Product Information

ORGATIX®

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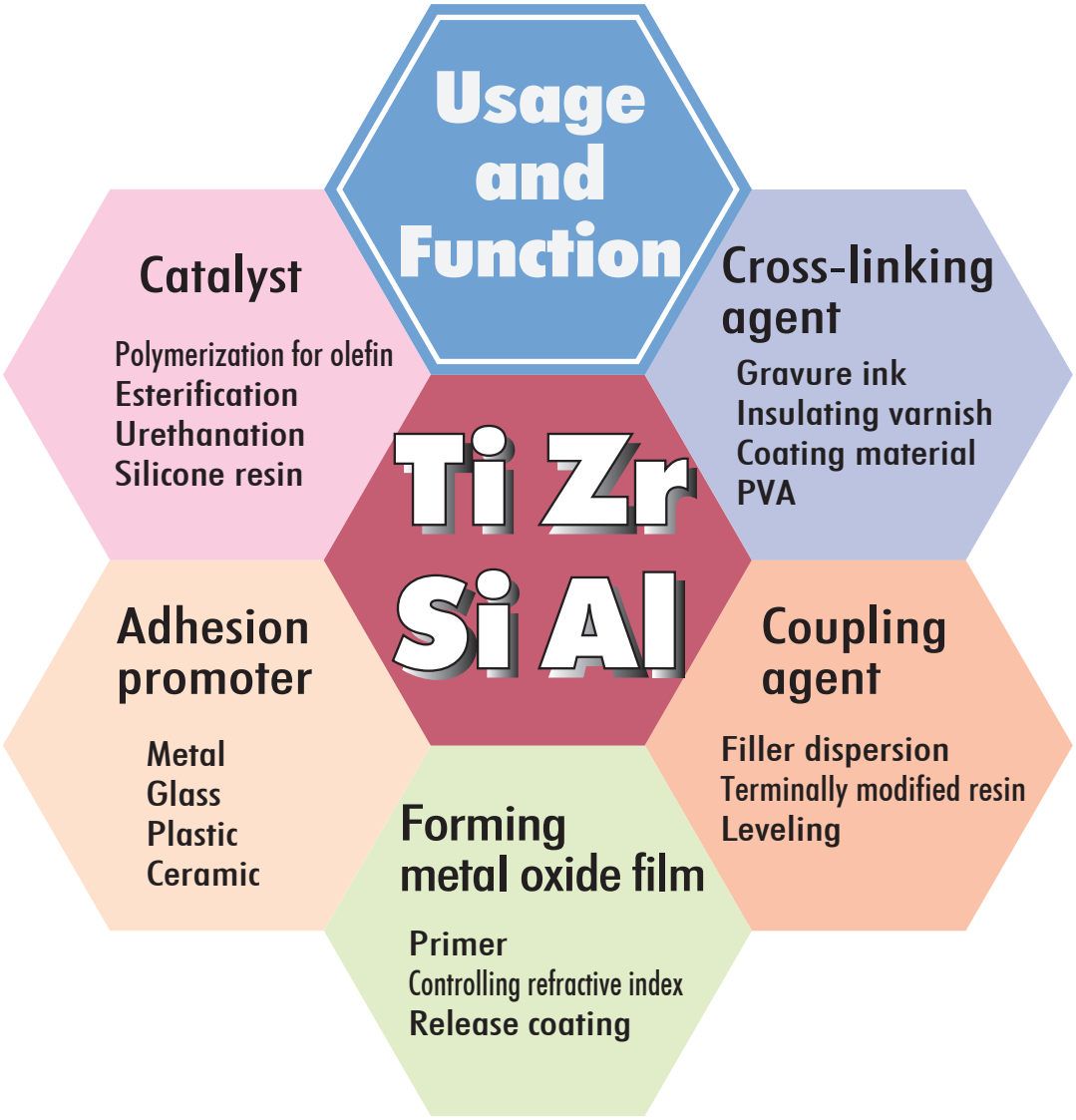
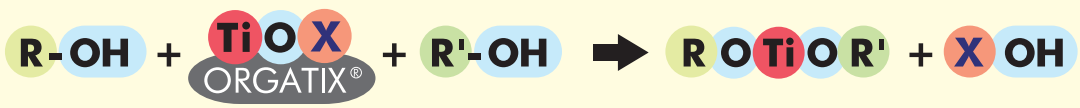


Elementary chemical reaction of ORGATIX

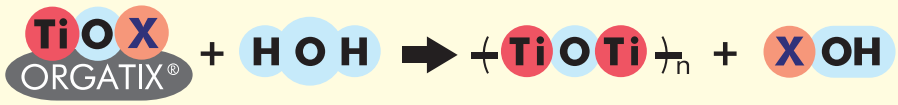
Ti-OR + HO-X ➡ Ti-OX + R-OH

Catalytic reaction

Cross-link reaction



Hydrolysis reaction



Only One

Matsumoto Fine Chemical Co., Ltd. is the sole manufacturer specializing in organometallic compounds in Japan.

