

## SUMIKAFLEX 755

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|-------------|---------------|-----|--------|-----------|---------|------------|----|--|-------|--------------------|------|-----|---------|----------------------|------|-----|------|---|-----------------|--|----------|----------------------|--|------|----|------|-----|------------------|-------|-----|--------------------|-----|--------|--|
| Type:                | Ethylene-Vinyl acetate Copolymer Emulsion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Properties:          | SUMIKAFLEX 755 (S-755) has a self-cross-linking functional group, and its film has a soft texture. The film is superior in water and solvent resistance. It also has sanitation properties.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Main application:    | Non-woven fabric binder<br>Impregnated paper binder<br>Flocky finish<br>Plastics lamination<br>Paper and fabric adhesives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Physical properties: | <table> <tr><td>Appearance</td><td></td><td>Milky white</td></tr> <tr><td>Solid content</td><td>(%)</td><td>51 ± 1</td></tr> <tr><td>Viscosity</td><td>(mPa·s)</td><td>500 – 1500</td></tr> <tr><td>pH</td><td></td><td>4 – 7</td></tr> <tr><td>Ave. particle size</td><td>(μm)</td><td>0.5</td></tr> <tr><td>Density</td><td>(g/cm<sup>3</sup>)</td><td>1.05</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>–15</td></tr> <tr><td>Tensile strength</td><td>(MPa)</td><td>1.0</td></tr> <tr><td>Tensile elongation</td><td>(%)</td><td>&gt; 1500</td></tr> </table> | Appearance  |  | Milky white | Solid content | (%) | 51 ± 1 | Viscosity | (mPa·s) | 500 – 1500 | pH |  | 4 – 7 | Ave. particle size | (μm) | 0.5 | Density | (g/cm <sup>3</sup> ) | 1.05 | MFT | (°C) | 0 | Particle charge |  | Nonionic | Mechanical stability |  | Good | Tg | (°C) | –15 | Tensile strength | (MPa) | 1.0 | Tensile elongation | (%) | > 1500 |  |
| Appearance           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Milky white |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Solid content        | (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 51 ± 1      |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Viscosity            | (mPa·s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 500 – 1500  |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| pH                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4 – 7       |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Ave. particle size   | (μm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.5         |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Density              | (g/cm <sup>3</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.05        |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| MFT                  | (°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0           |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Particle charge      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Nonionic    |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Mechanical stability |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Good        |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Tg                   | (°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | –15         |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Tensile strength     | (MPa)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1.0         |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |
| Tensile elongation   | (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | > 1500      |  |             |               |     |        |           |         |            |    |  |       |                    |      |     |         |                      |      |     |      |   |                 |  |          |                      |  |      |    |      |     |                  |       |     |                    |     |        |  |

## < Technical Information of SUMIKAFLEX 755 >

### 1. Grade positioning

SUMIKAFLEX 752: self-cross-linked, hard texture film (Tg: 15°C)



SUMIKAFLEX 755: self-cross-linked, soft texture film (Tg: -15°C)

### 2. Emulsion properties

|                              | S-752       | S-755       |
|------------------------------|-------------|-------------|
| Appearance                   | Milky white | Milky white |
| Solid content (%)            | 50 ± 1      | 51 ± 1      |
| Viscosity (mPa·s)            | 400 – 1300  | 500 – 1500  |
| pH                           | 4 – 7       | 4 – 7       |
| Ave. particle size (μm)      | 0.5         | 0.5         |
| Density (g/cm <sup>3</sup> ) | 1.09        | 1.05        |
| MFT (°C)                     | 9           | 0           |
| Particle charge              | Nonionic    | Nonionic    |
| Mechanical stability         | Good        | Good        |
| Tg (°C)                      | 15          | - 15        |

### 3. Film properties

#### (1) Tensile strength

|                |                | S-752 | S-755  |
|----------------|----------------|-------|--------|
| Tg (°C)        |                | 15    | - 15   |
| Original state | Elongation (%) | 360   | > 1500 |
|                | Strength (MPa) | 23.0  | 1.0    |
| Wet strength   | Elongation (%) | 380   | 1000   |
|                | Strength (MPa) | 3.0   | 0.9    |

#### Test method

|                        |                         |
|------------------------|-------------------------|
| Thickness of film      | : 0.15 mm               |
| Shape of film          | : Dumbbell No.3         |
| Film forming condition | : 23°C × 65%RH × 7 days |
| Measurement speed      | : 500 mm/min            |

