SANWAX - VISCOL

SANWAX products are low-molecular weight polyethylene.

VISCOL products are low molecular weight polypropylene.

They are produced by a Sanyo Chemical original manufacturing process.

Compared with polyethylene and polypropylene, these products have lower molecular weights, however, they have softening points equivalents to those of polyethylene and polypropylene.

Compared with paraffin wax , these products have higher molecular weight, however, they have viscosity equivalent to those of paraffin wax.

Having such a peculiar combination of properties. SANWAX products and VIS>COL products are widely used in a variety of application including pigment and filler dispersant, lubrificant for PVC, releasing agent for paint, softening point enhancer for EVA & paraffin wax, sewabilitry improver, and gelling agent for cosmetics.

We offer a wide range of SANWAX products and VISCOL products as follow:

Polyethylene				Polypropylene
Low-density		High-density		
Non-Oxydized Type	Oxydized Type	Non-oxydized Type	Oxydized Type	
SANWAX 131-P 151-P 161-P 165-P 171-P	SANWAX E-250P E-310 E-330	SANWAX LEL-250 LEL-800	SANWAX LEL-400P(EX)	VISCOL 330P 440P 550P 660P

Important: before to handle these products refer to the Material Safety Data Sheet (MSDS) for recommended protective equipment and detailed precautionary and hazards information.

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TYPICAL PROPERTIES

Table 1 and table 2 show the properties of SANWAX products and VISCOL products.
The listed values are typical ones.

Table 1: typical properties of SANWAX products and VISCOL products

Products	Appearance (20 ± 5°C)	Colour (Molten APHA)	Viscosity [2] mPA.s (140 °C)	Softening Point [4] °C
SANWAX 171P	White powder	30	180	107
SANWAX 151P		30	290	107
SANWAX 131P		30	1.000	108
SANWAX 161P		30	4.300	111
SANWAX 165P		30	4.300	107
SANWAX E-310	Pale yellow pellet	100	270	103
SANWAX E-330		100	850	104
SANWAX E-250P	Pale yellow powder	7 [1]	320	103
SANWAX LEL-250	White pellet	50	625	124
SANWAX LEL-800		100	22.000	133
SANWAX LEL-400(EX)	White powder	50	650	128
VISCOL 660P	White Powder	1 [1]	70 [3]	145
VISCOL 550P		200	200 [3]	152
VISCOL 440P		200	2000 [2]	153
VISCOL 330P		200	4000 [2]	153

1) Molten, gadner 2) Brookfield viscometer at 140°C 3) Measured a t 160°C 4) ASTM E28-58T

Table 2 Typical properties of SANWAX products and VISCOL products

Products	Penetration [5] Hardness (100gr,5s,25°C)	Acid Value	Density 6) (20°C)	Average Molecular Weight [7]
SANWAX 171P	4,5	Nil	0,92	1.500
SANWAX 151P	4	Nil	0,92	2.000
SANWAX 131P	3,5	Nil	0,92	3.500
SANWAX 161P	2	Nil	0,92	5.000
SANWAX 165P	2	Nil	0,91	5.000
SANWAX E-310	5	15	0,93	2.000
SANWAX E-330	4	17	0,94	2.000
SANWAX E-250P	5	20	0,95	2.000 [8]
SANWAX LEL-250	< 1	Nil	0,95	3.000
SANWAX LEL-800	< 1	Nil	0,96	6.000
SANWAX LEL-400(EX)	1	1	0,96	4.000
VISCOL 660P	1,5	Nil	0,89	3.000
VISCOL 550P	< 1	Nil	0,89	4.000
VISCOL 440P	< 1	Nil	0,89	9.000 [8]
VISCOL 330P	< 1	Nil	0,89	15.000 [8]

5) ASTM 1321-61T 6) ASTM D 792 T 7)measured with vapour-pressure osmotic-pressured method
8) Number average molecular weight measured with gel permeation chromatography

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FEATURES

Compared with polyethylene polypropylene, and waxes such as paraffin wax, carnauba wax and montan wax, SANWAX products and VISCOL products have the following features.

