

NuPLastic FILM SYSTEMS

"Multifunctional Polymeric Coatings for Personal Care"

- Water Resistant ■ Transfer Resistant ■ Chemical Resistant ■ Emolliency
- Hydrophilic and Lipophilic Actives Delivery ■ Quick Drying ■ Flexibility
- High Solids Loading ■ Shine or Matte Finish ■ Tack Free

Polyderm Thermoplastic Elastomers

- film forming ■ adhesion
- chemical and water resistance ■ surfactancy

≈ 33% Solution



Solid



TPE in water dispersion;
as water evaporates TPE film is formed

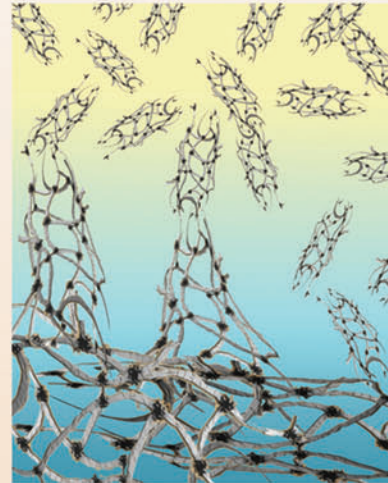
NuLastic™ Thermoset Elastomers

- lubricious emolliency ■ viscosity modifying
- emulsification ■ actives delivery

≈ 10% Gel Dispersion



Solid



TSE in solvents (isododecane, dimethicone, ester, etc.);
TSE film formed as solvent dissipates



NuPLastic Film

Emulsion



Solid



Emulsion



Solid

TPE+TSE form a non-tacky hybrid film

- TPE is the predominant film former
- TPE level is greater than TSE
- TSE functions as plasticizer for TPE
- TSE acts as a polymeric spacer in TPE
- TSE modifies the TPE
- high loading of emollients, oils and dimethicone
- resistance to solvents, esters, polymers
- suspends pigments and solids
- non-volatile solvents create clear lubricious films
- volatile solvents create dry opaque films
- external emulsifier not required

NuPLastic System WA (Water Activated)

delivery of water soluble actives while maintaining integrity of the film

62% NuLastic SILK-E ID-LSA 10 + 37% Polyderm PE-PA + 1% FD&C Blue #1



Cast film with FD&C Blue #1



Film releases FD&C Blue #1 in water



Cast film after 24 hours in water

NuPLastic System WR/TR (Water Resistant and Transfer Resistant)

delivery of oil soluble actives and extended wear

Film Blends 1 and 2:

50% loading of non-volatile ester solvent, Isononyl Isononanoate creates shiny emollient films.

56% NuLastic Silk-E D99-LSA 10 + 33% Polyderm PE-PA + 11% Pearl.



Film Blends 3 and 4:

Volatile solvent, Isododecane creates matte, dry films.

56% NuLastic Silk-E ID-LSA 10 + 33% Polyderm PE-PA + 11% Pearl.

NuPLastic Film Delivery (Water Resistant and Transfer Resistant)

Film Blend 1:

60% NuLastic Silk-E D99-LSA 10 clear film contains 54% Isononyl Isononanoate.

Film Blend 2:

60% NuLastic Silk-E DM-LSA 10 opaque film contains 54% I0 cst Dimethicone.



Film Blend 3:

60% NuLastic Silk-E ID-LSA 10 opaque film contains Isododecane which volatilizes.

*All blends contain 40% Polyderm PPI PE-PA.

NuLastic Silicone Elastomers

| Product | INCI name |
|---------------------------|---|
| ■ NuLastic Silk MA, D5 | Cyclomethicone (and) C4-24 Alkyl Dimethicone/Divinyldimethicone Crosspolymer |
| ■ NuLastic Silk MA, DM | Dimethicone (and) C4-24 Alkyl Dimethicone/Divinyldimethicone Crosspolymer |
| ■ NuLastic Silk MA, ID | Isododecane (and) C4-24 Alkyl Dimethicone/Divinyldimethicone Crosspolymer |
| ■ NuLastic Silk VSR-6 | C13-16 Isoparaffin (and) C12-14 Isoparaffin (and) C13-15 Alkane (and) C4-24 Alkyl Dimethicone/Divinyldimethicone Crosspolymer |
| ■ NuLastic Surfa ID-7 | Isododecane (and) Bis-Vinyldimethicone/PEG-10 Dimethicone Crosspolymer |
| ■ NuLastic Surfa D99-9 | Isononyl Isononanoate (and) Bis-Vinyldimethicone/PEG-10 Dimethicone Crosspolymer |
| ■ NuLastic Surfa DM-6 | Dimethicone (and) Bis-Vinyldimethicone/PEG-10 Dimethicone Crosspolymer |
| ■ NuLastic Silk-E ID-LSA | Isododecane (and) Polysilicone 23 |
| ■ NuLastic Silk-E DM-LSA | Dimethicone (and) Polysilicone 23 |
| ■ NuLastic Silk-E D99-LSA | Isononyl Isononanoate (and) Polysilicone 23 |

Polyderm Polyurethane Dispersions

| Product | INCI name |
|------------------|-----------------|
| ■ Polyderm PE-PA | Polyurethane 18 |

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