Synthetic pulp [polyethylene]

SWP™

Polyethylene quasi-cotton fiber

KEMIBESTO™

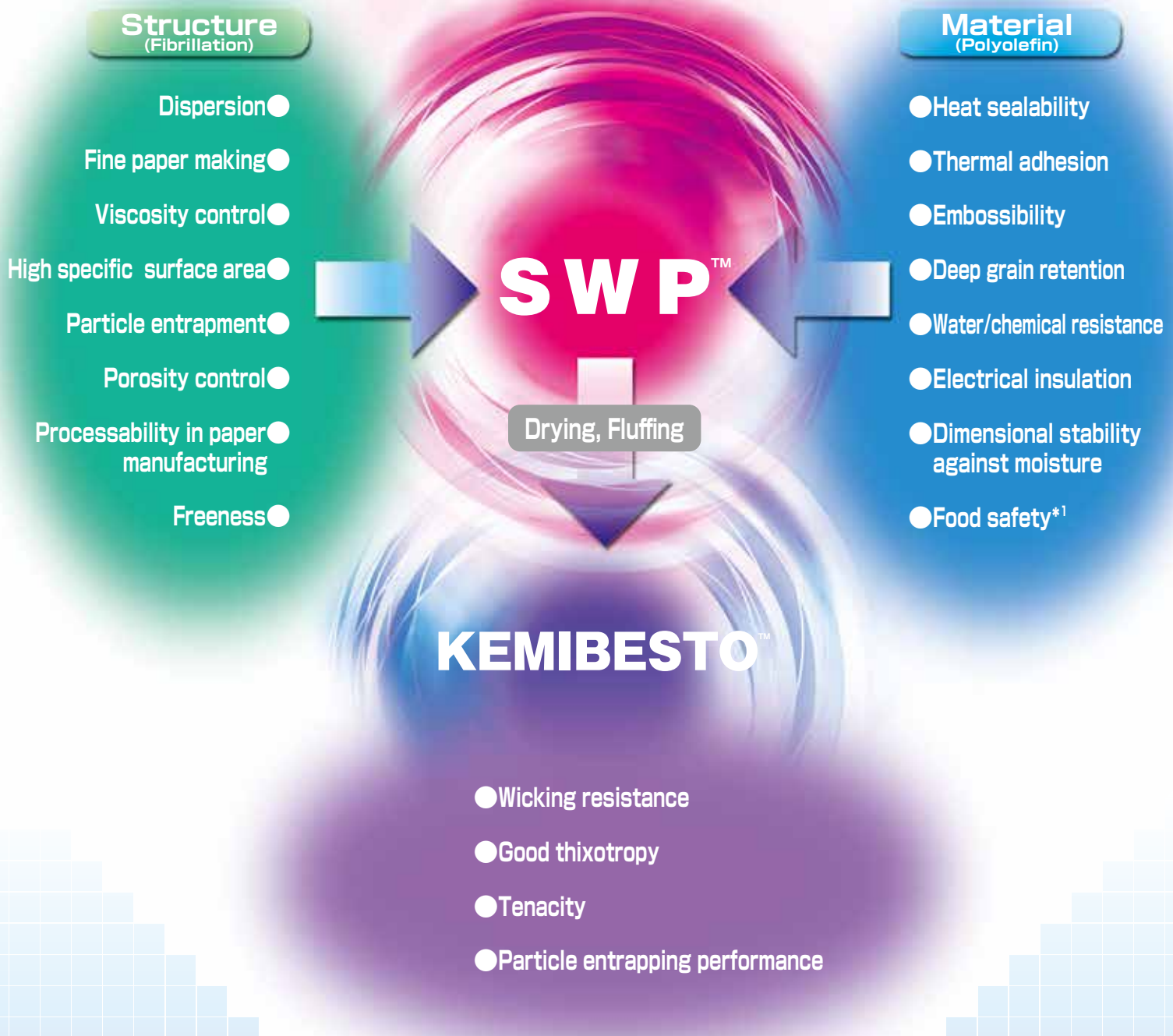
Mitsui Chemicals,INC.

