Novel Approach to Cyclopentasiloxane

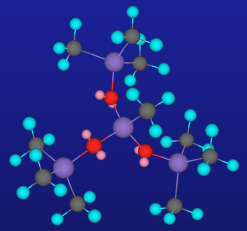
Methyl Trimethicone / Dimethicone Blends

Abstract:

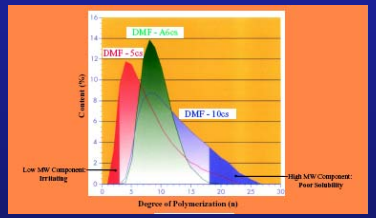
Methyl Trimethicone (***TMF-1.5***) and Dimethicone (***DM-Fluid A-6T***) blends are simple yet novel alternative solutions to cyclopentasiloxane (D_5). Methyl Trimethicone's high volatility is an excellent choice for formulations that require fast drying time. 6-cS Dimethicone's narrow molecular weight distribution, in which both the lower molecular weight and higher molecular weight species are removed so that the product does not cause any irritation and offers excellent compatibility with cosmetic formulation ingredients. When compared with existing alternative volatile silicone solutions, blends of Methyl Trimethicone and 6 cS Dimethicone are shown to have better skin feel, spreadabilty, emolliency without compromising the volatility. The blend ratio can easily be optimized depending upon the application requirements.

Chemical Structure:

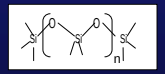
TMF-1.5



DM-Fluid A-6T



Primary Skin Irritation (FDA): *TMF-1.5 and DMF A-6T are non-irritating*



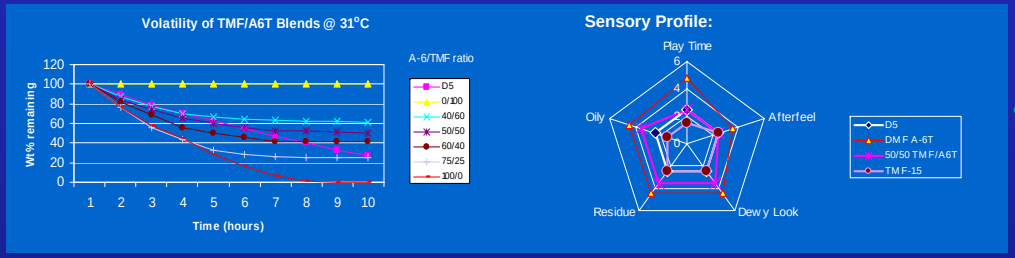
	DM-Fluid A-6T	n = 0	n = 1	n = 2	n = 3	TMF-1.5
Viscosity	6 cs	0.65 cs	1 cs	1.5 cs	2 cs	1.5 cs
S (irritation)	0	4.4	3.9	0.2	0.1	0

S = 1 – 2: irritation - near zero S = 2-5 irritation - medium

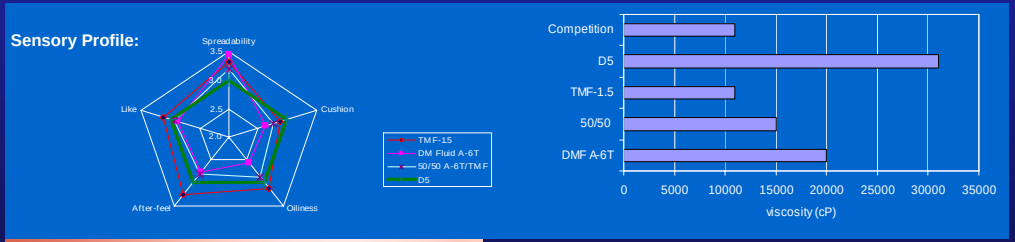
Characteristics: Comparison with Cyclopentasiloxane

Property	TMF-1.5	DM-Fluid A-6T	KF-995
INCI Name	Methyl Trimethicone	Dimethicone	Cyclopentasiloxane
Appearance	Clear water white liquid	Clear water white liquid	Clear water white liquid
Viscosity, 25°C, mm^2/s	1.5	6	4
Refractive Index, 25°C	1.3855	1.397	1.396
Freezing point, °C	-83	-	-40
Pour Point, °C	-	< -60	-
Flash Point, °C	64	174	77

Neat Material:



Water-in-silicone emulsions:



Summary:

What's unique about the blends approach

- Managed volatility and play time
- Silky, light, non-greasy feel
- No irritation; no "dry-eye" syndrome
- Excellent compatibility
- Oil free
- Long lasting fragrance
- Rheology control
- Formulation latitude
- Odorless, ultra High purity