

Aqualast® BL-100 Butyl Elastomer Emulsion

Description

LORD Aqualast® BL-100 butyl elastomer emulsion is an anionic emulsion of butyl rubber which offers broad latitude in formulating waterborne coatings. It is used as a modifier to enhance the flexibility and adhesion properties of many anionic emulsions.

Aqualast BL-100 emulsion can also be used as a coating for a variety of woven and non-woven fabrics to enhance barrier properties, improve fabric strength and handling properties. Typical commercial/industrial applications include: awnings, tents, carpet backing, protective clothing and upholstery. Typical medical applications include: bed sheets, operating room apparel, hospital gowns and incontinence pads.

Features and Benefits

Environmentally Friendly – cleans up with water; no VOC content; non-flammable.

Low Gas Permeability – provides a barrier to air and most gases.

Environmentally Resistant – resists the effects of exposure to outdoor environments; maintains physical and mechanical properties after aging.

Chemically Resistant – withstands exposure to a wide variety of industrial chemicals; provides excellent barrier against water and silicone oil in industrial and commercial applications.

Abrasion Resistant – extends fabric wear; improves fabric strength and washability.

Versatile – compatible with a variety of anionic emulsions and fabrics; retains natural characteristics of fabric.

Typical Properties*

Appearance	White Liquid
Viscosity, cps @ 25°C (77°F) Brookfield LVT Spindle 3, 12 rpm	1800-5000
Solids Content by Weight, %	61-63
pH	5-7
Gas Permeability, cm ² /sec/atm	2.47 x 10 ⁻⁶
Water Absorption, % After 24 hr, ASTM D 471	3
Mechanical Stability, % Coagulum after 1800 sec, ASTM D 1417	0

*Data is typical and not to be used for specification purposes.

LORD TECHNICAL DATA

Application

Mixing – Stir emulsion slowly and thoroughly before using. Use low shear and stainless steel open impeller centrifugal pumps for pumping raw Aqualast BL-100 emulsion or emulsion compounds. Moyno pumps or special wide tolerance gear pumps can also be used. Piston pumps should be avoided as the internal shear associated with these pumps may cause polymer coagulation and destabilize the emulsion.

Formulating – Prior to mixing Aqualast BL-100 emulsion with other emulsions, adjust the pH of Aqualast BL-100 emulsion to that of the other latex with ammonia or a dilute solution of sodium hydroxide. When compounding with predispersed pigments, the pH should be neutral or alkaline. Adjust the pH of Aqualast BL-100 emulsion with ammonia or a dilute solution of sodium hydroxide before adding the pigment dispersion; a pH of 8.5 to 10.0 provides the best results.

- With Curatives

Use conventional sulfur and sulfur donor cure systems or fast curing quinoid type systems to cure films of Aqualast BL-100 emulsion. Cured films are more resistant to chemicals, weather and aging than uncured films.

- With Thickeners

Use cellulosic, alginate, or polyvinyl alcohol to adjust the viscosity of Aqualast BL-100 emulsion compounds. The choice of thickener depends on rheological and performance requirements. Dissolve the thickener in water, then add to the emulsion compound under low speed agitation.

Acrylic emulsion thickeners such as Acrysol™ ASE-60 do not require dilution. They are, however, only effective in alkaline systems.

- With Fillers and Detackifiers

Add fillers to reinforce, detackify or extend Aqualast BL-100 emulsion compounds and to produce a flexible block resistant coating. The best results are achieved when the fillers are predispersed in water using high shear mixing equipment. Slowly add the predispersed filler to Aqualast BL-100 emulsion using low speed, low shear mixing equipment to minimize foaming or entrapped air. Mix thoroughly to ensure a complete and uniform mixture. Suggested fillers include:

Carbon Black	Talcs
Titanium Dioxide	Calcium Carbonates
Diatomaceous Earths	Clays
Silicas	Factice

Silicas and minute particle size talcs require adding a dispersant when using conventional mixing equipment. When using large quantities of dry undispersed fillers, add dispersants such as Tamol™ 731, Darvan® 1 or Daxad 30 to the emulsion.

The selection of a filler will depend on the degree of reinforcement. The following table demonstrates the reinforcing effects of respective fillers in regard to tensile and elongation values.

Table 1 - Filler Reinforcement*

Filler**	Dry Parts, by Weight	Tensile Strength, psi	Elongation, %
No Filler	–	35	1000
Hi-Sil™ 233	10	40	900
	30	54	900
	50	80	700
Non-Reinforcing Talc (Nytal® 300)	10	40	1000
	30	33	1000
	50	40	1000
Precipitated Calcium Carbonate	10	20	400
	30	30	400
Purecal U	50	31	400
Whitetex Clay	10	36	1000
	30	40	1000
	50	54	1000

*10-15 mil films dried 7 days at room temperature; pulled at 5 in/min.

** Predispersed in water using a high speed dissolver.

LORD TECHNICAL DATA

- With Foam Control Additives

The following antifoamers (foam inhibitors) and defoamers (foam breakers) are effective in Aqualast BL-100 emulsion compounds:

Foamaster® VL	Foamaster® VF
Colloid 680	Colloid 987

Colloid 840 and Colloid 999 are effective as both defoamers/antifoamers. They are effective over a period of several hours after being added.

Avoid non-ionic agents which contain moderately long hydrophobic groups and short hydrophilic groups (i.e., octyl alcohol and hexylene glycol). These defoamers can destabilize the emulsion, especially if subjected to high shear.

- With Emulsions and Latices

Most anionic emulsions and latices are compatible with Aqualast BL-100 emulsion.

Harder and stronger elastomers will reinforce butyl films and improve adhesive strength. These elastomers may also detackify butyl films and provide resistance to blocking in coating applications. In less flexible elastomers, butyl provides a substantial improvement in ambient and low temperature flexibility.

The following types of elastomer emulsions are compatible with Aqualast BL-100 emulsion:

Polyvinylidene Chloride	Nitrile
Vinyl Acetate-Acrylic	Natural Rubber
Chloroprene	Acrylic
Polyvinyl Acetate Homopolymer	
Carboxylated Styrene-Butadiene	

Hydrocarbon resin emulsions (aliphatic and aromatic hydrocarbon resins) are compatible with Aqualast BL-100 emulsion. Films made from blends of these resin emulsions with Aqualast BL-100 emulsion will have modified properties of strength, clarity, tack, and hardness. The most effective blend ratios are 60-90 parts, by dry weight, of Aqualast BL-100 emulsion to 10-40 parts resin.

Shelf Life/Storage

Shelf life is six months from date of shipment when stored in original, unopened container.

Use the entire container upon opening. Airborne contaminants are likely to induce bacterial growth in partial containers that are opened and re-closed.

Cautionary Information

Before using this or any LORD product, refer to the Material Safety Data Sheet (MSDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

Values stated in this technical data sheet represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Support Center.

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