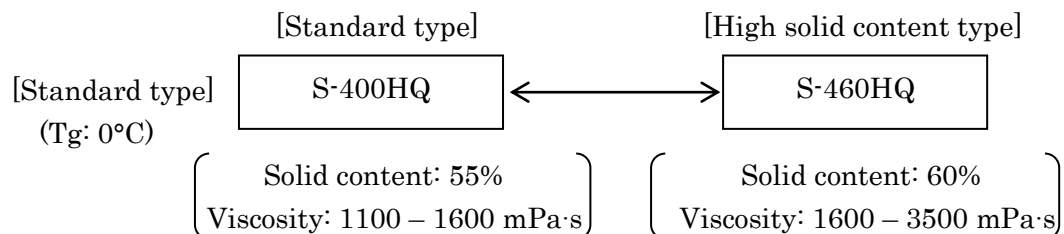


SUMIKAFLEX 460HQ

Type:	Ethylene-Vinyl acetate Copolymer Emulsion																																					
Properties:	SUMIKAFLEX 460HQ (S-460HQ) has higher solid content than SUMIKAFLEX 400HQ, so it allows faster drying during operation time. Similar to the adhesiveness of SUMIKAFLEX 400HQ it is suitable for adhesiveness, dryness, and thickener.																																					
Main application:	Adhesives																																					
Physical properties:	<table> <tr> <td>Appearance</td><td></td><td>Milky white</td></tr> <tr> <td>Solid content</td><td>(%)</td><td>60 ± 1</td></tr> <tr> <td>Viscosity</td><td>(mPa·s)</td><td>1600 – 3500</td></tr> <tr> <td>pH</td><td></td><td>4 – 7</td></tr> <tr> <td>Ave. particle size</td><td>(μm)</td><td>0.7</td></tr> <tr> <td>Density</td><td>(g/cm³)</td><td>1.07</td></tr> <tr> <td>MFT</td><td>(°C)</td><td>0</td></tr> <tr> <td>Particle charge</td><td></td><td>Nonionic</td></tr> <tr> <td>Mechanical stability</td><td></td><td>Good</td></tr> <tr> <td>Tg</td><td>(°C)</td><td>0</td></tr> <tr> <td>Tensile strength</td><td>(MPa)</td><td>13.0</td></tr> <tr> <td>Tensile elongation</td><td>(%)</td><td>620</td></tr> </table>		Appearance		Milky white	Solid content	(%)	60 ± 1	Viscosity	(mPa·s)	1600 – 3500	pH		4 – 7	Ave. particle size	(μm)	0.7	Density	(g/cm ³)	1.07	MFT	(°C)	0	Particle charge		Nonionic	Mechanical stability		Good	Tg	(°C)	0	Tensile strength	(MPa)	13.0	Tensile elongation	(%)	620
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< Technical Information of SUMIKAFLEX 460HQ >

1. Grade positioning



2. Emulsion properties

	Emulsion properties
Appearance	Milky white
Solid content (%)	60 ± 1
Viscosity (mPa·s)	1600 – 3500
pH	4 – 7
Ave. particle size (μm)	0.7
Density (g/cm ³)	1.07
MFT (°C)	0
Particle charge	Nonionic
Mechanical stability	Good
Tg (°C)	0

3. Film properties

(1) Tensile strength

		S-460HQ	S-400HQ	S-450HQ
Original	Elongation (%)	620	550	540
	Strength (MPa)	13.0	12.7	13.0
Wet	Elongation (%)	660	600	590
	Strength (MPa)	3.2	3.3	3.8