Number One

We have been making advancements in the product development of organic titanium and organic zirconium compounds by utilizing accumulated proprietary technologies.

New challenges

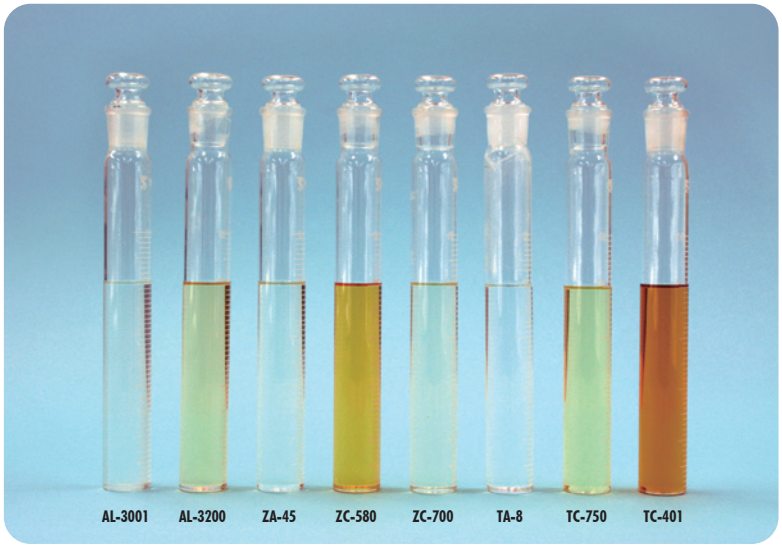
We are working on development of new organometallic compounds from aluminum, zinc and other metals.

Matsumoto Fine Chemical welcomes your requests and inquiries.

Partners

We offer close-knit contract manufacturing services tailored to the needs of every customer.

Product appearance



ORGATIX has a different color depending on its composition.

Contents

<Organic Titanate>

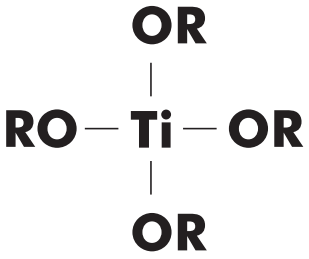
ORGATIX Ti reacts with a variety of functional groups including a hydroxy group (-OH), a carboxyl group (-COOH) and an amino group ($-NH_2$). It is used as additives for ink and paint and as a surface treatment agent for films, metals and glass. The titanium atom is tetravalent and 6-coordinate, and therefore, organic titanium compounds (organic titanates) have three types of structures of alkoxide, chelate (complex) and acylate.

