

## Luviset Clear – A New Styling Polymer for Crystal Clear Hair Gels

Dr. Claudia Wood, Dr. Peter Hoessel \*

BASF, Germany

### Abstract

Luviset Clear (INCI: VP / Methacrylamide / Vinyl Imidazole Copolymer) is a new hairstyling polymer with high setting effect and low tack even in humid conditions. It forms crystal clear gel formulations with thickeners such as cross-linked polyacrylic acid. Furthermore, it can be used as single polymer or in combination with various polyquaterniums in mousse formulations. Data on friction, hardness, tack and other mechanical properties obtained from a nanoindenter on an atomic force microscope combined with conventional stress strain measurements reveal the exceptional properties of Luviset Clear.

### Introduction

Most market hair gels are based on cross-linked polyacrylic acid as the thickener because it provides them with thixotropic behavior and a yield point. This means that they are effortlessly taken from a container, do not flow from the hand, and are easily dispersed on hair. However, only a limited number of styling polymers are compatible with the thickener. Almost every cationic or anionic setting polymer is incompatible with cross-linked polyacrylic acid, which leads to turbid formulations, precipitation, or instability.

Therefore, the required properties for a new specialty polymer for clear hair gels were

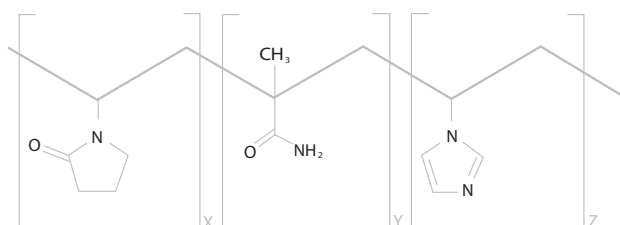
- excellent clarity in hair gel formulations with cross-linked polyacrylic acid
- high setting effect and high resistance to humidity
- very low tack.

Many of these properties were determined conventionally on human hair as well as with a nanomechanical testing device.

### Crystal Clear Hair Gels and Styling Mousses

Luviset Clear is a 20% aqueous solution of a nonionic copolymer of N-vinylpyrrolidone, methacrylamide and N-vinylimidazole.

Chemical composition of Luviset® Clear



INCI: VP / Methacrylamide / Vinyl Imidazole Copolymer

Fig. 1: Chemical composition of Luviset Clear

Completely transparent hair gels are made with Luviset Clear, if the thickener base is transparent. Fig. 2 shows the clarity of a formulation consisting of 3% Luviset Clear and 0.4% Acrylates / C10-C30 Alkyl Acrylate Crosspolymer [1.]. The light transmission of the gel base with 0.4% thickener is 97.4% (middle image). The addition of Luviset Clear enhances transparency to more than 99%.

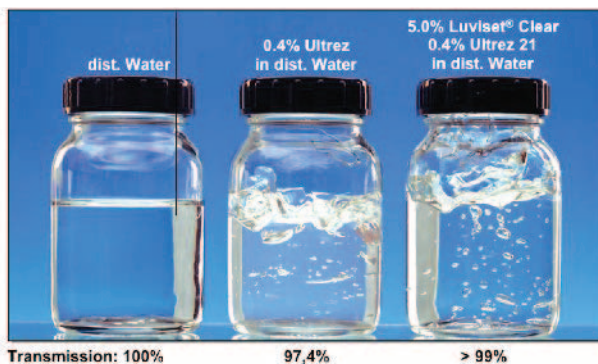


Fig. 2: Clarity of hair gels with Luviset Clear