Test method

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

(2) Water or alkali liquid of resistance of film

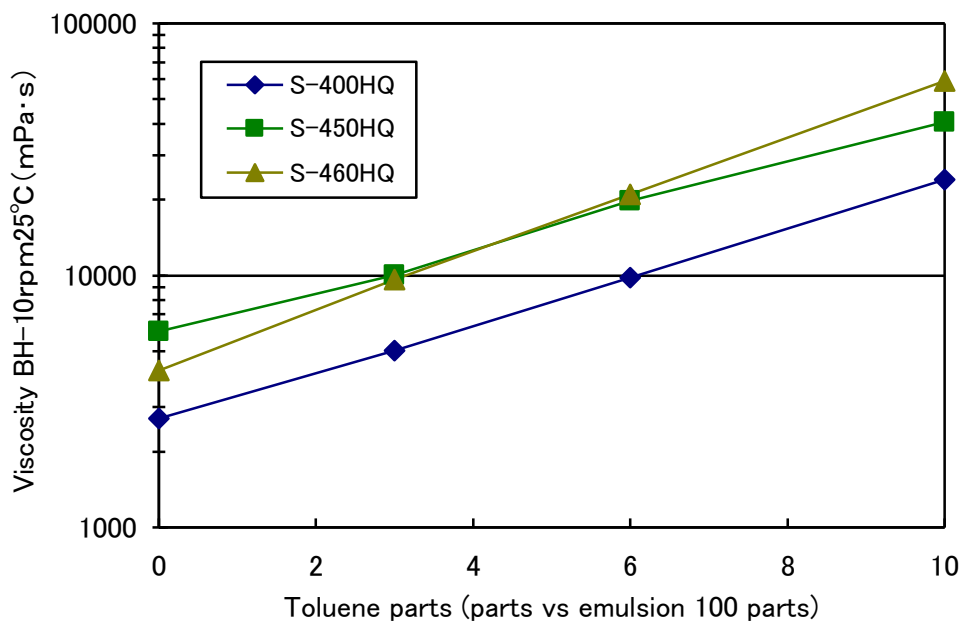
		S-460HQ	S-400HQ	S-450HQ
Water resistance	Elusion (%)	9	5	4
	Absorption (%)	19	16	16
Alkali resistance	Elusion (%)	12	9	12
	Absorption (%)	28	20	23

Test method

Thickness of film	: 0.15 mm
Water resistance	: Film immersed in water for 4 days at 23 °C
Alkali resistance	: Film immersed in 1 N NaOH for 4 days at 23 °C

4. Application

(1) Toluene viscosity



(2) PVC sheet to plywood

	Toluene parts	Adhesive strength (N/25 mm)		60°C Creep (mm/hr)
		Dry	Wet	
S-460HQ	0	50	19	4
	6	48	16	38
	10	46	16	50
S-400HQ	0	53	21	5
	6	49	15	40
	10	43	13	58
S-450HQ	0	52	25	6
	6	50	15	40
	10	45	14	55

Test method

PVC sheet	: Half semi-rigid PVC sheet
Plywood	: Lauan Type I 3-ply, 3 mm thick
Formulation	: Emulsion / Toluene = 100 / 0, 6, 10
Coating weight	: Wet 130 g/m ²
Clamping	: 50 kg / 30 cm × 30 cm at 20 hours (23°C × 65%RH)

Aging	: 6 days after clamping (23°C × 65%RH)
Original adhesive strength	: Peel at 100 mm/min of at a 180° angle
Wet adhesive strength	: After soaking in water for 20 hours, peel at 100 mm/min at a 180° angle
80°C Creep	: 80°C, 500 g weight and a 90° angle for static load test

(3) PVC sheet to particle board

	Adhesive strength (N/25 mm)		60°C Creep (mm/10 min)
	Original	Wet	
S-460HQ	38	31	19
S-400HQ	35	27	18
S-450HQ	34	27	20

Test method

Particle board: JIS A5908 200-Utype

PVC sheet: Half semi rigid PVC sheet

Formulation: Emulsion / Toluene =100/6

Coating weight: Wet 110 g/m²

Clamping: 50 kg/30 cm × 30 cm for 20 hours (23°C × 65%RH)

Aging: 6 days after clamping (23°C × 65%RH)

Original adhesive strength: Peel 50 mm/min of 180°

Wet adhesive strength: After in the water for 20 hours, peel 100 mm/min
of 180° angle

60°C Creep: 60°C, 90°, 500 g weight of 90° for static load test

(4) Set time

		S-460HQ	S-400HQ	S-450HQ
A	Craft paper/Craft paper (sec)	13	12	9
B	Craft paper/Aluminum (sec)	23	23	23
C	Craft paper/PVC sheet (sec)	20	18	12
D	Particle board/ PVC sheet (min)	50	55	50
E	Gypsum board/PVC sheet (min)	3	4	3

Test method

Adhesive: A – B: emulsion, C – E: emulsion/toluene = 100/6

Coating: A – C: Wet 50 g/m² D – E: Wet 110 g/m²

Room condition: 23°C × 65%RH

Measurement: Laminated immediately after coating

Peel the substrate at a constant time.

Measure the time when the substrate is completely broken.

(5) Gum up property

	Gum up time (min.)
S-460HQ	52
S-400HQ	75
S-450HQ	61

Test method

Role speed: 85 m/min