SUMIKAFLEX 900HL

Type:	Ethylene-Vinyl Acetate-Acrylate Terpolymer Emulsion
Properties:	SUMIKAFLEX 900HL (S-900HL) is a soft-type emulsion that has a functional self-cross-linking group. In addition, its mixing property with inorganic fillers is good, and various combinations of formulations are possible.
Main application:	Carpet and seat backing Non-woven fabric binder Impregnated paper binder Gravure - coated paper binder

Physical properties:

Appearance		Milky white
Solid content	(%)	60 ± 1
Viscosity	(mPa·s)	10 – 500
pH		4 – 7
Ave. particle size	(μm)	0.4
Density	(g/cm^3)	1.06
MFT	(°C)	0
Particle charge		Slightly anionic
Mechanical stability		Good
Tg	(°C)	−20
Tensile strength	(MPa)	0.9
Tensile elongation	(%)	> 1500

< Technical Information of SUMIKAFLEX 900HL >

1. Emulsion properties

		S-900HL
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Mechanical stability		Good
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2. Film properties

(1) Tensile strength

Items		S-900HL
Dry	Elongation (%)	> 1500
	Strength (MPa)	0.9
Wet	Elongation (%)	1200
	Strength (MPa)	0.7

Test method

Thickness of film : 0.15 mm (23°C × 65%RH, dried for 7 days)
Shape of film : Dumbbell No.3
Film forming condition and aging : 23°C × 65%RH × 7 days
Wet film strength : Wet film after film in water (23°C) for 24 hours
Measurement speed : 500 mm/min

3. Application examples

(1) Binder for permeated paper

		S-900HL	S-755	Acryl emulsion A	Acryl emulsion B
Tg (°C)		–20	–15	–16	–15
Impregnated paper	Basic weight (g/m^2)	157	156	157	156
	DPU (%)	25.2	25.5	25.8	26.0
Feelings Soft – Hard (1 – 3)		1	1-2	1	1-2
Folding Strength (number)		537	541	461	524
Coloring rate (%) (Hunter color difference meter)	Un-treatment	3.4	2.7	3.5	3.7
	Light resistance (80 hours)	6.7	7.7	8.1	8.2
	Heat resistance (150°C × 60 min)	7.9	8.0	8.6	10.1
Dry tensile strength (N/1.5 cm)		72	70	68	74
Wet tensile strength (N/1.5 cm) (1 hour in water)	Curing 130°C × 1 min	10	10	7	7
	130°C × 3 min	25	21	24	21
	130°C × 5 min	41	27	38	29
Sizing test (sec): Curing 130°C × 3 min		187	104	31	19

Test method

Master paper : Filter paper No.2 (basic weight: 120 g/m^2)

Dipping : Mangle condition

Emulsion concentrate: 20%

Nip pressure 0.2 MPa

DPU 25 – 26

Drying : At room temperature

Curing : 130°C × 1 min, 3 min and 5 min

(2) Non-woven binder

			S-900HL	S-755	Acryl emulsion A	Acryl emulsion B	SBR
Operation	Foaming (suitable A B C no suitable)		A	A	B	A	C
	Gum Up (suitable A B C no suitable)		A	A	A-B	A	C
Dipping	Basic weight (g/m^2)		46.1	46.3	46.7	47.1	46.5
	DPU (%)		31.6	31.2	31.4	32.1	31.8
Feeling total hand (g)			82.7	94.5	85.5	90.0	135.2
Coloring rate (%) (Hunter color different meter)	Un-treatment		3.1	3.6	4.2	4.7	6.4
	Light fastness (Fade-o-meter 80 h)		9.6	10.6	10.0	11.9	43.5
	Heat (150 °C × 60 min)		10.3	12.7	10.4	12.8	39.9
Tensile strength Curing 130°C × 5 min	Original	N/5 cm	25.1	23.9	18.5	18.7	30.6
		KGSC value	1236	1186	909	888	1511
	Wet (1 h Dip)	N/5 cm	13.3	12.3	11.0	9.8	8.0
		KGSC value	655	610	541	466	395
	Trichloroethylene Resistance (1 h Dip)	N/5 cm	6.4	7.3	7.8	6.0	1.0
		KGSC value	315	362	383	285	49

*KGSC value = strength (N/cm)/basic weight (g/cm^2)

Test method

Master material : Rayon (basic weight: 120 g/m^2)

Dipping : Mangle condition (sandwich with Nylon plain gauze)
Nip pressure 0.1 MPa
DPU 30%

Drying : 150°C × 1 min

Curing : 130°C × 5 min

(3) Binder for gravure coating paper

Formulation

Ultra white	90 Dry Parts
Calcium carbonate	10
Emulsion	7
Dispersant	0.4
Thickener	0.3

Test method

Coating: Coated the coating mixture by Wire bar on surface
Drying: 120°C × 30 sec
Calendar: 60°C × 60 kg/cm × 2 nips

Results

	Coating mixture TS (%)	Coating mixture viscosity (mPa·s)			Paint pH	Adhesion for calendar
		BL-60 rpm		After 24 h at high shear (4000 rpm)		
		After formulation	After 24 h			
S-900HL	60	890	1130	85	8.9	Excellent
SBR latex	60	1530	1690	91	8.7	Good
Acryl emulsion	50	1380	1600	50	9.0	Good

	Coating (g/m^2)	Dry Pick	Miss Dot (15%)	gloss (%)	Whiteness (hunter %)	
					Un-treatment	Treatment*
S-900HL	15.2	5	21	74.6	80.3	78.5
SBR latex	15.5	5	21	75.0	79.4	75.8
Acryl emulsion	12.3	4.8	23	67.8	79.0	77.1

Dry Pick 5 suitable (excellent) 5←→1 (bad)
*Heat treatment: 150°C × 30 min