

# Methyl Salicylate and Menthol Hydroalcoholic Clear Gel

The gel contains **Methyl salicylate 15% and Menthol 7% w/w**. This gel features **Carbopol® 971P NF polymer** which imparts viscosity and clarity to the hydroalcoholic clear gel formulation.

Number	Ingredients	% w/w
<b>Part A:</b>		
1.	Methyl salicylate	15.0
2.	Menthol	7.0
3.	<b>Carbopol® 971P NF Polymer</b>	0.3
4.	Ethanol	15.0
5.	Propylene glycol	20.0
<b>Part B:</b>		
6.	Hydroxypropyl cellulose (Klucel® HXF)	0.6
7.	Ethanol	20.0
8.	Deionized water	21.5
<b>Part C:</b>		
9.	2-Amino-2-methyl-1 propanol (20% aqueous solution)	0.4
10.	Lavender fragrance	0.2
<b>TOTAL:</b>		<b>100.00</b>

Lab batch size - 500 gm

## Process:

- Part A:** Dissolve menthol in the methyl salicylate by heating to 40-45°C. Disperse Carbopol® 971P NF polymer into the oil mixture using propeller stirrer at low agitation. Add ethanol and propylene glycol and mix well. Keep the solution covered during mixing to prevent evaporation.
- Part B:** Disperse the hydroxypropyl cellulose in ethanol using a suitable homogenizer. Add the deionized water and homogenize to obtain a clear, viscous solution.
- Add Part B ingredients to Part A ingredients and mix thoroughly using a propeller stirrer.
- Part C:** Slowly add the 20% 2-amino-2-methyl-1-propanol aqueous solution while mixing with paddle or U-shaped low-shear impeller to minimize air entrapment. Add fragrance and mix to obtain a clear, viscous gel.

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Product Properties	Stability
<b>Appearance:</b> Clear Gel	Stable for a minimum of 3 months when stored under the following ICH conditions:
<b>pH:</b> 6.50	Long term (25 ± 2°C / 60 ± 5% relative humidity)
<b>Viscosity (cP)*:</b> 8,900 • *Brookfield RVT @25°C, 20 rpm, Spindle #6, measured at 24 hours	Accelerated (40 ± 2°C / 75 ± 5% relative humidity)

## Design of mixing elements:



Propeller or dissolver for dispersing Carbopol polymers.



Homogenizer for preparing Phase B.



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

## Summary:

Carbopol® polymers have demonstrated to be useful and highly efficient as rheology modifiers in hydroalcoholic clear gel formulations.

The Lubrizol Life Science Health website [www.lubrizol.com/Health](http://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 from video gallery
- Technical Data Sheets, Test Procedures, Certificates, and other Formulations

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

