技　術　資　料

Technical Information

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ORGATIX Anchor Coating SERIES

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「ORGATIX」

ORGATIX is a series of our anchor coatings developed for the extrusion lamination of polyethylene onto a film substrate.

ORGATIX products are divided into two types: one based on organic titanate compounds (alkyl titanate), and the other based on water soluble resins which comprise aqueous polyethylenimine resins modified crosslinkingly.

ORGATIX gives a lamination film excellent in adhesion, sealing strength, moisture resistance, and gas-impermeability in comparison with films laminated with a conventional anchor coating.

I ORGATIX Based on Water Soluble Resin

One grade is available:「ORGATIX WS-700」. This is based on a water soluble polyethylenimine modified crosslinkingly. It is odorless, and advantageous in terms of versatility, flexibility, and working stability compared with current water-based anchor coatings. In addition, the solubility in water makes them free from problems of water pollution.

A. Physical Properties

Trade Name	appearance	content (%)	viscosity (30℃)	diluents
ORGATIX WS-700	pale white liquid	9	20mPa·s	water methyl alcohol

B. Characteristics

ORGATIX WS-700 comprises a water soluble polyethylenimine resin crosslinkingly modified with a water soluble titanate compound. It is odorless, and exhibits high adhesion strength on plain and inked surfaces. WS-700 is the most versatile among water soluble anchor coatings.

C. Application

WS-700 is water soluble, and diluable with an aqueous alcohol.

Water and alcohol (methanol, ethanol, iso-propanol) are mixed in a volume ratio of water: alcohol=1: 4 to give a dilute solution. To 25 parts by volume of the dilute solution, 1 part by volume of ORGATIX is added, mixed thoroughly, and then coated onto a film substrate using a roll-coater. The coated substrate is dried thoroughly.

Note:

1. The ratio of water and alcohol has no serious influence. However, 80% or more alcohol may elute ink from the film substrate, and 20% or more water makes the drying delay.
2. Water resistant butylene rubber (ethylene propylene rubber) or neoprene rubber is favored as the material of the coater roll.
3. A residual of ORGATIX solution is usable. However, it should be replaced with a fresh one, when a heavy clouding is observed.
4. Off-line processing should be avoided, because of possible blocking during lamination operation.
5. Drying should be carried out thoroughly. Insufficient drying may result in a poor adhesion.
6. The surface of the roll should be kept clean.
7. Polyethylene is extruded at a temperature of 315 to 320℃ when running through the outlet of the die.

D. Test Results

Peel Strength on Various Film Substrates

[Strength:g/15mm width]

film / grade	PT	OPP	PET	NY	Al	MST	KOP
ORGATIX WS-700	220	240	230	220	150※	60	80

※Surface oxidation(dull appearance) is observed.

Lamination of Al-foil or evaporated Al-film with a water-based ORGATIX may corrode the surface, giving a damaged appearance.

Lamination Conditions:

PE thickness	30μ
extrusion temperature	315℃
lamination speed	90m/min.
dilution ratio	25:1(Solvent:ORGATIX)
	solvent=water(1)+methanol(4)

(The above data are results of our test, and the figures vary with processing conditions, film composition, etc.)

Ⅱ Titanate-Based ORGATIX

One grade is available:「ORGATIX TA-40」. This is based on organic titanate. As compared with current titanate anchor coatings comprising TPT or TBT, this is more stable against hydrolysis even in a hot and humid atmosphere and usable effectively and economically.

It enables various film substrates to form laminates, and results in lamination bonding having a high flexibility as never obtained with other anchor coatings, especially on such a film substrate as moisture-proofing cellophane (MST, K-coated or the like), aluminum foil and PT cellophane.

A. Physical Properties

Trade Name	Appearance	Content (%)	Ti-content (%)	Diluents
ORGATIX TA-40	Pale yellow liquid	95	13.7	Toluene n-Hexane Ethyl Acetate Etc.

B. Characteristics

ORGATIX TA-40 comprises an alkyl titanate in principle. It exhibits high initial adhesion strength and is free of odor problems.

C. Application

ORGATIX TA-40 is added to a dehydrated, dried solvent such as toluene, n-hexane to form a 5%-solution by dissolving 1 part by volume of ORGATIX into 19 parts by volume of a solvent. After stirring, the resulting solution is applied using a suitable coater, in a manner of roll-coating (mirror-roll, gravure-roll, etc.), bar-coating or drop-coating. The coated surface is allowed to be hydrolyzed and then thermally dried to give an extremely thin coat layer.

Note:

1. The coating solution should be replaced with a fresh one, when it becomes clouded during roll-coating process.
2. A solvent resistant rubber should be used as a material of the coater roll.
3. The coated surface is dried in a hot air of temperature about 80℃. The air flow rate should be increased in proportion to lamination speed, since the drying depends on the rate. Insufficient drying may result in a poor

adhesion, and cause an unfavored odor.

4. The surface of the roll should be kept clean thoroughly. Stains over the surface influence the clarity of polyethylene, resulting in uneven adhesion.
5. Polyethylene extrusion is carried out at a temperature of 310 to 315℃ when passing through the outlet of the die. Although the higher the temperature, the more accelerate the surface oxidation and adhesion strength, an elevated temperature may lead to much degradation of polyethylene, a cause of aging. A relation between air-gap and PE-extrusion temperature should be considered.

D. Test Results

Peel Strength on Various Film Substrates

[Strength:g/15mm width]

film / grade	PT	OPP	PET	NY	Al	MST	KOP
ORGATIX TA-40	200	210	200	200	200	180※	170※

※migration to PE-side

Lamination of Al-foil or evaporated Al-film with a water-based ORGATIX may corrode the surface, giving a damaged appearance.

Lamination Conditions:

PE thickness	30μ
extrusion temperature	310℃
lamination speed	90m/min.
dilution ratio(Solvent:ORGATIX)	25:1 (solvent=PDC)

(The above data are results of our test, and the figures vary with processing conditions, film composition, etc.)

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