist may be irritative to respiratory tract.

  Ingestion - Unlikely to be harmful unless excessive amount.

- Physical/Chemical Hazards: Contact of glycerine with strong oxidizing agents such as Nitric Acid or other strong acids, Chromium Trioxide, Potassium Chlorate, or Potassium Permanganate may cause an explosion.

- Environmental Hazards: Product is biodegradable

4. FIRST AID MEASURES

- Eye - Immediately flush with copious amounts of water. Get medical attention if irritation persists.
- Skin - Wash thoroughly with plenty of water and soap.
- Inhalation - Remove to fresh air.
- Ingestion - Remove material from mouth. Drink plenty of water. If large amount swallowed or symptoms develop get medical attention.

5. FIRE FIGHTING MEASURES

- Extinguishing media: Use water, alcohol resistant foam, CO_2 or dry chemical.
- Unsuitable extinguishing media: Not applicable

5. FIRE FIGHTING MEASURES - CONTINUED

- Flash Point and method: >390° F (198.9° C) PMCC
- Explosive limits in air: Not applicable
- Auto-ignition temperature: ~752º F (~400º C)
- Sensitivity to mechanical impact/static discharge: Not available
- Special Protective Equipment: Wear self-contained breathing apparatus and full protective clothing.
- Other Fire Fighting Considerations: Contact of glycerine with strong oxidizing agents such as Nitric Acid or other strong acids, Chromium Trioxide, Potassium Chlorate, or Potassium Permanganate may cause an explosion.
- Exposure hazards: During burning poisonous acrolein may be formed.

6. ACCIDENTAL RELEASE MEASURES

- Personal Precautions: Wear respirator, suitable gloves and eye/face protection.
- Environmental Precautions: Minimize contamination of drains, surface and ground waters.
- Procedures for Spill/Leak Clean-up: Transfer product to suitably labeled containers for disposal at an approved site. Absorb liquid spillage onto inert material (e.g. sand). Residues and small spillages may be washed away with water and detergent.

Refer to Section 8 for additional personal protection information.
Refer to Section 13 for disposal considerations.

7. HANDLING AND STORAGE

- Handling: No special precautions required, but avoid eye and skin contact as part of normal industrial hygiene. Prevent formation of mist. Eye and skin contact should be avoided if handling at elevated temperatures.
- Storage: Store in clean tight containers to prevent moisture pickup from air. Can be stored in aluminum, stainless steel, fiberglass or resin lined steel vessels.
- Other Recommendations: Avoid contact with strong oxidizing agents such as Nitric Acid or other strong acids, Chromium Trioxide, Potassium Chlorate, or Potassium Permanganate.
- Specific use(s): Follow bulk handling and storage procedures as noted above.

Refer to Section 6 for clean-up of spillages.
Refer to Section 13 for disposal considerations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- General Precautions: Good industrial hygiene should be followed. Avoid breathing mist.

- Exposure Limit Values - glycerine:

Australia – TWA 10 mg/m^3
Belgium - TWA 10 mg/m^3
Canada:
Alberta – TWA 10 mg/m^3
British Columbia – TWA 10 mg/m^3
Ontario – TWA 10 mg/m^3
Quebec – TWA 10 mg/m^3
France – TWA (VME) 10 mg/m^3
Finland – 8 hour limit 20 mg/m^3
Ireland – 8 hour OEL (TWA) 10 mg/m^3
Italy – 8 hour TWA 10 mg/m^3
Korea – TWA 10 mg/m^3
Malaysia – TWA 10 mg/m^3
Mexico – TWA 10 mg/m^3
New Zealand – TWA 10 mg/m^3
Singapore – 8-hour PEL (TWA) 10 mg/m^3
Spain – 8 hour daily exposure limit (VLA-ED) 10 mg/m^3
The Netherlands – MAC TWA (TGG) 10 mg/m^3
United Kingdom – TWA 10 mg/m^3
United States – ACGIH – Glycerine mist - TLV-TWA 10 mg/m^3
OSHA Z-1 PEL Glycerine mist, respirable fraction - 5 mg/m^3
OSHA Z-1 PEL Glycerine mist, total dust - 15 mg/m^3

- Exposure Controls:

Engineering Controls: Ventilation: Local exhaust - preferred
Mechanical (general) acceptable
Provide ventilation to meet exposure limits.

Personal Protective Equipment:

Eye - None required, although eye protection is recommended as part of good industrial hygiene.

Skin - Protective gloves: None required with normal use.

Inhalation - An appropriate NIOSH/MSHA approved respirator should be used if a mist or vapor is generated. A NIOSH/MSHA approved self-contained breathing apparatus or air-supplied respirator is recommended if the concentration exceeds the capacity of cartridge respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Other Controls: None required.

- Environmental Exposure Controls: Contact Procter and Gamble for specific Community information.

