PRIMAL™ ST-954 Emulsion

Binder for Non-wovens

Regional Product Availability

- Asia Pacific

Description

PRIMAL™ ST-954 Emulsion is a soft self-crosslinking acrylic emulsion used in non-woven applications.

Typical Applications

PRIMAL™ ST-954 Emulsion is used in the manufacture of soft and durable non-woven webs such as those used in apparel interlinings or interfacings. Webs using this binder demonstrate excellent resistance to degradation from dry-cleaning and laundering together with the softness required of typical apparel applications.

Key Features

Non-wovens bonded with PRIMAL™ ST-954 Emulsion not only have the strength characteristics of stiffer binders, and binders of comparable softness crosslinked with a melamine-formaldehyde resin, but do so ***without*** compromising hand. The improved balance of strength and softness in this acrylic binder results from an advanced emulsion manufacturing technology.

The main advantages of using PRIMAL ST-954 Emulsion as the binder for interlinings are:

- Desirable drape attained in apparel applications
- Shape and strength retained after repeated laundering
- Good resistance to dry-cleaning solvents
- Reduction or elimination of melamine-formaldehyde resins
- Easy formulation and application with conventional techniques and equipment

While PRIMAL ST-954 Emulsion is designed specifically for durable applications, it also has potential in disposable uses such as carrier fabrics or medical drapes and gowns. The balance of softness and strength combined with its slightly hydrophobic nature makes PRIMAL ST-954 Emulsion a suitable choice for these market segments.

Typical Physical Properties

(These properties are typical but do not constitute specifications.)

Property	Value
Appearance	Milky-white liquid
Type	Self-crosslinking acrylic
Ionic Charge	Anionic
Solids Content, %	45.5
pH (as packed)	3.5
Brookfield Viscosity at 25°C, cP (#1 spindle, 60 rpm)	30
Glass Transition Temperature, Tg, °C (DSC Method)	-23
Density, 25°C lb/US gal kg/l	 8.7 1.04
Mechnical Stability	Excellent

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Performance Features

The balance of strength and softness offered by PRIMAL™ ST-954 Emulsion can be demonstrated by using the glass transition temperature (Tg, °C) as an indicator of softness, and tensile measurements for evaluation of strength. Table 1 illustrates that the wet tensile strength of nonwovens bonded with PRIMAL ST-954 Emulsion significantly exceeds that of an acrylic emulsion of essentially equal Tg, and is equivalent to that of PRIMAL NW-1402 Emulsion, a significantly stiffer binder.

PRIMAL ST-954 Emulsion was also compared to the acrylic emulsion of equal softness modified with a melamine-formaldehyde resin (MFR). As illustrated in Table 2, the tensile strengths of this binder approach those of the MFR-modified emulsion, while the hand of PRIMAL ST-954 Emulsion is significantly softer. These relative strength relationships are maintained on webs wet with water or solvents, indicating the suitability of PRIMAL ST-954 Emulsion for durable and disposable wipe-type applications. These results were obtained by testing commercially produced non-woven Dacron polyester webs normalized at 0.7 ounces per square yard and a 70/30 fibre/binder ratio.

TABLE 1 –SOFTNESS VERSUS WET TENSILE STRENGTH

	Softness (Tg, °C)	Water-Wet Tensile Strength	
		g/in	g/cm
Nonwoven acrylic binder standard	-23	150	60
PRIMAL™ ST-954 Binder	-23	250	100
PRIMAL NW-1402 Binder	-11	250	100

TABLE 2 –COMPARISON OF TENSILE STRENGTHS AND SOFTNESS OF ACRYLIC BINDERS

	PRIMAL™ ST-954 Emulsion	Acrylic binder standard	Acrylic binder standard + 4% MFR
Web Stiffness Handle-O-Meter, g (4 x 4 inch sample) (lower numbers are softer)	40	37	48
Tensile strength, g/inch width (CMD)			
Dry	330	225	375
Water wet	250	150	330
After 5 commercial drycleaning cycles	160	50	250
2-Propanol	140	100	175

Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Disposal Considerations

Dispose in accordance with local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed of in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

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