

SPRAY HAIR GEL USING CARBOPOL® 940 POLYMER

Ingredient / INCI-CTFA Name	Weight, %	Function	Trade Name (Supplier)
PART A Carbomer (1% dispersion)	30.00	Gellant	Carbopol® 940 Polymer (Noveon, Inc.)
PART B Deionized Water	59.47	Diluent	
PVP/VA Copolymer	8.00	Hair Setting Resin	Luviskol® VA-73W (BASF)
Triethanolamine (99%)	0.12	Neutralizer	
DMDM Hydantoin	0.20	Preservative	Glydant® (Lonza)
Disodium EDTA	0.01	Chelating Agent	
PART C Glycerin	2.00	Humectant	
Methylparaben	0.20	Preservative	
2350-92-672 (OVER)			

PROPERTIES:

pH	5.30 - 5.60
Viscosity* (mPa·s)	10,000 - 14,000
Clarity** (%T)	92.0 - 96.0

* Brookfield RVT @ 20 rpm, 25°C, #5 spindle

** Brinkman PC801 colorimeter, 420 nm, >90% visually clear

PREPARATION PROCEDURE:

1. Prepare 1% **Carbopol® 940 polymer** dispersion in room temperature deionized water.
2. Mix PART B ingredients until all ingredients dissolve.
3. Add PART B to PART A with moderate agitation.
4. Mix PART C ingredients with slight heating until paraben is dissolved.
5. Add PART C to PART A and PART B.
6. Add a small additional amount of TEA until gel is clear.

SPECIAL INSTRUCTIONS:

In this formulation, a PVP/VA (70:30) copolymer in aqueous solution is required to maintain optimum clarity at up to 4% polymer solids. Additionally, the best clarity will be obtained when the pH is maintained between 5.30 and 5.60. Special care should be taken not to exceed this pH.

Additional hold can be obtained by the incorporation of PVP K90 (BASF) at 0.5% to PART B without a reduction of gel clarity.

The viscosity can be lowered by adding very small quantities of Na₂ EDTA (0.01% increments) if so desired.

COMMENTS:

This clear gel has excellent pump spray quality, with moderate hold and little tack on hair under humid conditions. Carbopol® 940 gives a very clear gel structure to suspend air bubbles, yet thins when pumped through the sprayer to give a fine mist.

NOTE: Recommended pump sprayer is Calmar Mark IV high pressure, 1.8 pound precompression spring, WT 25 Actuator orifice (Calmar, Inc., Fax #: 816-246-3520 / Phone #: 800-599-2124).