

# Polymeg® Polyols

Polytetramethylene ether glycol  
(PTMEG)



## Introduction

POLYMEG® polyols are diols produced through the polymerization of tetrahydrofuran. They are linear in structure with a backbone of repeating tetramethylene units connected by ether linkages. The chains are capped with primary hydroxyl units.

POLYMEG polyols are characteristically white, waxy solids at room temperature. They do not have sharp melting or solidification points. At slightly elevated temperatures (38° C, 100° F), they liquefy to low-viscosity, water white liquids with a tendency to supercool. The hygroscopic nature of polyols requires limiting exposure to atmospheric moisture. An antioxidant is added to POLYMEG polyols to improve the stability of the polyol against thermal and oxidative degradation during normal storage and handling.

POLYMEG polyols are soluble in most organic solvents (alcohols, esters, ketones, plus aromatic and chlorinated hydrocarbons), but they are essentially insoluble in aliphatic hydrocarbons and water.

## Physical Properties

|                        | 650         | 1000        | 2000      |
|------------------------|-------------|-------------|-----------|
| Molecular Weight       | 625-675     | 950-1050    | 1900-2100 |
| Hydroxyl #, mg. KOH/g. | 166.2-179.5 | 106.9-118.1 | 54.7-57.5 |
| Water, ppm max.        | 150         | 150         | 150       |
| Color, APHA max.       | 40          | 40          | 40        |
| Viscosity, cP at 40°C  | 100-200     | 240-360     | 1180-1650 |
| Iron, ppm max.         | 1           | 1           | 1         |
| Specific gravity, 40°C | 0.98        | 0.975       | 0.972     |

## Applications

The major application uses for POLYMEG polyols include: as a component of thermoplastic and thermoset urethane elastomers; in spandex fibers; and in copolymer thermoplastic elastomers. High performance elastomers made with POLYMEG polyols are also used in a large number of commercial applications to form soft segment polyurethane, copolymer polyester and copolymer polyamide elastomers. Thermoplastic elastomers made with POLYMEG can be processed into finished articles by injection molding or extrusion. Polyurethane articles can also be made via lowpressure processes (casting or compression molding) by filling a mold before the polymer viscosity increases from the curing reaction.

Common application markets include:

- Automotive
- Adhesives and sealants
- Coatings
- Engineered components
- Industrial
- Sports
- Clothing

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## Benefits

Elastomers prepared from POLYMEG polyols are high performance products with these outstanding characteristics:

- Superior hydrolytic stability (high temperature and humidity)
- High fungus resistance
- Low temperature flexibility
- Superior dynamic properties
- Excellent abrasion resistance
- High moisture vapor transmission
- Good tear strength

## FDA Status

POLYMEG polyols, listed as a-hydro-w-hydroxypoly-(oxytetramethylene), are acceptable indirect food additives in the following regulation standards:

- 21 CFR 177.1680 Polyurethane resins
- 21 CFR 175.105 Adhesives
- 21 CFR 177.1590 Polyester elastomers
- 21 CFR 177.2600 Rubber articles intended for repeated use

## Safety and Health Hazards

POLYMEG polyols are stable, non-hazardous materials with a low order of toxicity and a high flash point. Eye and skin exposure may cause some mild irritation. More detailed safety and disposal information about this product is contained in the Material Safety Data Sheet (MSDS).

All users of

our products are urged to retain and use the MSDS.

A MSDS is automatically distributed upon customer purchase/order execution. You may request an advance or replacement copy by going to our website: [www.lyondell.com](http://www.lyondell.com) or by calling our MSDS hotline at (800) 700-0946 (U.S. and Canada).

Before using a product sold by a company of the LyondellBasell family of companies, users should make their own independent determination that the product is suitable for the intended use and can be used safely and legally.

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This product(s) may not be used in:

(i) any U.S. FDA Class I, Health Canada Class I, and/or European Union Class I medical devices, without prior notification to Seller for each specific product and application; or (ii) the manufacture of any of the following, without prior written approval by Seller for each specific product and application: U.S. FDA Class II Medical Devices; Health Canada Class II or Class III Medical Devices; European Union Class II Medical Devices; film, overwrap and/or product packaging that is considered a part or component of one of the aforementioned medical devices; packaging in direct contact with a pharmaceutical active ingredient and/or dosage form that is intended for inhalation, injection, intravenous, nasal, ophthalmic (eye), digestive, or topical (skin) administration; tobacco related products and applications, electronic cigarettes and similar devices, and pressure pipe or fittings that are considered a part or component of a nuclear reactor. Additionally, the product(s) may not be used in: (i) U.S. FDA Class III Medical Devices; Health Canada Class IV Medical Devices; European Class III Medical Devices; (ii) applications involving permanent implantation into the body; (iii) life-sustaining medical applications; and (iv) lead, asbestos or MTBE related applications. All references to U.S. FDA, Health Canada, and European Union regulations include another country's equivalent regulatory classification.

Users should review the applicable Safety Data Sheet before handling the product.

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