



## DATASHEET

**MPG - USP**

## PO &amp; DERIVATIVES

U1512

Revised December 2019

MPG - USP is the US Pharmacopoeia compliant grade of monopropylene glycol (MPG). It is a clear, colourless and practically odourless, hygroscopic liquid, completely soluble in water.

MPG - USP is miscible in all proportions with low molecular weight aliphatic alcohols and ketones. It is slightly to moderately soluble in aromatic hydrocarbon solvents and only slightly miscible with aliphatic hydrocarbon solvents.

Other chemical names for MPG - USP are: 1,2-dihydroxypropane; 1,2-propanediol; 1,2-propylene glycol

**TYPICAL PROPERTIES**

| PROPERTY                               | TEST METHOD | UNIT                 | VALUE     |
|--|-------------|----------------------|-----------|
| Purity                                 | USP         | % (m/m)              | 99.5 min  |
| Colour                                 | ASTM E-202  | Pt-Co                | 10 max    |
| Water                                  | USP         | % (m/m)              | 0.2 max   |
| Acidity as Acetic Acid                 | USP         | % (m/m)              | 0.005 max |
| Chlorides                              | USP         | mg/kg                | 1.0 max   |
| Sulphate                               | USP         | mg/kg                | 60 max    |
| Iron                                   | ASTM E-202  | mg/kg                | 0.5 max   |
| Heavy metals                           | USP         | mg/kg                | 5.0 max   |
| Molecular weight                       |             | g/mol                | 76.09     |
| Density @ 20 °C                        |             | kg/m <sup>3</sup>    | 1036      |
| Viscosity @ 20 °C                      |             | mPa.s                | 55        |
| Coefficient of cubic expansion @ 20 °C |             | 10 <sup>-4</sup> /°C | 6.95      |
| Refractive index @ 20 °C               |             |                      | 1.4326    |
| Pour point                             |             | °C                   | -59.5     |
| Boiling point                          |             | °C                   | 187.4     |
| Flash point                            |             | °C                   | 99        |
| Vapour pressure @ 20 °C                |             | kPa                  | 0.0067    |
| Vapour pressure @ 50 °C                |             | kPa                  | 0.0893    |
| Surface tension @ 20 °C                |             | mN/m                 | 36        |
| Specific heat @ 20 °C                  |             | kJ/kg/°C             | 2.48      |
| Latent heat of vaporization @ 20 °C    |             | kJ/kg                | 976.5     |
| Thermal conductivity @ 20 °C           |             | W/m/°C               | 0.187     |
| Heat of combustion at 25 °C            |             | kJ/kg                | 23982     |
| Electrical conductivity @ 20 °C        |             | µS/m                 | 4.4       |
| Dielectric constant                    |             |                      | 32.0      |

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All typical physical properties are at 20 °C unless stated otherwise. The above typical physical properties are published here as a guide to potential users of the product. A sales specification is published separately.

### Application

MPG - USP is used in a wide range of applications in the pharmaceutical industry, the food industry and in cosmetics.

### Test Methods

Copies of copyrighted test methods can be obtained from the issuing organisations:

American Society for Testing and Materials (ASTM): [www.astm.org](http://www.astm.org)

US Pharmacopoeia Inc (USP): [www.usp.org](http://www.usp.org)

For routine quality control analyses, local test methods may be applied that are different from those mentioned in this datasheet. Such methods have been validated and can be obtained through your local Shell Chemicals company.

### Storage and Handling

MPG - USP is slightly hygroscopic and must be stored under such conditions that contamination with water and absorption of moisture are prevented.

Storage of MPG - USP at ambient temperature will not create hazardous conditions. For quality reasons the storage temperature should not exceed 40 °C. Under freezing conditions the product viscosity may become too high to be pumped.

MPG - USP is a stable product. It is not expected to deteriorate significantly provided it is stored as indicated. As a good industrial practice, however, it is recommended that MPG - USP be used within 12 months from opening of the sealed package.

### Bulk

Tanks should be of stainless or mild steel, free of mill-scale or rust, and maintained in a rust-free condition. The tank may be lined with an epoxy or phenolic resin paint that is approved for this service.

Small tanks must be fitted with silica gel breathers, that are inspected and regenerated at regular intervals.

Large tanks (> 300m<sup>3</sup>) should be fitted for blanketing with dry nitrogen.

If heating of the product is necessary the heating coil skin temperature must not exceed 40 °C.

Lines should be of stainless or mild steel, and maintained in a rust-free condition.

Hoses should be of Polypropylene or stainless steel, and labelled "Propylene glycol only".

### Drums

MPG - USP should be stored in dry conditions, away from direct heat sources, and preferably in the original containers. Opened drums must be closed tightly immediately after use.

For further advice on Storage and Handling please refer to the Safety Data Sheet on [www.shell.com/chemicals](http://www.shell.com/chemicals).

### Hazard Identification

Low order of acute toxicity by the oral or percutaneous routes. Slightly irritating to the eyes and skin. This product is not in the 'flammable' range, but will burn. Before handling the product, please refer to the Safety Data Sheet.

| PROPERTY                     | TEST METHOD | UNIT    | VALUE |
|------------------------------|-------------|---------|-------|
| Flash point (PMCC)           | ASTM D93    | °C      | 99    |
| Lower explosive limit in air |             | % (v/v) | 2.6   |
| Upper explosive limit in air |             | % (v/v) | 12.6  |
| Auto ignition temperature    |             | °C      | 421   |

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