



Rhushabh Chemicals

Bringing Color to your Style

PHYSICAL AND ANALYTICAL DATA

| RHU CHEM | APPEARANCE AT 25° c | PH | AVERAGE MOLECULAR WEIGHT | MELTING POINT | HYDROXYL VALUE | MOISTURE CONTENT MAX. |
|----------|--------------------------------|---------|--------------------------|---------------|----------------|-----------------------|
| PEG-200 | Clear viscous colorless liquid | 4.0-7.0 | 190-210 | <65°C | 500-550 | 1.0% |
| PEG-300 | Clear viscous colorless liquid | 4.0-7.0 | 290-310 | <15°C | 340-394 | 1.0% |
| PEG-400 | Clear viscous colorless liquid | 4.0-7.0 | 390-410 | 4-8°C | 264-300 | 1.0% |
| PEG-600 | Clear viscous colorless liquid | 4.0-7.0 | 590-610 | 15-17°C | 176-200 | 1.0% |
| PEG-1000 | White waxy solid | 4.0-7.0 | 950-1050 | 37-38°C | 105-120 | 1.0% |
| PEG-1500 | White waxy solid | 4.0-7.0 | 1450-1550 | 44-45°C | 70-90 | 1.0% |
| PEG-2000 | White flakes | 4.0-7.0 | 1950-2050 | 45-46°C | 50-70 | 1.0% |
| PEG-4000 | White flakes | 4.0-7.0 | 3800-4200 | 53-56 °C | 30-36 | 1.0% |
| PEG-6000 | White flakes | 4.0-7.0 | 5500-6500 | 55-63 °C | 16-20 | 1.0% |

STABILITY AND STORAGE CONDITIONS

Polyethylene glycols are chemically stable in air and in solution although grades with a molecular weight less than 2000 are hygroscopic. Polyethylene glycols do not support microbial growth, nor do they become rancid.

Polyethylene glycols and aqueous polyethylene glycol solutions can be sterilized by autoclaving, filtration or gamma irradiation. Sterilization of solid grades by dry heat at 150°C for one hour may induce oxidation, darkening and the formation of acidic degradation products. Ideally, sterilization should be carried out in an inert atmosphere. Oxidation of polyethylene glycols may also be inhibited by the inclusion of a suitable antioxidant.

If heated tanks are used to maintain solid polyethylene glycols in a molten state, care must be taken to avoid contamination with iron, which can lead to discoloration. The temperature must be kept to the minimum necessary to ensure fluidity; oxidation may occur if polyethylene glycols are exposed for long periods to temperatures exceeding 50°C. However, storage under nitrogen reduces the possibility of oxidation.

Polyethylene glycols should be stored in well-closed containers in a cool, dry place. Stainless steel, aluminium, glass or lined steel containers are preferred for the storage of liquid grades.



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❑ INCOMPATIBILITIES

The chemical reactivity of polyethylene glycols is mainly confined to the two terminal hydroxyl groups, which can be either esterified or etherified. However, all grades can exhibit some oxidizing activity due to the presence of peroxide impurities and secondary products formed by autoxidation.

Liquid and solid polyethylene glycol grades may be incompatible with some colours.

The antibacterial activity of certain antibiotics, particularly penicillin and bacitracin, is reduced in polyethylene glycol bases. The preservative efficacy of the parabens may also be impaired due to binding with polyethylene glycols.

Physical effects caused by polyethylene glycol bases include softening and liquefaction in mixtures with phenol, tannic acid and salicylic acid. Discoloration of sulphonamides and dithranol can also occur and sorbitol may be precipitated from mixtures. Plastics, such as polyethylene, phenol form aldehyde, polyvinyl chloride and cellulose-ester membranes (in filters) may be softened or dissolved by polyethylene glycols. Migration of polyethylene glycol can occur from tablet film coating, leading to interaction with core components.

SAFETY

Polyethylene glycols are widely used in a variety of pharmaceutical formulations. Generally, they are regarded as nontoxic and non-irritant materials. However, adverse reactions to polyethylene glycols have been reported and although of relatively low toxicity, any toxicity appears to be greatest with polyethylene glycols of low molecular weight.

❑ HANDLING PRECAUTIONS

Observe normal precautions appropriate to the circumstances and quantity of material handled. Eye protection is recommended.

THANK YOU



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