#### 4. Application

##### (1) Compared EVA emulsion, another emulsion and latex

|                | Texture | Adhesive | Light resistance | Heat resistance | Cleaning resistance | Dry cleaning resistance | Heat sealing ability | High frequency treatment ability |
|----------------|---------|----------|------------------|-----------------|---------------------|-------------------------|----------------------|----------------------------------|
| S-752          | H       | 3        | 3                | 3               | 3                   | 3                       | 2                    | 2                                |
| S-755          | S       | 2        | 3                | 3               | 3                   | 2                       | 2                    | 2                                |
| Acryl emulsion | M       | 3        | 3                | 3               | 2                   | 3                       | 2                    | 2                                |
| NBR latex      | M       | 2        | 1                | 1               | 1                   | 3                       | 1                    | 1                                |
| SBR latex      | M       | 2        | 1                | 1               | 2                   | 2                       | 1                    | 1                                |

Texture H: hard, M: middle, S: soft, excellent 3 – 2 – 1 not suitable

##### (2) Non-woven binder

|                                  |                   | S-752 | S-755 | Acrylic emulsion A |
|----------------------------------|-------------------|-------|-------|--------------------|
| Basic weight (g/m <sup>2</sup> ) |                   | 47.0  | 46.5  | 45.7               |
| Dry Pick Up (%)                  |                   | 28.4  | 26.9  | 27.9               |
| Dry strength                     | Strength (N/5 cm) | 55.3  | 27.6  | 21.1               |
|                                  | KGSC value*       | 2353  | 1187  | 923                |
| Wet strength                     | Strength (N/5 cm) | 15.9  | 13.3  | 10.1               |
|                                  | KGSC value*       | 677   | 572   | 442                |
| Cantilever method (mm)           |                   | 290   | 175   | 160                |
| Dry cleaning resistance          | Absorption (%)    | 4.0   | 9.9   | 5.1                |
|                                  | KGSC value        | 451   | 245   | 343                |
| Heat resistance                  |                   | 14.6  | 15.1  | 15.2               |
| Light resistance (yellow index)  |                   | 7.0   | 6.9   | 7.1                |

\*: KGSC value = strength (N/cm)/basic weight (g/cm<sup>2</sup>)

##### Test method

Substrate: Rayon (basic weight 35 to 40 g/m<sup>2</sup>)

Dipping: Mangle condition (sandwich non-woven between nylon mesh)

Nip pressure: 0.1 MPa

DPU: 25 to 30%

Drying: 150°C × 48 sec

Curing: 130°C × 5 min

Strength: JIS L-1085

Texture (cantilever method): JIS L-1085

Dry cleaning resistance: JIS L-1085

Heat resistance: After 150°C × 60min, measured by hunter color difference meter with Greenfilter

Light resistance: After Fade-O-Meter for 80 hours, measured by hunter color difference meter

### (3) Application for impregnated paper

|                                         |                      |                      | S-752 | S-755 | Acrylic emulsion A |
|-----------------------------------------|----------------------|----------------------|-------|-------|--------------------|
| Dry Pick Up (%)                         |                      |                      | 27.7  | 26.3  | 26.7               |
| Dry tensile strength<br>130°C × 3 min   |                      | Strength (N/1.5 cm)  | 111   | 69    | 72                 |
|                                         |                      | Breaking length (km) | 4.82  | 3.08  | 3.11               |
| Wet strength                            | Strength (N/1.5 cm)  | 130°C × 1 min        | 19.0  | 9.3   | 19.6               |
|                                         |                      | 130°C × 3 min        | 37.2  | 19.9  | 30.6               |
|                                         |                      | 130°C × 5 min        | 41.7  | 25.3  | 35.6               |
|                                         | Breaking length (km) | 130°C × 1 min        | 0.82  | 0.41  | 0.85               |
|                                         |                      | 130°C × 3 min        | 1.61  | 0.89  | 1.32               |
|                                         |                      | 130°C × 5 min        | 1.81  | 1.13  | 1.54               |
| Sizing degree (sec)                     |                      | 130°C × 1 min        | 5     | 31    | 17                 |
|                                         |                      | 130°C × 3 min        | 6     | 64    | 36                 |
|                                         |                      | 130°C × 5 min        | 10    | 112   | 41                 |
| Folding resistance (time) 130°C × 3 min |                      |                      | 381   | 641   | 585                |
| Tear strength (g) 130°C × 3 min         |                      |                      | 154   | 146   | 145                |

### Test method

Master paper: filter paper No.2 (basic weight: 120 g/m<sup>2</sup>)

Dipping: Mangle condition

Concentrate of emulsion 20%

Nip pressure 0.2 MPa

DPU 26 to 28%

Drying: at room temperature

Curing: 130°C × 1, 3 and 5 min