Stock

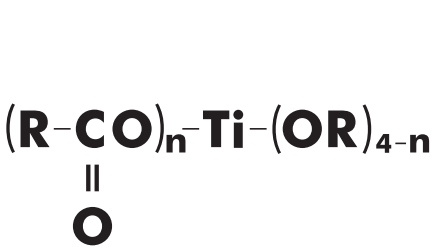
Category	Products Name	Formula/Chemical Name	Content/ Appearance	Inventory JP	US	CN	KR	TW	Applications
Alkoxide	ORGATIX TA-8	$Ti(O\text{-}i\text{-}C_3H_7)_4$ Tetra *i* - propyl titanate (TPT)	≧ 99% Colorless to pale yellow clear liquid	✔	✔	✔	✔	✔	Catalyst for · Esterification · Polymerization for olefin · Urethanation · Silanol condensation Cross linking agent for insulating varnish Binder for inorganic coating material Forming for TiO_2 layer for various materials TiO_2 fine particle material Piezoelectric ceramic materials
	ORGATIX TA-21	$Ti(O\text{-}n\text{-}C_4H_9)_4$ Tetra *n* - butyl titanate (TBT)	≧ 99% Pale yellow to yellow clear liquid	✔	✔	✔	✔	✔	
	ORGATIX TA-23	$(n\text{-}C_4H_9O)_3Ti\text{-}O\text{-}Ti(O\text{-}n\text{-}C_4H_9)_3$ *n* - Butyl titanate dimer (DBT)	≧ 95% Pale yellow to yellow liquid	✔	✔	✔	✔	✔	
	ORGATIX TA-30	$Ti[OCH_2CH(C_2H_5)C_4H_9]_4$ Tetra 2 - ethylhexyl titanate (TOT)	≧ 99% Pale yellow liquid	✔	✔	✔	✔	✔	
Chelate (Solvent)	ORGATIX TC-100	$(i\text{-}C_3H_7O)_2Ti(C_5H_7O_2)_2$ Titanium acetylacetonate (TAA)	75% Reddish-brown liquid	✔	✔	✔	✔	✔	Crosslinking agent for gravure inks Dryer for coating materials Adhesion improvement for resins Curing catalyst
	ORGATIX TC-401	$Ti(C_5H_7O_2)_4$ Titanium tetra - acetylacetonate (TAA)	65% Reddish-brown liquid	✔	✔	N/A	✔	✔	
	ORGATIX TC-710	$(i\text{-}C_3H_7O)_2Ti(C_6H_9O_3)_2$ Titanium ethyl acetoacetate	63% Pale yellow to reddish-orange liquid	✔	✔	✔	✔	✔	Acetylacetone free crosslinking agent for gravure inks Crosslinking agent for adhesive
	ORGATIX TC-810	**Trade secret**, $Ti(O\text{-}i\text{-}C_3H_7)_4$ Titanium dodecylbenzene sulfonate	93% Yellowish-brown liquid	✔	✔	✔	✔	✔	
	ORGATIX TC-1040	**Trade secret** Titanium phosphate complex	75% Pale yellow liquid	✔	✔	✔	✔	✔	
	ORGATIX TC-245	**Trade secret** Titanium octyleneglycolate	68% Pale yellow liquid	✔	✔	✔	✔	✔	TiO_2 coating agent (High temperature burning type) Binder for inorganic particle
	ORGATIX TC-750	$(i\text{-}C_3H_7O)_2Ti\,(C_6H_9O_3)_2$ Titanium ethyl acetoacetate	≧ 95% Pale yellow to reddish-orange liquid	✔	✔	✔	✔	✔	Curing Catalyst for · Silicone resin · Urethane
Chelate (Aqueous)	ORGATIX TC-300	$(HO)_2Ti[OCH(CH_3)COO^-]_2(NH_4^+)_2$ Titanium lactate ammonium salt	41% Pale yellow liquid	✔	✔	✔	✔	✔	Water base crosslinking agent Water resistant agent for PVA TiO_2 coating agent Water base dispersing agent Catalyst for polyester polymerization
	ORGATIX TC-310	$(HO)_2Ti[OCH(CH_3)COOH]_2$ Titanium lactate	44% Pale yellow liquid	✔	N/A	N/A	✔	✔	
	ORGATIX TC-400	$(i\text{-}C_3H_7O)_2Ti(C_6H_{14}NO_3)_2$ Titanium triethanolaminate	79% Pale yellow to yellow clear liquid	✔	✔	✔	✔	✔	Adhesion improvement for resins Catalyst for polyester polymerization

<Organic Titanate>

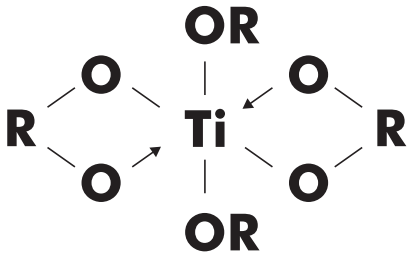
We accept an order of make-to-order products with the minimum order quantity.
Furthermore, we'd be pleased to provide complimentary samples for your evaluation and testing.