High performance which is realized by SWP™/KEMIBESTO™

SWP™/KEMIBESTO™ is a hydrophilic fibrillated fiber made from polyolefin 100%.

SWP™, a fibrillated polyolefin fiber, realizes distinctive properties such as a high degree of smoothness, whiteness, heat sealability and water-resistance.
SWP™, unprecedented high performance fiber, expands potentiality in various application fields, particularly in paper-related applications.
KEMIBESTO™, dried and fluffed SWP™, disperses readily in water or organic solvents and is used for a broad range of applications such as coatings and adhesives.

Property keywords of SWP™ and KEMIBESTO™



※1:If considering to use our products for food or medicinal applications, please consult with us in advance.

SWP™ and other Fibers

(Photomicrographs, 150 times magnification)

Wood pulp

SWP™ (E400)

Polyolefin cut fiber

Food and medical applications

SWP™ affords heat sealing properties and is used in a variety of applications, such as food packaging and medical services.
SWP™ blending enhances moulding property to realize good grain retention.
SWP™ is used for environmentally-friendly applications as well as for recycling products.

Heat sealability | Thermal adhesion | Air permeability control | Food safety

■Tea bags

■Coffee pods

Major grades for use NL491/E790/E690/E400/AU690

Food safety | Grain retention | Recycling

■Food containers

Left Company name: Kyoto Pickles Nishiri, product name: Nishiri Semmaizuke, development/production: Suzuki Shofudo Co., Ltd.
Middle Company name: Murasakino Wakuden, product name: Kyo-no-Himetsuto, development/production: Suzuki Shofudo Co., Ltd.
Right Company name: Murasakino Wakuden, product name: Hassun, development/production: Suzuki Shofudo Co., Ltd.

Base paper: hybrid moulded paper, Maro™

■Trays for food and medical use

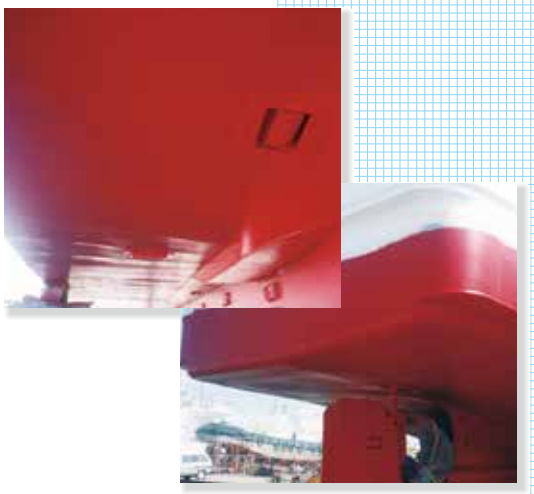
Major grades for use E790/E400

Construction and manufacturing

SWP™ , a highly-fibrillated fiber (multi-branched, high surface area, controlled freeness), shows excellent particle-entrapment, mouldability, thixotropy, viscosity control, crack resistance, dimensional stability and tenacity.
It is considered that SWP™ has negligible impact on human health under normal conditions of use.

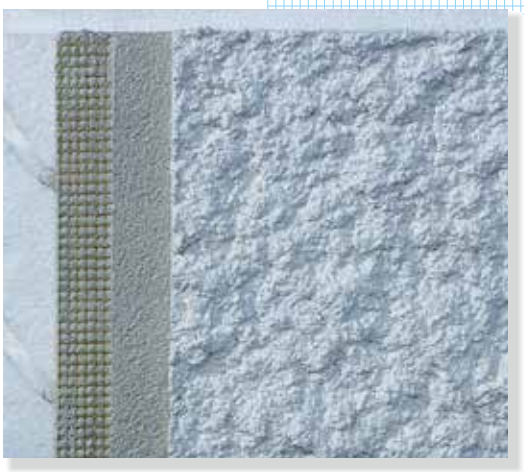
Thixotropy | Crack resistance | Particle entrapment | Dispersion

■Coatings



■Marine coatings

■Roofing tiles



■Foundation materials for mortar

Major grades for use E524/E620/E400/ESS-5/all KEMIBESTO™ grades

Labels and cards

SWP™ made from polyolefin, adheres to containers made of the same material.
SWP™ has outstanding printing features, which will enhance designs.
SWP™-blended paper has fine embossibility and enhances three dimensional and transparent designs.

