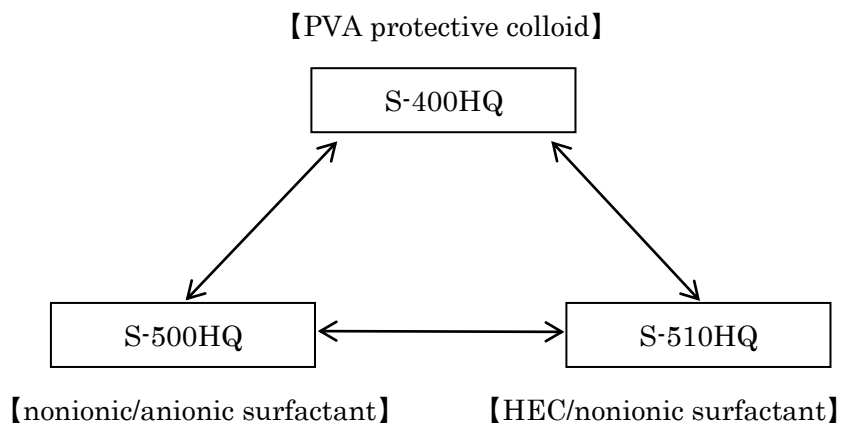


## SUMIKAFLEX 500HQ

|                       |   |                  |  |
|-----------------------|---|------------------|--|
| Type:                 | Ethylene Vinyl acetate Copolymer Emulsion   |                  |  |
| Properties:           | SUMIKAFLEX 500HQ (S-500HQ) is a nonionic and anionic surfactant emulsion, and its particle is smaller than that of SUMIKAFLEX 400HQ. It offers good spray handling, miscibility with fillers and mechanical stability. Its dried film is excellent for transparency and water resistance. |                  |  |
| Main application:     | Binder for paper coating<br>Adhesives for paper and textile<br>Paint<br>Additives for mortars   |                  |  |
| Physical properties : |   |                  |  |
| Appearance            |   | Milky white      |  |
| Solid content         | (%)   | 53 ± 1           |  |
| Viscosity             | (mPa·s)   | 50 – 500         |  |
| pH                    |   | 4 – 7            |  |
| Ave. particle size    | (μm)  | 0.3              |  |
| Density               | (g/cm³)   | 1.07             |  |
| MFT                   | (°C)  | 0                |  |
| Particle charge       |   | Slightly anionic |  |
| Mechanical stability  |   | Excellent        |  |
| Tg                    | (°C)  | 0                |  |
| Tensile strength      | (MPa)   | 8.0              |  |
| Tensile elongation    | (%)   | 500              |  |

## <Technical Information of SUMIKAFLEX 500HQ>

### 1. Glade positioning



### 2. Emulsion properties

|                              | S-500HQ          | S-510HQ     | S-400HQ     |
|------------------------------|------------------|-------------|-------------|
| Appearance                   | Milky white      | Milky white | Milky white |
| Solid content (%)            | 53±1             | 55±1        | 55±1        |
| Viscosity (mPa·s)            | 50-500           | 10-400      | 1100-1600   |
| pH                           | 4-7              | 4-7         | 4-7         |
| Ave. particle size (μm)      | 0.3              | 0.7         | 0.7         |
| Density (g/cm <sup>3</sup> ) | 1.07             | 1.07        | 1.07        |
| MFT (°C)                     | 0                | 0           | 0           |
| Particle charge              | Slightly anionic | Nonionic    | Nonionic    |
| Mechanical stability         | Good             | Good        | Good        |
| Tg(°C)                       | 0                | 0           | 0           |

### 3. Film properties

#### (1) Tensile strength

|          |                | S-500HQ | S-510HQ | S-400HQ |
|----------|----------------|---------|---------|---------|
| Original | Elongation (%) | 500     | 800     | 550     |
|          | Strength (MPa) | 8.0     | 5.8     | 12.7    |
| Wet      | Elongation (%) | 520     | 600     | 600     |
|          | Strength (MPa) | 1.3     | 2.9     | 3.3     |