Titanium alkoxide



Titanium acylate



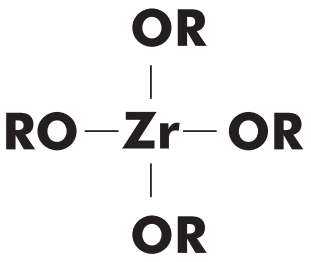
Titanium chelate

Make to Order

Category	Products Name	Formula/Chemical Name	Content/ Appearance	Inventory JP	US	CN	KR	TW	Applications
Alkoxide	ORGATIX TA-12	$Ti(O\text{-}i\text{-}C_3H_7)_4$ Tetra *i* - propyl titanate（Refined）	≧ 99% Colorless to pale yellow clear liquid	✔	✔	✔	✔	✔	Materials for CVD and MOCVD Nano particle materials
	ORGATIX TA-80	$Ti(O\text{-}t\text{-}C_4H_9)_4$, $Ti(O\text{-}i\text{-}C_3H_7)_4$ Tetra *t* - butyl titanate（TTBT）	≧ 83% Pale yellow liquid	✔	✔	✔	✔	✔	Curing catalyst for silicone resin （Low color application）
	ORGATIX TA-90	$Ti(OC_{18}H_{37})_4$ Tetra stearyl titanate（TST）	≧ 98% Pale yellow solid	✔	✔	N/A	✔	✔	Additives for resin （Possible for mixing and kneading） Catalyst for polyester polymerization
Chelate (Solvent)	ORGATIX TC-120	$(i\text{-}C_3H_7O)_2Ti(C_5H_7O_2)_2$ Titanium acetylacetonate	53% Reddish-brown liquid	✔	✔	✔	✔	✔	Catalyst for modified silicone resin
Acylate	ORGATIX TC-800	$(i\text{-}C_3H_7O)Ti(OCOC_{17}H_{35})_3$ Titanium isostearate	77% Orange liquid	✔	✔	✔	✔	✔	Additive for paint
Chelate (Aqueous)	ORGATIX TC-315	$(HO)_2Ti[OCH(CH_3)COOH]_2$ Titanium lactate（aqueous）	44% Pale yellow liquid	✔	N/A	N/A	✔	✔	Water base crosslinking agent Water resistant agent for PVA TC-335 is classified as Non-DG, Non-UN
	ORGATIX TC-335	$(HO)_2Ti[OCH(CH_3)COO^-]_2(NH_4^+)_2$ Titanium lactate ammonium salt	35% Pale yellow liquid	✔	✔	✔	✔	✔	
	ORGATIX TC-510	$(i\text{-}C_3H_7O)Ti(OC_2H_4NHC_2H_4NH_2)_3$ Titanium aminoethylaminoethanolate	70% Pale yellow to yellow liquid	✔	✔	✔	✔	✔	Adhesion improvement for resin and metal/ Cosslinking agent for resin Water base inorganic coating material binder

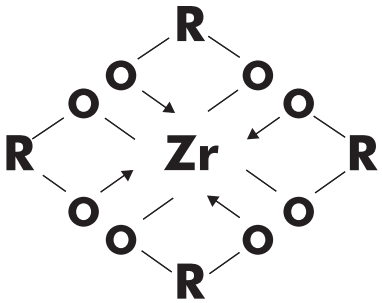
<Organic Zirconate>

ORGATIX Zr reacts with a variety of functional groups including a hydroxy group (-OH), a carboxyl group (-COOH) and an amino group (-NH_2) similar to ORGATIX Ti. In contrast to the Ti series, ORGATIX Zr causes less coloration on materials to which it is applied. The Zirconium atom is tetravalent and 8-coordinate, and therefore, organic zirconium compounds have three types of structures of alkoxide, chelate (complex) and acylate.



