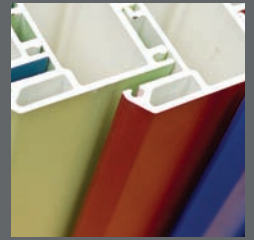
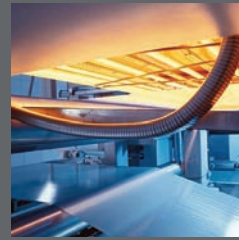


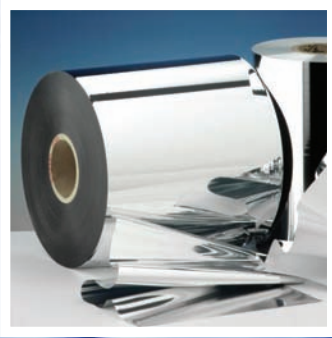
Dispurez® Pyrrolidone-Free Waterborne Polyurethane Dispersions

selection guide



Dispurez® waterborne polyurethane dispersions for use in:

- coatings for flexible films
- coatings for rigid plastics
- high performance coatings



Pyrrolidone-Free Polyurethane Dispersions

Introduction

Polyurethane Dispersions (PUDs) are often the polymer type favoured by waterborne coating formulators to boost performance properties such as toughness, scratch and chemical resistance in a wide variety of applications. PUDs bring these advantages and often combine them with other features such as low temperature flexibility and lack of tackiness, whereby other polymers such as acrylics cannot easily combine such properties.

Pyrrolidones

Historically, one of the main drawbacks with polyurethane dispersions has been the use of pyrrolidone solvents in manufacturing and as a film coalescence aid. There has been and still is, significant regulatory pressure to eliminate the use of products containing these solvents.

Life beyond pyrrolidone solvents

Incorez have combined the development of novel, proprietary chemistries and processes to produce an alternative to pyrrolidone solvents, specifically NMP and NEP, in the manufacture and formulation of polyurethane dispersions.

This innovative approach has resulted in a range of hazard-free PU and PU-Acrylic dispersions that produce hard, crystalline polyurethane coatings with comparable physical properties to equivalent coatings based on pyrrolidone solvents.

Coalescence

One of the major obstacles to replacing pyrrolidone solvents is to achieve good coalescence of the film without the need for addition of significant amounts of co-solvent, which contributes to the VOC of the product, as required in dipropylene glycol dimethyl ether based dispersions.

The technology developed by Incorez has the ability to achieve excellent coalescence with minimal additional co-solvent for a hard, crystalline polyurethane coating, allowing the formulator to limit the VOC content and satisfy increasingly stringent legislation requirements.

Physical Properties

Incorez new PUD technology exhibits a faster hardness development and higher ultimate hardness than with both pyrrolidone solvents. In addition, when subjected to hardness testing the new PUD showed comparable results to NMP and improved results over an equivalent PUD based on NEP.

Applications

Dispurez 101

High Tg, hard, crystalline waterborne polyurethane dispersion with excellent chemical resistance. Suitable for clear protective top coats and lacquers.

Typical Applications:

- Tough coatings for rigid plastics including uPVC/ABS/HIPS

Dispurez 102

Flexible, toughened, self-crosslinking polyurethane dispersion with excellent optical clarity and excellent chemical and block resistance.

Typical Applications:

- Flexible films with a tough finish for PET, plasticised PVC, pre-treated PP/PE

Dispurez 101A

Hard polyurethane acrylic dispersion designed for excellent pigment compatibility. Ideal for use in tough coatings with good durability.

Typical Applications:

- Rigid plastics including uPVC/ABS/HIPS

Dispurez 102A

Flexible polyurethane acrylic dispersion with good adhesion to difficult plastic substrates. Good pigmentability and low temperature flexibility.

Typical Applications:

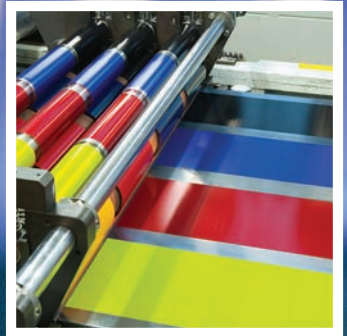
- Flexible films for PET, plasticised PVC, pre-treated PP/PE

Dispurez 201

VOC free polyurethane dispersion that is soft and flexible but with good impact resistance and low temperature flexibility.

Typical Applications:

- Flexible films for PET, pre-treated PP/PE
- Suitable for indirect food contact in packaging/laminating applications



Technical Data

		Typical Properties				
Product	Type	Polyol type	Typical Viscosity @ 20°C (mPa.s)	Solids (%)	pH	Pa
DISPUREZ 101	PUD	Polycarbonate	100	32	10	
DISPUREZ 102	PUD	Polycarbonate	100	33	8	
DISPUREZ 101A	PU/Acrylic	Polycarbonate	250	40	8	
DISPUREZ 102A	PU/Acrylic	Polycarbonate	100	40	9	
DISPUREZ 201	PUD	Polyester	80	34	10	

Recommended Additives

The following additives are recommended for use with the **DISPUREZ** range of polyurethane and polyurethane/acrylic dispersions

Wetting Agents	Matting Agents	Defoamers	Thickeners	Coal Sol
Byk 348, 349, 3445	Gasil HP39	Byk 012, 024, 025, 093	Rheovis PU 1214	Butyl d
TEGO Twin 4100, 4200	Ceraflour 920	Surfynol MD20	Rheovis AS 1180	Ethylen
TEGO Wet 240, 270, 280	Acematt TS 100	TEGO Airex 902 W	Borchi gel CW44	
	Acematt 440, 450, 3300, 3600	TEGO Foamex 822, 823, 825, 842	TEGO ViscoPlus 3000, 3010, 3030, 3060	

Typical Film Properties*						
Particle Size (nm)	Pencil Hardness	Persoz Hardness (secs)	UTS (MPa)	Elongation at Break (%)	MFFT (°C)	Tg (°C)
30	H	300	26	120	< -10	58
60	F	230	26	300	-6	60
80	F	250	10	150	-4	25
100	HB	160	11	400	-4	-47
70	HB	200	15	550	0	-23

*Thin Film (50-100 microns) dried at 22°C / 50% RH for 14 days

Resin Solvents	Biocides	Pigment Dispersing Agents	Low Boiling Solvents (drying aids)	Crosslinkers
Propylene glycol	Mergal K14	Efka 6230	Acetone	Epocross WS500, WS700
Diethylene glycol	Intercede DCOIT 25 DART	TEGO Dispers 660 C, 741, 755, 757	Isopropyl alcohol	Picassian XL-732
	Intercede OIT 13 DART			PZ-33 (XAMA 7)
	Intercede OIT 16			



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