Thermal adhesion | Dimensional stability | Designing | Recycling

■Labels

Major grades for use E400/E620

Embossibility | Designing | Whiteness

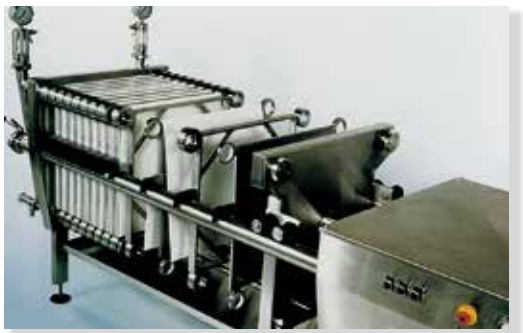
■Decorative papers

Major grades for use E400/E620/E790

Industrial materials

SWP™ has superb thermal adhesion properties, mouldability and chemical resistance, and enables air permeability, owing to its fibrillated structure.

Thermal adhesion | Air permeability control | Chemical resistance



■Filter

■Battery separator

Major grades for use E400/EST-8/UL410/EST-2

Housing materials

SWP™ is used in construction materials such as wallpaper and breathable sheets (synthetic paper made from 100% SWP™, etc.) because of its outstanding properties for embossing, dimensional stability and air permeability control.

Air permeability control | Designing | Water resistance | Bulkiness

■Wallpaper

Major grade for use E790

Air permeability control | Water resistance

■Waterproof / breathable sheet

Major grade for use E620

Penetrating into the various fields

Papers blended with SWP™ facilitate embossing and grain retention, and realize deeper design imprints than ordinary paper.
SWP™, which has the characteristics of both natural pulp and polyolefin, is able to confer advantages of its high performance in various fields.

■Blotting paper

■Air-laid sheets

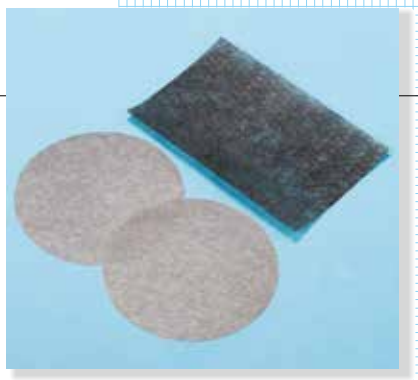
■Cotton pads

■Boards for construction use

■Speaker cones

■Printing papers

■Wrapping papers



■Conductive papers

■Moulded pulp

■Formable board (for vehicles)

■Grass mat

Grades

SWP™ grades

Type		grade	Melting point (°C)	CSF (cc)	CFL (mm)	Wetness	Coarseness	Main characteristics	Main application
Type E (PE)	Paper manufacturing grades	E400	135	580	0.9	63	Standard	Outstanding texture	Papers, construction materials
		E524		340	1.2	57	Standard	Good fiber binding	Construction materials
		E620		340	1.2	64	Standard		Papers, construction materials
		E690		700	1.3	53	Standard	High filtration	Tea bags Coffee pods
		E790		680	1.5	50	Standard	Long fibers High filtration	
		EST-2		470	0.9	59	Fine	Very fine fibers	Speciality papers
		EST-8		540	0.9	59	Fine		
	Dry process grades	E780		—	1.6	36	Coarse	Long fibers	Binder for drylaid nonwoven fabric
		ESS-5		—	0.1≧	50	Standard	Good thixotropy Crack resistance	Coatings, adhesives
		ESS-2		—	0.6	47	Standard		
		E380		—	0.7	39	Coarse		
		E990		—	2.0	50	Very Coarse		
		ESS-50		—	0.1≧	50	Standard	Highly hydrophilic	
Type NL (denatured PE)	Paper manufacturing grades	NL491	100	720	1.0	55	Coarse	Hot tack Low melting point	Tea bags Coffee pods
Type AU (denatured PE)		AU690	120	680	1.2	52	Coarse	Highly adhesive Low melting point	
Type UL (PE)		UL410	125	600	1.0	55	Coarse	Low melting point Outstanding texture	Papers, construction materials