## 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 drop examination

|                    | S-500HQ | S-510HQ | S-400HQ |
|--------------------|---------|---------|---------|
| Whiting time (min) | >120    | >120    | 2       |

## Test method

Foam film (thickness: 0.15 mm) on the slide glass at room temperature. The slide glass is on the 8-point Chinese character in a newspaper. Measure the time until the film is whitened after one drop of water, and the character cannot be read.

#### 4. Application

##### (1) Heat sealing

| Heat sealing temperature (°C) | Adhesive strength (N/25mm) |         |         |
|-------------------------------|----------------------------|---------|---------|
|                               | S-500HQ                    | S-510HQ | S-400HQ |
| 60                            | 4.7                        | 9.1     | 10.6    |
| 80                            | 7.8                        | 16.2    | 17.4    |
| 100                           | 10.1                       | 27.8    | 32.7    |
| 120                           | 12.3                       | 35.6    | 32.2    |
| 140                           | 19.1                       | 42.7    | 33.6    |
| 160                           | 41.9                       | -       | 38.3    |
| 180                           | 45.9                       | -       | -       |

##### Test method

Substrate: cotton #40

Coating 1: Coating 0.03 mm thickness of emulsion

Coating 2: Coating 0.07 mm thickness of the emulsion after coating 1 and drying 1min

Drying: 24 hours in the room

Lamination: Seal at each lamination temperature after the coated sides are superposed

Peeling speed: 300 mm/min

## (2) Flock treatment

### Test method

Formulation: emulsion / cross-linked additive / catalyst of crosslink /  
thickener = 100 / 6 / 0.6 / α

Substrate: Cotton #40

Rubbing test: Water resistance, Perchloroethylene resistance

Texture: Cantilever method

Dry condition: 80°C × 10min → curing 130°C × 20min

### Textile

|   | S-500HQ | S-510HQ | S-400HQ | Acryl<br>emulsion A |
|---|---------|---------|---------|---------------------|
| Viscosity(mPa·s)                        | 26900   | 29900   | 37700   | 28800               |
| Coating (g/m <sup>2</sup> )             | 267     | 255     | 254     | 259                 |
| Water<br>resistance (times)             | 4000    | 4040    | 2780    | 3500                |
| Perchloroethylene<br>resistance (times) | 28      | 1       | 1       | 2060                |
| Texture (cm)                            | 6.1     | 6.2     | 8.5     | 5.4                 |

Substrate: nylon pile 1.5d, thickness 0.5mm

### Application for shoes

|   | S-500HQ | S-510HQ | S-400HQ | Acryl<br>emulsion A |
|---|---------|---------|---------|---------------------|
| Viscosity(mPa·s)                        | 27400   | 29300   | 31100   | 29300               |
| Coating (g/m <sup>2</sup> )             | ca.250  | ca.250  | ca. 250 | ca.250              |
| Water<br>resistance(times)              | 2120    | 3800    | >6000   | 3800                |
| Perchloroethylene<br>resistance (times) | 45      | 1       | 1       | >4800               |
| Texture (cm)                            | 7.1     | 6.6     | 9.3     | 6.6                 |

Substrate: nylon pile 3.0d, thickness 1.0mm

### Application for carpet

|                             | S-500HQ | S-510HQ | S-400HQ | Acryl<br>emulsion A |
|-----------------------------|---------|---------|---------|---------------------|
| Viscosity (mPa·s)           | 27900   | 27500   | 35800   | 27500               |
| Coating (g/m <sup>2</sup> ) | 336     | 340     | 335     | 337                 |
| Water<br>resistance(times)  | 1780    | 1900    | 3280    | 1140                |

Substrate: nylon pile 14d, thickness 3.0mm