

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



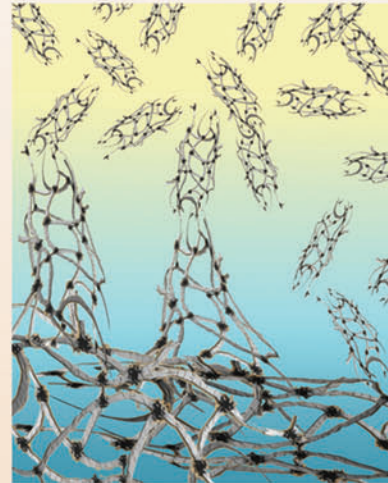
NuLastic™ Thermoset Elastomers

- 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

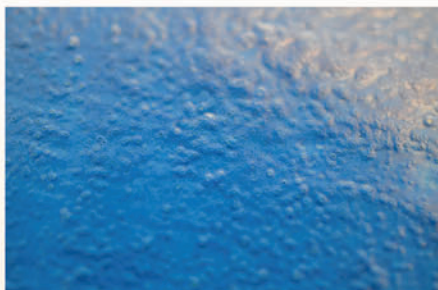
TPE+TSE form a non-tacky hybrid film

- 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.

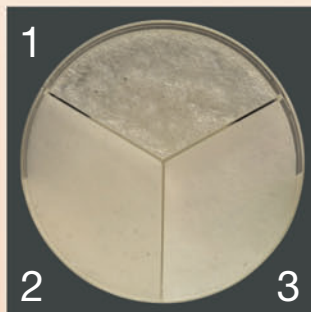
NuPLastic Film Delivery (Water Resistant and Transfer Resistant)

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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