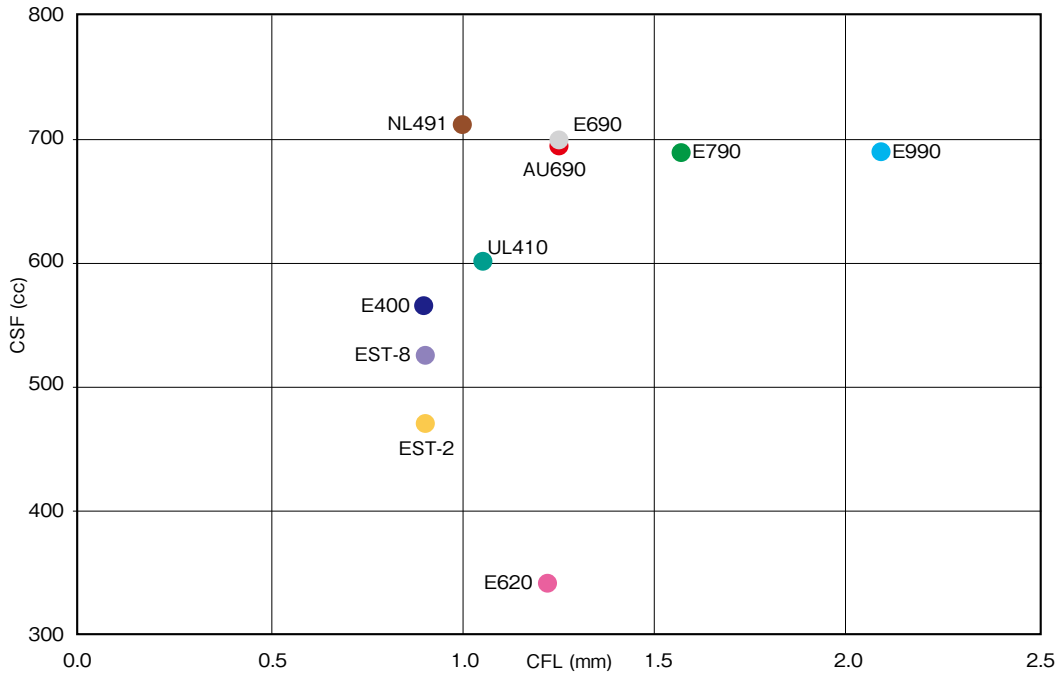
■KEMIBESTO™ grades

Grade	Melting point (°C)	CFL (mm)	Wetness	coarseness	Main characteristics
FDSS-5	135	0.1≧	1≧	Standard	Good thixotropy Crack resistance
FDSS-2		0.6		Standard	
FD380		0.7		Coarse	
FD780		1.6		Coarse	
FD990		2.0		Very coarse	
FDSS-50		0.1≧		Standard	Highly hydrophilic