Zirconium alkoxide

Zirconium acylate



Zirconium chelate

Stock

Category	Products Name	Formula/Chemical Name	Content/ Appearance	Inventory JP	US	CN	KR	TW	Applications
Alkoxide	ORGATIX ZA-45	$Zr(O\text{-}n\text{-}C_3H_7)_4$ Tetra *n* - propyl zirconate (NPZ)	75% Pale yellow to yellow liquid	✔	✔	✔	✔	✔	Catalyst for ・Esterification ・Polymerization for olefin Forming ZrO_2 layer for various materials Nano particle material Ceramics material
	ORGATIX ZA-65	$Zr(O\text{-}n\text{-}C_4H_9)_4$ Tetra *n* - butyl zirconate (NBZ)	87% Pale yellow to yellow liquid	✔	✔	✔	✔	✔	
Chelate(Solvent)	ORGATIX ZC-150	$Zr(C_5H_7O_2)_4$ Zirconium tetra acetylacetonate	≧ 99% White to pale yellow powder	✔	✔	✔	✔	✔	Crosslinking agent for gravure inks Curing catalyst for urethane resin Catalyst for silanol condensation
	ORGATIX ZC-162	$Zr(C_5H_7O_2)_4$ Zirconium tetra acetylacetonate (Fine grinding of ZC-150)	≧ 99% White to pale yellow powder	✔	✔	✔	✔	✔	
	ORGATIX ZC-540	$(n\text{-}C_4H_9O)_3Zr(C_5H_7O_2)$ Zirconium mono acetylacetonate	45% Pale yellow to yellow liquid	✔	N/A	✔	N/A	✔	Forming ZrO_2 layer for various materials
	ORGATIX ZC-700	$Zr(C_5H_7O_2)_4$ Zirconium tetra acetylacetonate (Solution type of ZC-150)	20% Pale yellow liquid	✔	✔	✔	✔	✔	Catalyst ・Urethane ・Epoxy resin Crosslinking agent ・Low odor ・Reduced yellowing color

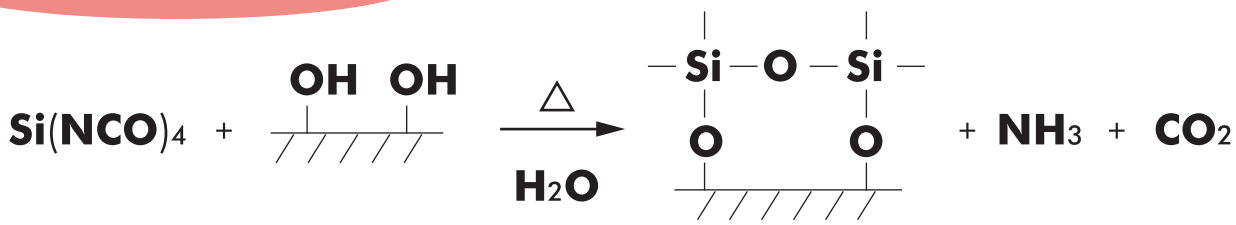
Make to Order

Category	Products Name	Formula/Chemical Name	Content/ Appearance	Inventory JP	US	CN	KR	TW	Applications
Acylate	ORGATIX ZC-200	Trade secret Zirconium 2-ethylhexanoate complex	80% Yellowish-brown liquid	✔	✔	✔	✔	✔	Curing Catalyst for ・Silicone resin
	ORGATIX ZC-320	$(n\text{-}C_4H_9O)_3Zr(OCOC_{17}H_{35})$ Zirconium stearate	81% Pale yellow liquid	✔	N/A	N/A	N/A	✔	Water repellent Additive for paint
Chelate (Aqueous)	ORGATIX ZC-126	Trade secret Zirconyl chloride compound	30% Clear liquid	✔	✔	N/A	✔	N/A	Water resistant agent for PVA ・Coating for printing paper ・Polarizing ceramics materials

<Isocyanate Silane>

ORGATIX SI is a silicone compound directly bonded with an isocyanate group. As distinct from organic isocyanates, it is susceptible to hydrolysis at low temperatures.

Diagram of reaction example



Make to Order

Products Name	Formula/Chemical Name	Content/ Appearance	Inventory JP	US	CN	KR	TW	Applications
ORGATIX SI-310	$CH_3Si(NCO)_3$ Methyltriisocyanate silane	99% Colorless liquid	✔	N/A	N/A	N/A	✔	Forming SiO_2 layer for various materials ・Insulating layer for semiconductor ・Alkali-elution prevention layer ・Material for CVD
ORGATIX SI-400	$Si(NCO)_4$ Tetraisocyanate silane	99% Colorless liquid	✔	N/A	✔	✔	✔	

ORGATIX® Polymer-Coating Lineup

ORGATIX PC is titanium oligomer coating material offering excellent film formation. Combined with a variety of functional agents, it delivers higher performance. The product lineup includes high-refractive film forming agent (PC-200) and high adhesive primer (PC-601, PC-640). Both types of products offer high transparency.

