Construction
Technical Data Sheet

Acronal® S 400 na

Chemical Nature	**Aqueous styrene-acrylate copolymer dispersion for modifying hydraulic binders**		

Properties

Typical Properties	Solids content	%	~ 57.0
	pH		~ 8.0
	Apparent viscosity at 23 °C (Brookfield RVT, Spindle #3, at 100 rpm)	mPa s	~ 300 – 750
Other properties of the dispersion	Viscosity at 23 °C (shear rate, 250 s^{-1})	mPa s	140 – 200
	Density	lbs/gal	ca 8.58
		g/cm^3	ca. 1.03
	Average particle size	µm	ca. 0.2
	Film forming temperature	°F	<33 min.
		°C	<1 min.
	Dispersion type		anionic
	Plasticizer content		free from plasticizer
	Sensitivity to frost	°F	below 32
		°C	below 0
Properties of the film	Density	g/cm^3	ca. 1.08
	Glass transition temperature Tg (DSC)	°C	ca. -6
	Water absorption (After 24 hour immersion in water)	%	ca. 5 -10
	Mechanical strength*		
	Tensile strength	psi	130
	Elongation at break	%	>2500
	Appearance		clear, transparent
	Surface		tacky
	Resistance to aging		good

*This figure should be taken for comparison purposes only. All that can be obtained from it is an idea of the magnitude concerned.

Compatible with

Polymer dispersions	Acronal® 296 D and with most other nonionic and anionic dispersions
Thickeners	Collacral® VL, Latekoll® D, and cellulose ether
Plasticizers	Plastilit® 3060, Palatinol® types, Palamoll® types, and chlorinated paraffin waxes
Antifoams	Lumiten® E-L
Pigments and fillers	Silica flour, fine-grained sand, microdolomite, amorphous calcium carbonates. The compatibility with pigments is improved by the addition of sodium polyphosphate and Pigment Disperser N. The formulation can be tinted with mineral colors, Pigmosol® or Luconyl® pigments.
Hydraulic binders	Acronal® S 400 na is compatible with hydraulic binders

Applications

Features

Acronal® S 400 na is used mainly for producing flexible mortars, adhesives and coatings. It blends readily with hydraulic binders and can be used to produce ceramic tile adhesives as well as flexible, water-resistant two-component mortars.

A particular application of Acronal® S 400 na is the production of crack-filling systems and flexible cementitious coatings for flat roofs and walls. It can also be used in combination with asphalt emulsions to produce waterproofing membranes.

Processing

It is advisable to add small amounts of a suitable preservative to products containing Acronal® S 400 na in order to ensure adequate shelf life. The suitability of the preservative must be tested and monitored.

A sample two-component, cementitious, flexible waterproofing mixture based on Acronal® S 400 na is highlighted as follows (guiding formulation):

Dry Premix	**% by Weight**		**% by Volume**
F-110[1] - Silica sand	30.0		22.5
F-95[1] - Silica sand	27.3		20.4
Portland cement[2] (Type I/II)	19.6		12.3
Pigment Disperser® N[3]	0.2		0.7
Lumiten® E-P 3108[3] (Antifoam)	1.6		3.1
Latex mixture			
Acronal® S 400 na[3]	20.66	Polymer	16.0
Antifoam	0.2		0.5
Water *	0.5	Total	24.5 **+**

+ = Adjust to desired flow characteristics

Formulation Parameters	
Polymer / cement ratio	0.60
Water / cement ratio	0.48 *
Sand / cement ratio	2.92

SUPPLIERS:

[1] U. S. Silica, Ottawa, IL
[2] Lehigh Portland Cement Company, Allentown, PA
[3] **BASF Corporation, Charlotte, NC**

Flexible cementitious waterproofing slurries contain sand, cement, water and a high proportion, 11 - 18% by volume (16% shown above), of a polymer dispersed in the water. To apply, firstly, blend the dry premix (1) and latex mixtures together. Slurries are applied to wetted concrete in two to four coats with a total thickness of 1/8 inch (2 - 4 mm or 80 - 150 mils). The polymer particles coalesce to form a compact film. The coating remains somewhat flexible and because of its thickness, it seals most pores in the surface of the concrete. Access to moisture and water through the diurnal cycle allows hydration of the cement to continue with the result that the coat becomes somewhat denser and firmer yet still at least two magnitudes more flexible than concrete without the polymer modification. The coating is permeable to water vapor but almost impermeable to water itself. Chloride ion penetration and carbonation of concrete can also be considerably reduced or even entirely prevented under flexible cementitious membranes. The suitability of formulations for field use must be thoroughly evaluated and optimized prior to launch.

Safety

General

The usual safety precautions when handling chemicals must be observed. These include the measures described in Federal, State and Local health and safety regulations, thorough ventilation of the workplace, good skin care and wearing of protective goggles.

Safety Data Sheet

All safety information is provided in the Material Safety Data Sheet for Acronal® S 400 na.

Storage

Acronal® S 400 na has a shelf life of six months from delivery date, provided it is stored in accordance with the “Handling and Storage of polymer dispersions” brochure. Technical information regarding the storage of BASF polymer dispersion products is available upon request.

Important

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