

# Aerosol Mousses and Hair Fixatives, Formulation Tips and Introduction of a New Polymer

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### Abstract

This article will describe the current understanding of a basic mousse formula, with emphasis on the type of hair fixatives currently available for this application. Several key properties of hair fixatives will be discussed as well as the chemistry and properties of a new hair fixative, which was developed for hair gels, but produced excellent results in hair mousse.

### Introduction

Hair styling mousses provide a strong, flexible hold to the hair with a natural look. They make hair more manageable, reduce flyaway and minimize static. Typically, mousses are used on medium to long hair and although they can be applied to wet, damp or dry hair, they are commonly applied to wet hair, before blow-drying. Unlike gels and hairsprays that offer a stiff hold, mousses claim to add body while providing conditioning benefits. Mousses also help aid in styling the hair. Therefore, hairspray is usually applied after blow-drying to set the style created by the mousse. For a shinier style with added crunch, mousses can be applied to wet, damp, or dry hair without blow-drying. Most mousses are in aerosol form but they can also be packaged as a non-aerosol pump. In either case they typically dispense thick, creamy, white foam.

### Propellants

Hydrocarbons are the most common propellants used in mousses because they are cheap and they foam. One can choose between hydrocarbon blends that have different pressures to change some aspects of the foam characteristics.

### Styling Polymers

The hair fixative is the one ingredient around which the formulation should be developed, the most commonly used hair fixatives are: Polyquaternium-11, Polyquaternium-4, Polyquaternium-46, VP/Methacrylamide/ Vinyl imidazole Copolymer, Polyquaternium-16, Polyquaternium-39, Polyquaternium-2, Polyquaternium-28, PVP, PVP-VA, acrylates type copolymers, butyl or ethyl ester of PVM/MA copolymer, and guar derivatives like guarhydroxypropyl trimonium chloride.

All hair fixatives are film formers; the film forming property provides the hold. Different film formers have different humidity resistant properties, which determine both the holding power and the lack of tack in humid climates. The higher the humidity resistance of the polymer (hair fixative) the higher its curl retention (CR); generally, the polymers are the main ingredients that provides hold and curl retention. Curl retention is the

#### Typical ingredients used in mousses; their function in the formula is outlined:

Ingredient	Typical % w/w	additional comments
Water	qs	provides the medium for the formula
Alcohol (Ethanol)	0-8	it helps reduce tack, it is also a VOC
Propellant (Hydrocarbon)	8-15	it dispenses the product out of the can
Polymer- hair fixative (solids)	1-5	it provides styling
Non-ionic emulsifier/surfactant	0.5-3.0	it helps generate the foam
Corrosion inhibitor	0 - 1.0	for packaging stability
Fragrance	0.1 - 0.5	for consumer appeal
Preservative	0 - 1.0	for formula stability, and consumer safety
Misc.	0 - 1.0	ingredients to generate a marketing image for the product

