

Intelimer® 8600 Emulsion Polymer—A unique side chain crystalline polymer technology for hair styling

Introduction

Discover new possibilities in hair styling with Intelimer 8600 emulsion polymer. Intelimer 8600 emulsion polymer enables you to create novel hair styling formulations with superior hold, durability, humidity resistance, flexibility and multiple quick style-restyle properties without reapplication. With conventional hair fixatives, once the hair is styled, reshaping is virtually impossible. If your intent is to have styling flexibility with a smooth, light aesthetic, no stickiness, and a shiny look without flyaway or frizz, Intelimer 8600 emulsion polymer is an ideal choice.

Intelimer 8600 emulsion polymer is a patented, side chain crystalline homopolymer with a long chain acrylate group in the backbone. It has a very sharp melt point with small hysteresis that allows it to exhibit sharp changes in properties such as permeability, adhesion, and viscosity over temperature changes as narrow as 1 to 2 °C. Intelimer 8600 emulsion polymer exhibits flexible, water-resistant films above 40 °C that become reversibly rigid and impermeable below 35 °C.

INCI Name: C8-22 Alkyl Acrylate/Methacrylic Acid Crosspolymer

Typical Properties

(not to be used as specifications)

Appearance	Milky White Liquid
Total Solids	46-49 %
pH	6-7
Melt Temperature	45-47 °C
Density (lbs/gal)	8.0
Viscosity @ 25 °C (cPs)	40-100

Key Benefits of Intelimer 8600 Polymer Include:

- Exceptional humidity resistance and curl retention
- Styling flexibility
- Superior hold
- Reversible styling-restyling
- Shine and gloss without greasy feel or stickiness
- Easy wash out
- Easy to use
- Compatible with carbomer-type thickeners

Unique Polymer Structure

Although Intelimer 8600 emulsion polymer is a side chain crystalline polymer, it is unique and different from other crystalline polymers. Intelimer 8600 emulsion polymer is composed of spherical microstructures. The side chain crystalline polymer chain is contained in a network of core shell polymer configurations with crystalline structure on the surface that has the ability to provide stiffness and style retention but also trigger temperature properties.

Figure 1: AFM Images of Intelimer 8600 Polymer

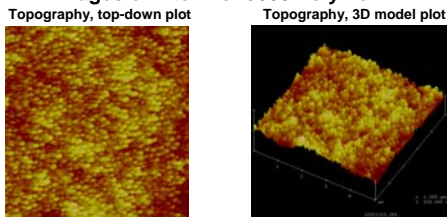
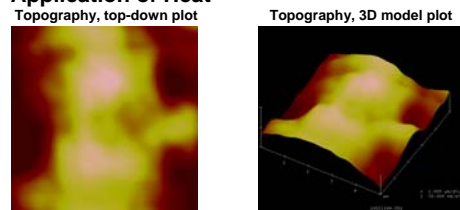


Figure 2: AFM Images of Intelimer 8600 Polymer Film after Application of Heat

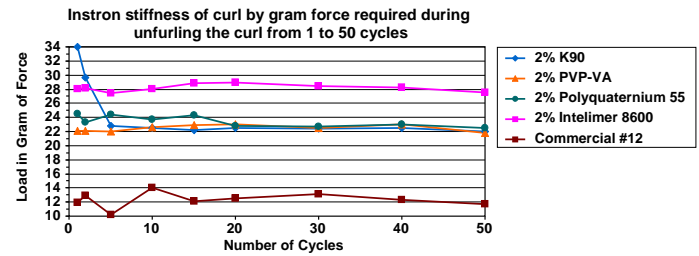


Atomic force microscope images of Intelimer 8600 polymer show the polymer film is in the form of microparticles that form a thin continuous film upon application of heat. The spherical microstructure undergoes a deformation upon application of heat and becomes a more flexible structure that allows restyling due to the temperature trigger mechanism.

Stiffness of Intelimer 8600 polymer

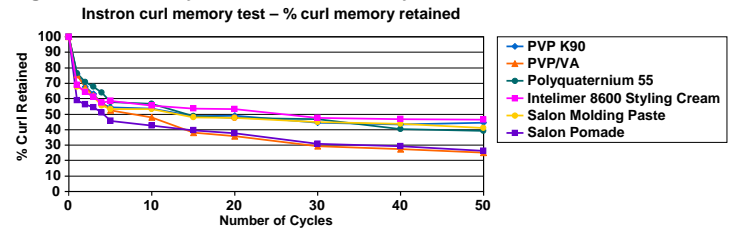
Curled hair tresses coated with different styling agents were subjected to a series of controlled extensions in a controlled environment using Instron. Each hair stress was extended to a straight conformation before release. The force required to uncurl the hair tresses is directly proportional to the stiffness of the polymer film.

Figure 3: Instron Stiffness of Curl



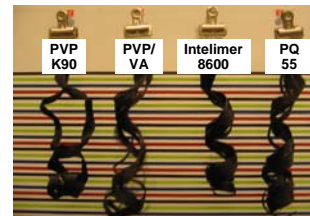
A styling cream based on Intelimer 8600 shows significantly higher stiffness than competitor products and a commercial salon product.

Figure 4: Durability of Intelimer 8600 Polymer



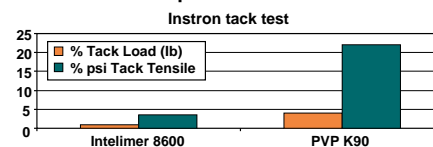
An Instron curl memory test, which was developed to evaluate resistance to mechanical deformation and recovery after deformation, shows a styling cream based on Intelimer 8600 polymer performs better than styling creams based on competitor products and commercial styling products.

Figure 5: Style Durability after 50 Instron Extensions



A visual demonstration of the curl memory test shows that a styling cream based on Intelimer 8600 polymer has better durability than styling creams based on competitor products.

Figure 6: Low Tack Properties of Intelimer 8600 Polymer



A tack test developed to demonstrate tack properties of hair swatches coated with styling cream shows a styling cream based on Intelimer 8600 polymer exhibits significantly reduced tack versus an industry standard styling cream based on PVP K90.

Figure 7: High Humidity Curl Retention

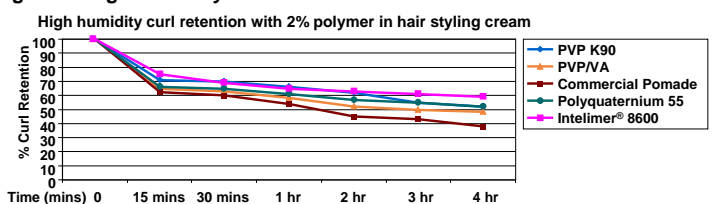
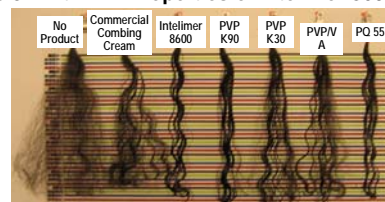


Figure 8: Anti-frizz Properties of Intelimer 8600 Polymer



A humidity curl retention test conducted at 90% humidity and an anti-frizz study conducted at 70% humidity show better humidity resistance and curl definition for styling and combing creams based on Intelimer 8600 polymer compared to competitive and commercial products.