1. VISCOSITY
Compared with paraffin was, SANWAX products and VISCOL products have higher molecular weight, however they have viscosity equivalent to that of paraffin wax (figure 1)

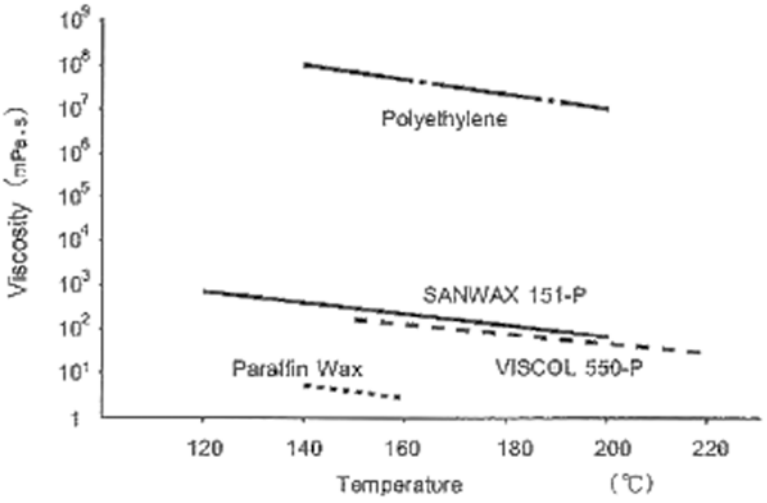

Figure 1. Viscosity of SANWAX 151-P and Viscol 550-P

2. SOFTENING POINT
Compared with polyethylene and polypropylene, SANWAX products and VISCOL products have molecular weight, however, they have softening points equivalent to those of polyethylene and polypropylene.

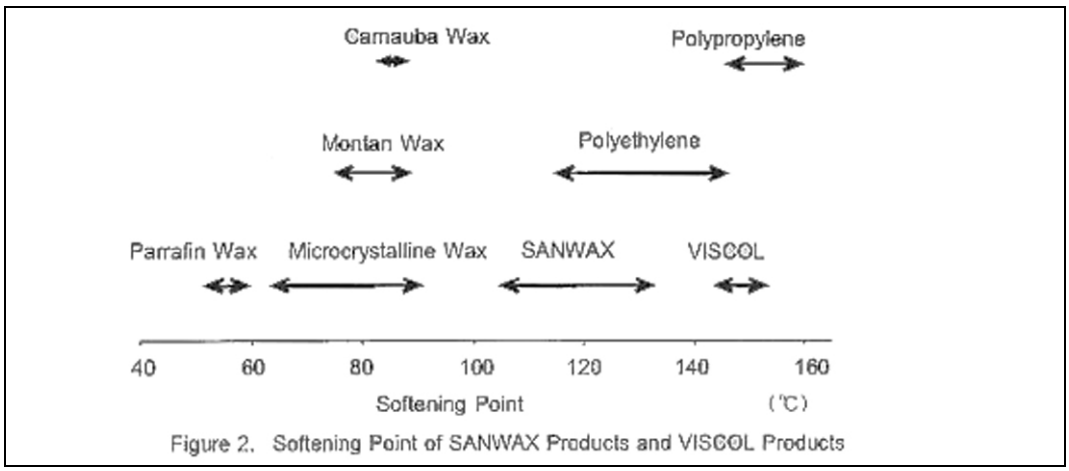

Figure 2. Softening Point of SANWAX Products and VISCOL Products

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3. PENETRATION HARDNESS

Compared with polyethylene and polypropylene, SANWAX products and VISCOL products have lower molecular weight, however, they have penetration hardness equivalent to that of polyethylene and polypropylene.

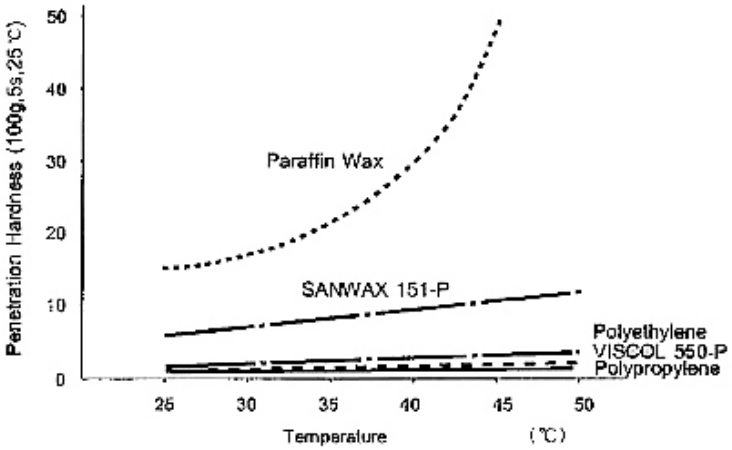

Figure 3. Penetration Hardness of SANWAX Products and VISCOL Products

4. COMPATIBILITY WITH RESINS

Generally, SANWAX products and VISCOL products are compatible with polyolefins and not compatible with other resins.
TABLE 3 shows the compatibility of SANWAX products and VISCOL products with resins at 160°C

