LUBRIZOL LIFE SCIENCE

HEALTH

Anhydrous Topical Gel

This anhydrous gel features **Carbopol® 974P NF polymer** which imparts viscosity, acidic and bioadhesive properties to the formulation for different topical administrations.

Number	Ingredients	% w/w
	Part A:	
1.	**Carbopol® 974P NF polymer**	2.0
2.	Propylene glycol	73.0
3.	Polyethylene glycol (PEG 400)	25.0
	TOTAL:	**100.00**

Lab batch size – 600 g

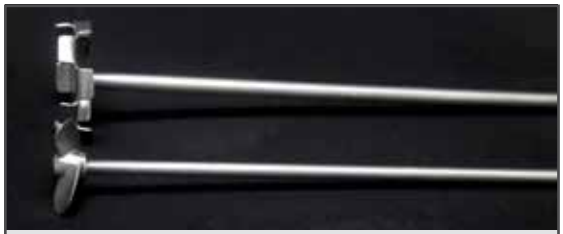
Process:

1. Mix propylene glycol and PEG 400 together.

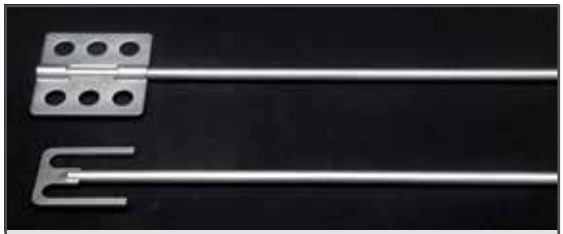
2. Disperse Carbopol® 974P NF polymer into the glycol mixture by submerging the impeller until it is very close to the bottom of the vessel. Angle the impeller to generate a vortex that is 1 to 1½ impeller diameters. Slowly sift the polymer through a stainless steel 20 mesh screen into the vortex of the moderate agitating liquid (about 300-800 rpm). After all the dry polymer has been introduced, continue the agitation to 300-800 rpm and reposition the mixer to vertical position to avoid or minimize air entrapment. Continue the agitation to obtain a uniform dispersion. Heat the dispersion to 65°C for 20 minutes and mix for 1 hour with low-shear impeller while cooling.

Product Properties	Stability
Appearance: Translucent gel	Passed 3 freeze/thaw cycles
Viscosity (cP)*: 40,700 • *Brookfield RVT @25°C, 20 rpm, Spindle #7, measured at 24 hours	Stable for a minimum of 6 months when stored under the following ICH conditions:
	Long term (25 ± 2°C / 60 ± 5% relative humidity)
	Accelerated (40 ± 2°C / 75 ± 5% relative humidity)

Design of mixing elements:



Propeller or dissolver for dispersing Carbopol® polymers.



Paddle or U-shaped low-shear impeller for neutralization.

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Summary:

Carbopol® polymers have demonstrated to be useful and highly efficient as rheology modifiers for un-neutralized anhydrous system.

Alternative Lubrizol products to use in this formulation are Carbopol® 971P NF and Noveon® AA-1 polycarbophil.

Other polyols, like glycerin can be used.

The Lubrizol Life Science Health website **www.lubrizol.com/Health** provides additional information:

- Bulletin 04 - Dispersion Techniques; Bulletin 07 - Flow and Suspension Properties; Bulletin 08 - Emulsification Properties; Bulletin 21 - Formulating Semisolid Products
- Dispersion and neutralization videos under video gallery
- Technical Data Sheets, Test Procedures, Certificates, and other Formulations

Please contact your Lubrizol representative to get samples, quotations or further technical assistance.

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