■Application of KEMIBESTO™

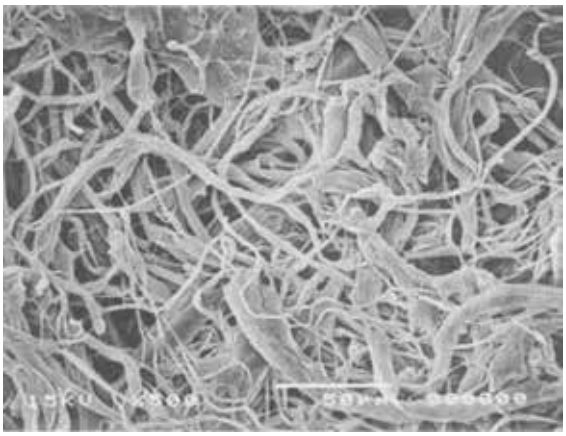
	Coatings, adhesives, sealing materials	Construction materials	Nonwoven fabric	Others
Applications	Protective coating (underseal coatings) Roof coatings Coatings for paving Traffic line coatings	Spray coatings Putty FRP Dry lining boards Sealants	Cushions Covers Laminated materials	Inorganic filler Composite materials
Advantage	Good thixotropy Crack resistance	Wicking resistance Thermal adhesion Hydrophobic	Thermal adhesion Flexibility Air permeability Heat sealability	Thermal adhesion Dispersion Particle entrapment

■Mapping CFL against CSF



■Photomicrographs

Standard fiber (E400)



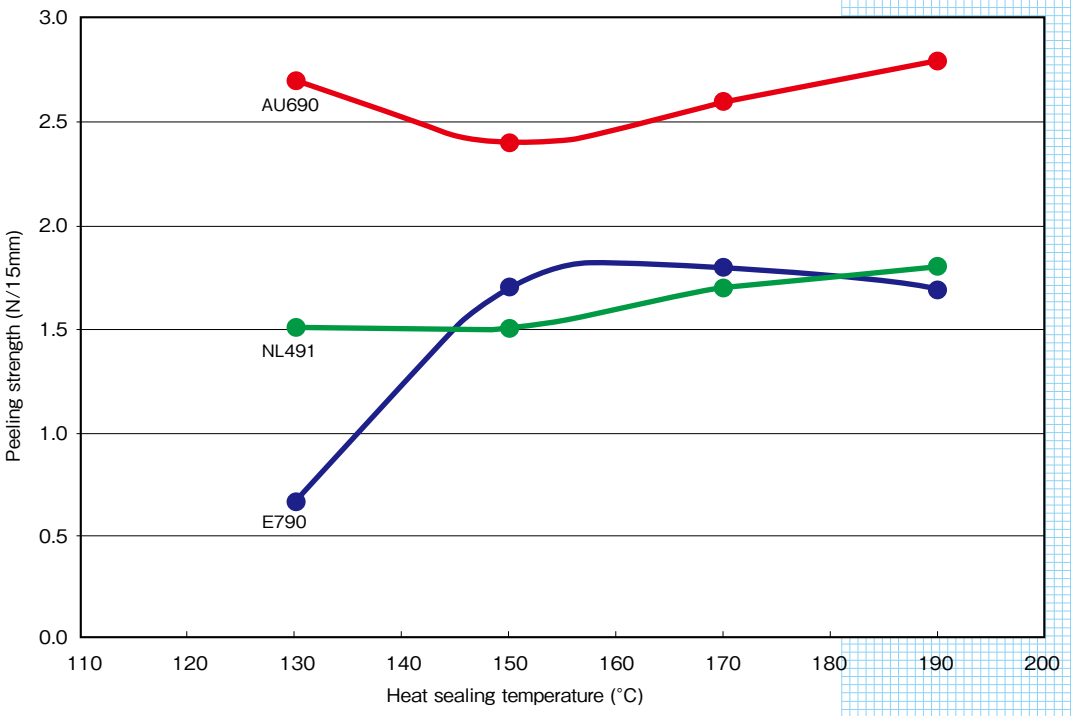
Fine fiber (EST-8)