9. PHYSICAL AND CHEMICAL PROPERTIES

- General Information:

  Physical State: Liquid
  Appearance: Water white, clear
  Odor: Bland odor; sweet taste
  Odor Threshold: Not available

- Important health, safety and environmental information:

  pH: Neutral
  Boiling point/Boiling range: > 550° F (288° C) @ 760 mm Hg (101.3kPa)
  Flash Point & Method: >390° F (198.9° C) PMCC
  Flammability (solid, gas): Not available
  Explosive properties: Not to be expected
  Oxidising properties: Not to be expected
  Vapor pressure: @ 68° F (20° C) <0.008 mm Hg (<1013 hPa)
  Relative density: 1.262 @ 25/25° C
  Freezing point: Not available
  Melting Point: ~64.4º F (~18º C) (solidifies at a much lower temperature)
  Solubility:
  Water solubility: Complete @ 72º F
  Fat solubility (solvent-oil to be specified): Miscible with ethanol
  Slightly soluble in acetone
  Insoluble in ether and in chloroform
  Partition coefficient (Log Pow) (calculated): -2.6
  Viscosity: ~1300 mPa.s at 20º C
  Vapor density: Not available
  Evaporation Rate (nBuOAc=1): Not available
  Explosive Limits: Not applicable
  Auto ignition temperature: ~752º F (~400º C)
  Coefficient of water/oil distribution: Not available

10. STABILITY AND REACTIVITY

- Stability: Stable under normal operational procedures.

- Conditions to Avoid: None identified.

- Materials to Avoid: Contact of glycerine with strong oxidizing agents such as Nitric Acid or other strong acids, Chromium Trioxide, Potassium Chlorate, or Potassium Permanganate may cause an explosion.

- Hazardous Decomposition Products: Does not decompose up to 204° C (400° F)
  Thermal decomposition may release acrolein.

- Hazardous Polymerization: No hazardous polymerization reactions.

11. TOXICOLOGICAL INFORMATION

IRRITATION DATA

Skin, rabbit	Not irritating
Eye, rabbit	Not irritating

TOXICITY DATA

LD_{50} oral, rat	>2 g/kg

12. ECOLOGICAL INFORMATION

- Ecotoxicity:

Carassius auratus (Goldfish)	24h LC_{50} >5,000 mg/L
Leuciscus idus (Golden Orfe)	48h LC_0 >250 mg/L
Oncorhynchus mykiss (Rainbow trout)	96h LC_{100} = 51,000 – 57,000 mg/L
Daphnia magna	24h EC_{50} >10,000 mg/L
Daphnia magna	24h EC_0 >500 mg/L

Microorganisms

Chlimonas paramaecium	48h NOEC >10,000 mg/L
Entosiphon sulcatum	72h NOEC 3200 mg/L
Pseudomonas putida	16h NOEC >10,000 mg/L
Uronema parduzci	20h NOEC >10,000 mg/L

Algae

Microcystis aeruginosa	8d NOEC 2900 mg/L
Scenedesmus quadricauda	8d EC0 >10,000 mg/L

- Mobility:
  Low potential for sorption to soil. Glycerol will partition primarily to water.

- Persistance and degradability:
  Readily biodegradable (OECD 301)

- Bioaccumulative potential:
  BCF: 3.162 (calculated)

13. DISPOSAL CONSIDERATIONS

DISPOSAL IS TO BE PERFORMED IN COMPLIANCE WITH ALL FEDERAL, STATE/PROVINCIAL AND LOCAL REGULATIONS. Do not dispose of via sinks, drains or into the immediate environment.

14. TRANSPORT INFORMATION

U.S. DOT: Not regulated for transport
Not classified in RID/ADR – IMDG – ICAO/IATA

15. ADDITIONAL REGULATORY INFORMATION

INVENTORY STATUS: TSCA, EINECS, DSL, JAPAN, AUSTR, PHIL, CHINA, KOREA

WGK water endangering class: 1, low hazard to water

EU Classification

This product is not classified as dangerous according to Directive 67/548/EEC.

Canada

HAZARDOUS INGREDIENTS – WHMIS (Canadian Workplace Hazardous Materials Information System)

This product when tested as a whole is not a controlled substance within the meaning of the Hazardous Products Act.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

EUROPE

This product safety data sheet was prepared in compliance with Directive 2001/58/EC

References: BIBRA toxicity profile (1987). Glycerol.

OECD SIDS Initial Assessment Report for SIAM 14, February 2002

The following sections contain revisions or new statements: 1.

Department issuing MSDS: Product Safety and Regulatory Affairs 1-800-477-8899

The submission of the MSDS may be required by law, but this is not an assertion that the substance is hazardous when used in accordance with proper safety practices and normal handling procedures. Data supplied are for use only in connection with occupational safety and health.

The information contained herein has been compiled from sources considered by Procter & Gamble to be dependable and is accurate to the best of the Company's knowledge. The information relates to the specific product designated herein, and does not relate to use in combination with any other material or any other process. Procter & Gamble assumes no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the controlled product.