

Methyl Salicylate, Menthol, Thymol, Eucalyptus Oil Compound Emulgel

The emulgel contains **Methyl salicylate 12.5%, Menthol 2.5%, Thymol 0.12% and Eucalyptus oil 0.2% w/w**. This formulation features **Pemulen™ TR-1 NF polymer** as an emulsifying agent. **Carbopol® 980 NF polymer** is incorporated in the formulation for rheology modification.

Number	Ingredients	% w/w
	Part A:	
1.	Methyl salicylate	12.50
2.	Menthol	2.50
3.	Thymol	0.12
4.	Eucalyptus oil	0.20
5.	Cetostearyl alcohol	5.00
6.	Polysorbate 80	0.30
7.	Benzyl alcohol	1.0
8.	Pemulen™ TR-1 NF Polymer	0.30
9.	Carbopol® 980 NF Polymer	0.20
	Part B:	
10.	Glycerin	10.00
11.	Deionized water	67.63
	Part C:	
12.	Triethanolamine	q.s. to pH 5.0 to 5.50
	TOTAL:	100.00

Lab batch size - 1,000 gm

Process:

- Part A:** Dissolve menthol, cetostearyl alcohol, thymol, benzyl alcohol and polysorbate 80 in methyl salicylate by warming to 40-45°C. Disperse **Pemulen™ TR-1 NF** and **Carbopol® 980 NF polymers** into the oil phase using propeller stirrer at low RPM and cool to room temperature.
- Part B:** Mix glycerin in the water. Add Part A to Part B and homogenize to form a smooth, white emulsion using suitable homogenizer.
- Part C:** Adjust the pH to 5.25 (desired range pH 5.0 to 5.5) with triethanolamine. Mix thoroughly with Paddle or U-shaped low-shear impeller to minimize the air entrapment, until a smooth, viscous white emulgel is obtained.

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Product Properties	Stability
Appearance: White, smooth emulgel	Stable for a minimum of 3 months when stored under the following ICH conditions:
pH: 5.25	Long term (25 ± 2°C / 60 ± 5% relative humidity)
Viscosity (cP)*: 40,000 • *Brookfield RVT @25 °C, 20 rpm, Spindle #6, measured at 24 hours	Accelerated (40 ± 2°C / 75 ± 5% relative humidity)

Design of mixing elements:



Summary:

Carbopol® and Pemulen™ polymers have demonstrated to be useful and highly efficient as rheology modifiers and emulsion stabilizer to provide a stable o/w cream with nice sensory.

The Lubrizol Life Science Health website <https://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.