■Heat sealing strength and hot tack property

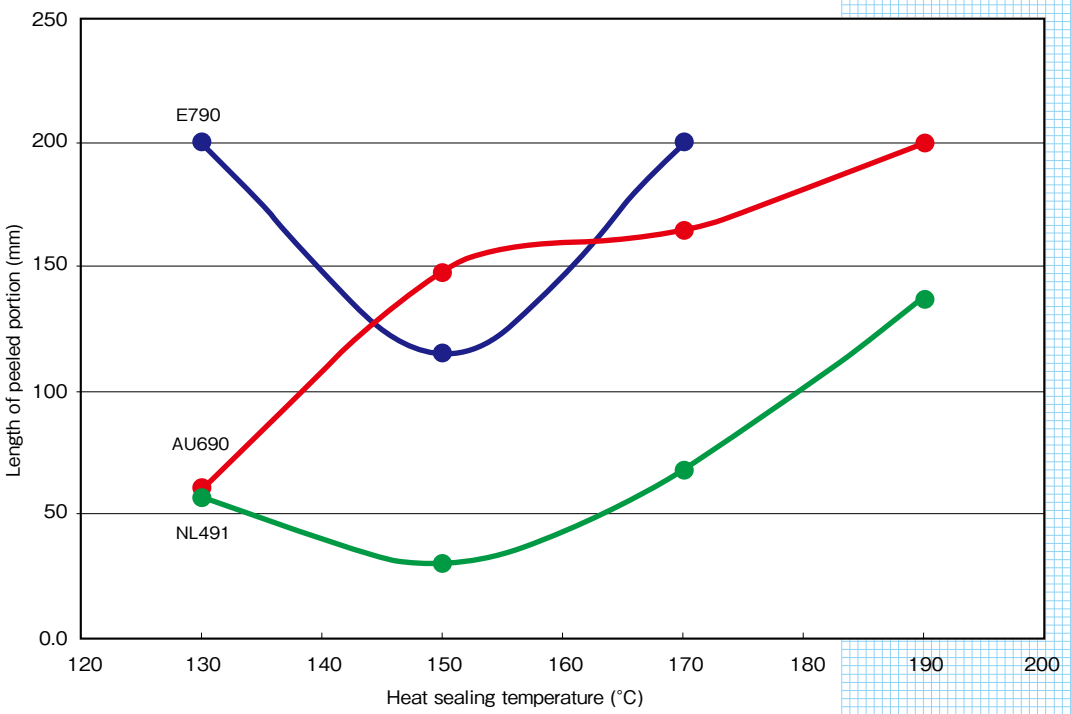
Assessed samples

Two-layered paper [base layer: 12g/㎡ (abaca pulp), heat sealing layer: 5g/㎡ (80% SWP™, 20% NBKP)]

■Heat sealing strength: expressed by peeling strength (the higher, the better)
Force required to peel heat sealed part with width of 15mm.



■Hot tack property: expressed by the length of the peeled portion (the shorter, the better)
Length of peeled portion when a peel force (0.1N/10mm) is applied immediately after heat sealing.