Products	Compatible	Compatible to a lesser degree	Incompatible
SANWAX Non oxydized type	Polyethylene Polypropylene	- Polyamide - Polybutyleneterephatalate - Polymethylmetacrylate	- Polyvinylchloride - Polystyrene - Polycarbonate - Ethylene-vinylacetate copolymer
SANWAX Oxydized type		- Polyamide - Polybutyleneterephatalate - Polymethylmetacrylate - Ethylene-vinylacetate copolymer	- Polyvinylchloride - Polystyrene - Polycarbonate
VISCOL		- Polyamide - Polybutyleneterephatalate - Polymethylmetacrylate	- Polyvinylchloride - Polystyrene - Polycarbonate - Ethylene-vinylacetate copolymer

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APPLICATION

Table 4 and table 5 show the relationship between various applications and the suitable SANWAX products and VISCOL products.

Table 4 Application Of SANWAX products and VISCOL products (1)

Basic Properties	**Compatible with Polyolefin low viscosity**			**Incompatible with resins other than polyolefin** **High Softening Point**									
Applications	Pigment Dispersant for Polyolefin	Filler Dispersant for Polyolefin	Flowability improver for Polyolefin	Gelling Agent for oil	Lubricant for PVC	Releasing Agent & Flowability improver for rubber & resins other than Polyolefin	Releasing Agent for Polyurethane Molding	Abrasion Resistance improver Paint &Ink	Antisagging Agent for Paint	Delustering Agent for Paint	Gelling Agent for Cosmetics	Fixing Agent for Agrochemicals	Releasing Agent for Concrete Molding
Products													
SANWAX 171-P	B	B	B	B	A	A	A	B		B	A		
SANWAX 151-P	A	A	A	B	A	A	A	B		A	A		
SANWAX 131-P	A	A	A	A	B	B	B	A		B	B		
SANWAX 161-P	A	A	A	A	B	B	B	A		B	B		
SANWAX 165-P	A	A	A	A	B	B	B	B		B	B		
SANWAX E-310	B	B	B	B	B	B	B	B	A	B		B	B
SANWAX E-330	B	B	B	B	B	B	B	B	A	B		B	B
SANWAX E-250P	B	B	B	B	B	B	B	B	A	B		B	B
SANWAX LEL-250	A	B	B	B	B	B	B	A		A			
SANWAX LEL-800	A	B	B	B	B	B	B	A		A			
SANWAX LELE-400P(EX)	A	A	B	B	B	B	B	A		A			
VISCOL 660-P	B	B	B	B	A	A	B	B		B			
VISCOL 550-P	A	A	A	B	A	A	B	B		B			
VISCOL 440-P	B	B	B	B	B	B	B	B		B			
VISCOL 330-P	B	B	B	B	B	B	B	B		B			

A: Excellent suitability B: Good suitability (Blank): Unsuitable

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Table 5 Application Of SANWAX products and VISCOL products (2)

Basic Properties	Low Viscosity High Hardness				Low Viscosity Hight Softening Point			Hight Softening Point High Hardness				Low Viscosity
Applications	Relcasing Agent for Heat Fixing Toner	Relaesing Agent for Pressure Fixing Toner	Abrasion Resistance for Preeassure Fixing Toner	Ingredient for Shoepolish & Lipstick	Softening Point Enhacer for EVA	Softening Point Enhacer for Paraffin Wax	Surface Treatment Agent for Paper	Polishing Agent for Cosmetics	Ingredient for Floor Polishing Agent	Sewability Improver	Softening Point Enhancer for Asphalt	Binder for Ceramics
Products												
SANWAX 171-P			B	A	B	B	B	B			B	B
SANWAX 151-P			B	A	B	B	B	B			B	B
SANWAX 131-P			B	B	B	A	A	B				B
SANWAX 161-P				B	B	A	A	B				B
SANWAX 165-P				B	B	B	B	A				B
SANWAX E-310			A	A	B	B	B		A	A		B
SANWAX E-330			A	A	B	B	B		A	A		B
SANWAX E-250P			A	A	B	B	B					B
SANWAX LEL-250		A		B	B	A	A				A	B
SANWAX LEL-800		A		B	B	A	A				A	B
SANWAX LEL-400P(EX)		A		B	B	A	A				A	B
VISCOL 660-P	A				B	B	B					B
VISCOL 550-P	A				B	B	B					B
VISCOL 440-P	A				B	B	B					B
VISCOL 330-P	B				B	B	B					B

A: Excellent suitability B: Good suitability (Blank): Unsuitable

Manufactured by	三洋化成工業株式会社
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