

Application Data

MPDiol® Glycol

Solubility in Personal Care Formulations

Freeze/Thaw Stability: MPDiol Glycol Formulations

Frequently, glycols are utilized in emulsion products to improve freeze/thaw stability. This test measures the ability of a product to be frozen and then recover without product degradation. Samples were placed at -20°C for 24 hours and 25°C for 24 hours. This constitutes one cycle. Each product was subjected to a total of five cycles. The following products were evaluated and passed in this study:

- Baby Lotion
- Facial Moisturizer
- Hair Conditioner
- Hair Relaxer
- 5% Benzoyl Peroxide Cream (oil free)

Miscibility Study*		
Compound 1	Compound 2	Miscible
MPDiol	+ SILWET L-7657 Polyalkylene oxide Silicone (HLB 13-17)	Y
MPDiol	+ SF-96-100 GE Silicone	N
MPDiol	+ Mineral Oil	N
MPDiol	+ GE SF1288	Y
*Mixing at room temperature		

High Temperature Stability: MPDiol Formulations

Cosmetic products must exhibit adequate elevated temperature stability in order to be considered satisfactory to enter the marketplace. It is anticipated that 90 days at 45°C will approximate a shelf life of at least two years.

The following products were subjected to this rather extreme test and all passed:

- Liquid Makeup
- Facial Cleanser
- Baby Lotion
- Hair Conditioner
- Benzoyl Peroxide Cream
- Curl Activator Gel²
- AHA Lotion
- Sunscreen
- Facial Moisturizer
- Bath & Shower Gel
- Hair Relaxer¹

¹MPDiol glycol prevented phase separation encountered using traditional glycols.

²MPDiol glycol produced the clearest product compared to traditional glycol.

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Preservative Solubility in MPDiol Glycol and Propylene Glycol at RT				
Preservative	Solubility, Wt%		Brookfield Viscosity, cps	
	MPDiol	PG	MPDiol	PG
None			162.2 ¹	43.5 ²
Methyl Paraben	13.7	18.1	153.0 ¹	53.6 ²
Ethyl Paraben	14.4	19.2	156.5 ¹	53.0 ²
Propyl Paraben	17.1	22.4	152.0 ¹	54.5 ²
Butyl Paraben	41.5	39.4	173.8 ¹	70.5 ²
IPBC	16.7	22.2	158.8 ¹	50.8 ²
Glydant XL-1000	20.8	28.7	186.8 ¹	84.0 ²
Germall II	< 1	23.4	--	200.0 ³
Germall 115	< 1	21.6	--	201.0 ³

¹LVT-SSA, #18 Spindle @ 12 rpm @ 25°C
²LVT-SSA, #18 Spindle @ 30 rpm @ 25°C
³LVT-SSA, #18 Spindle @ 6 rpm @ 25°C

- IPBC = Iodopropynyl Butyl Carbamate (Lonza)
- Glydant XL-1000 = DMDM Hydantoin (Lonza)
- Germall II – Diazolidinyl Urea (ISP)
- Germall 115 – Imidiazolidinyl Urea (ISP)

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