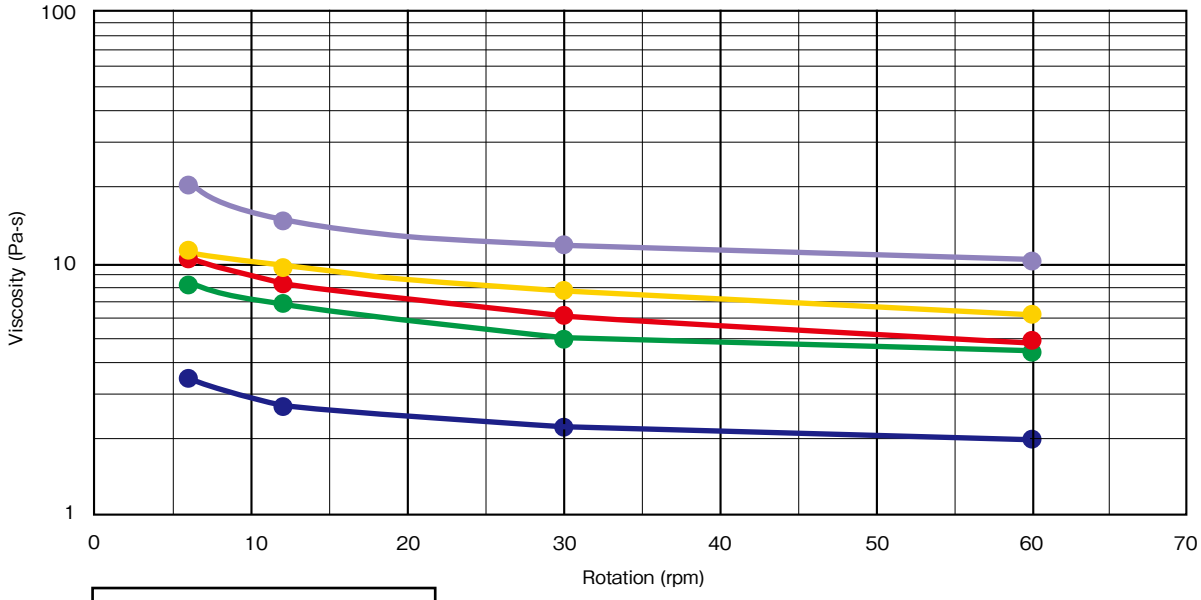
■Dimensional stability against moisture and embossibility

Blending (%)		Heat treatment (2 minutes)	Thickness	Basis weight	Elongation	Embossibility
Wood pulp	SWP™ E400	℃	mm	g／m²	%	Assessed with 5 levels
100	0	125	0.125	111	1.25	2
		145	0.125	111	0.95	1
90	10	125	0.125	112	1.25	2
		145	0.125	110	1.00	2
80	20	125	0.125	112	0.75	3
		145	0.125	113	0.30	2
70	30	125	0.125	114	0.55	5
		145	0.125	111	0.05	4

Elongation: measured immediately after removing moisture from the surface of tested samples which had been soaked in water at 23°C for 20 minutes.
Embossibility: state of mesh embossing, which had been loaded with a surface pressure of 1MPa at a temperature of 150°C, observed after soaking in water at 23°C for 5 minutes and then dried.

Level 1: possible to see part where deeply embossed, but only faintly
Level 2: possible to see part of embossed pattern
Level 3: possible to see all of embossed pattern
Level 4: The original embossed pattern mostly remains unchanged
Level 5: Good quality embossed pattern

■Thixotropic property

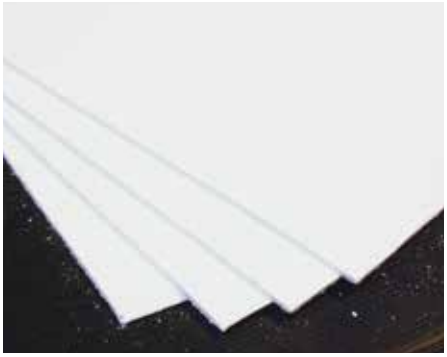


	Thixo index
FD990	2.04
FDSS-2	2.14
FD380	1.82
FD780	1.77
FDSS-5	1.74

■Solution measured

Epoxy resin	104
Benzyl alcohol	16
KEMIBESTO™ (1PHR)	1.2

Package



1BL

Palletized

SWP™ package

Package (Bale) wrapped with polyethylene film of approximately 70cm (length) x 60cm (width) x 65cm (height) contains 150 - 170 wet sheets. The gross weight of each package (bale) varies according to the grade.

·Typical gross weight
Type E: 210kg
Type UL: 190kg
Types NL, AU: 170kg

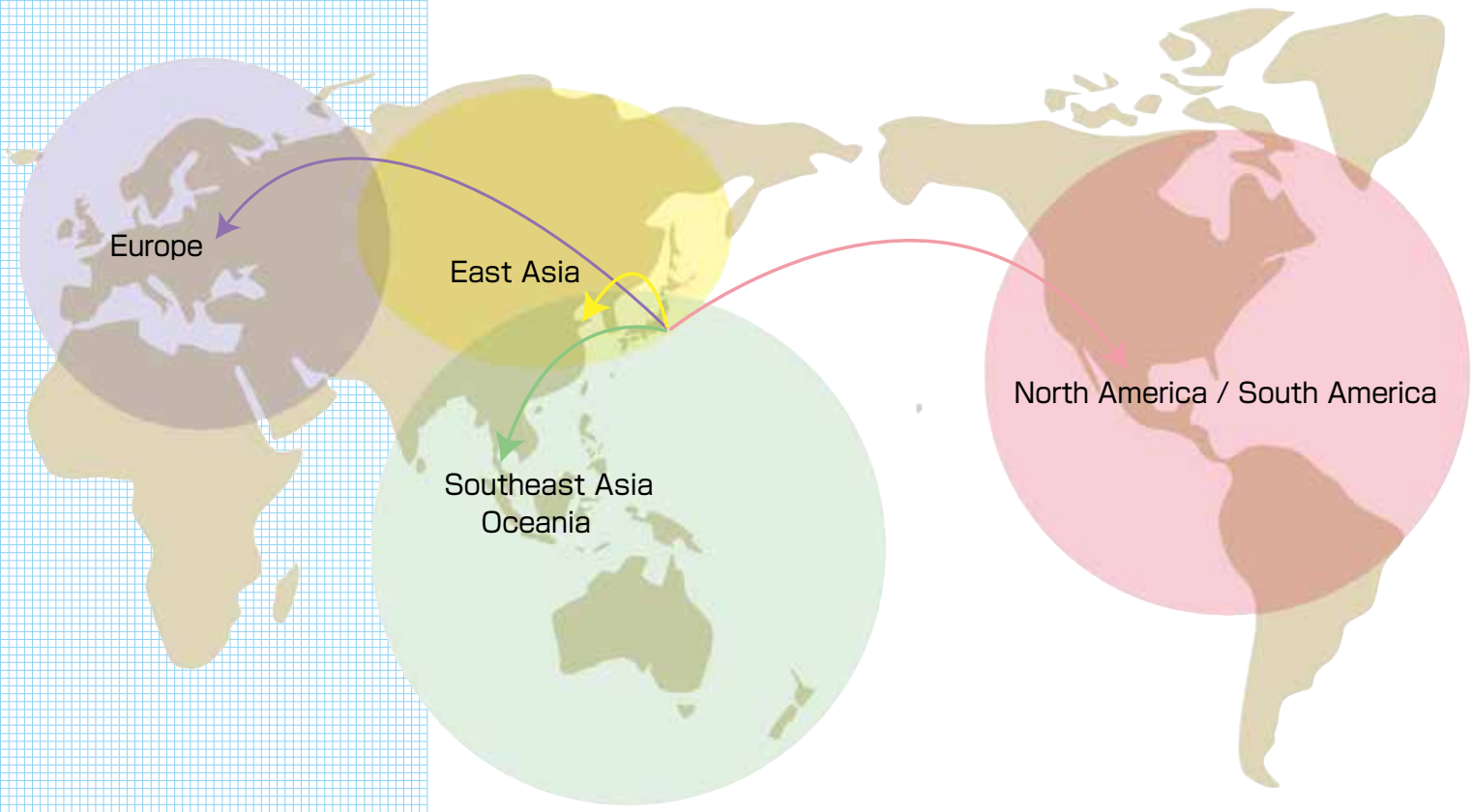
Air-dry weight (ADkg) is stated on the label on each bale.
Air-dry weight is used as the invoiceable unit of SWP™ containing10% water.
Air-dry weight = total weight x (100 - moisture percentage) /90

Magnified photograph

KEMIBESTO™ package

KEMIBESTO™ is sold in paper bags of approximately 95cm (length) x 50cm (width) x 15cm (height) containing 5kg of KEMIBESTO™.

We sell SWP™ and KEMIBESTO™ to countries all over the world.



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