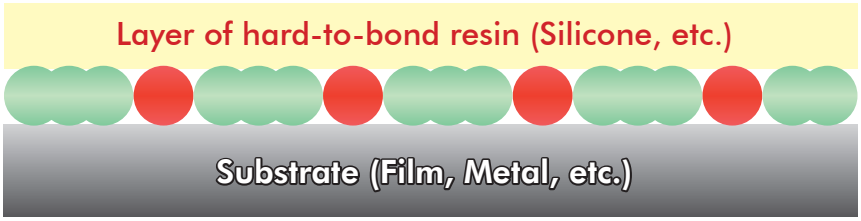
<High refractive index coating agent>

Make to Order

Products Name	Component	Coating Method	Diluent Solvent/ Diluent rate	Curing	Applications
ORGATIX PC-200	One (Solvent)	Roll-to-roll coating Spin coating	n-Butanol and Other 5-factor	120℃ to 150℃ for 60 seconds	TiO_2 thin film • Refractive index: 1.81 • Film thickness: 90nm

<Primer treatment agent>

Conceptual drawing of film forming



: Titanium oligomer
(Forming films and promoting adhesion to a substrate)

: Functional agents
(Improving adhesion to resin layer, controlling refractive index and film thickness, etc.)

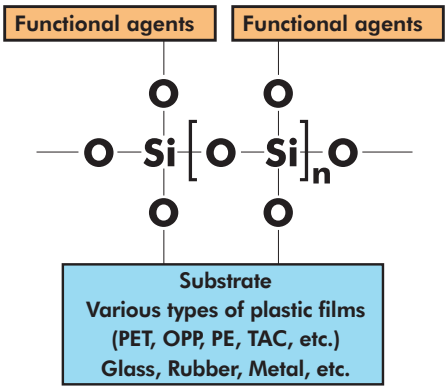
Make to Order

Products Name	Composition	Coating Method	Diluent Solvent/ Diluent rate	Curing	Applications
ORGATIX PC-601	One (Solvent)	Hand painting	Original solution	Dry in room temp	Primer for various adhesion coating • Sealant for Building • Various adhesion
ORGATIX PC-640	Two (Solvent)	Roll-to-roll coating Spin coating	n-Butanol 5-factor	90℃ to 120℃ for 30 seconds	Primer for Silicone Coating (Addition curing type) • Separator • Release film • Adhesive tape

ORGATIX® SIC Lineup

<Silicone release coatings>

ORGATIX SIC is a one-component coating material comprised of our own product, isocyanate silane compound (hardener) and functional agent. Coated and dried on plastic films, such as oriented polypropylene (OPP), polyethylene terephthalate (PET), or substrates (glass, metal, rubber, etc.), ORGATIX SIC is able to form a coating film which meets the needs of users.



Make to Order

Products Name	Functions	Reaction	Appearance/ Viscosity (25℃)	Diluent Solvent/ Diluent rate	Drying	Applications
ORGATIX SIC-330	Easy release	Condensation curing type	Colorless liquid 1-5mPa･s	Ethyl acetate 5-factor	90℃ to 120℃ for 30 seconds	Silicone release coatings ・Film ・Rubber ・Tape Sealing materials
ORGATIX SIC-434	Medium release					

ORGATIX® Anchor-Coating Lineup

<Anchor Coating Agent>

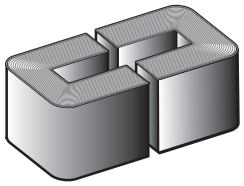
ORGATIX WS-700 is an anchor coating (AC) agent exclusively for extrusion lamination.
It is an aqueous coating that is composed of a water-soluble resin modified with a titanium compound.
It has been used for many years in applications such as food packages.

Stock

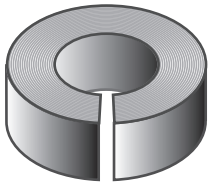
Products Name	Component	Base	Appearance/ Content	Diluent Solvent Diluent rate	Functions
ORGATIX WS-700	One (Aqueous)	Polyethylenimine modified with a water soluble titanate compound.	Slightly milky liquid 9.5%	Water Alcohol 20 to 30 -factor	Applicable for various kinds of films Provide higher bond strength, compared with conventional polyethyleneimine based products,

<Acrylic impregnation resin for cut cores>

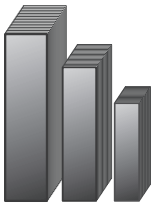
VISTEX is a one-component acrylic impregnation resin developed for use in transformers and motors. It takes only a short time for the impregnation and curing as compared with an epoxy impregnation resin. Therefore, it offers high workability and is widely used in the core industry.



Cut core



Gap core



Laminaiton core

Stock

Products Name	Appearance	Viscosity (25℃)	Curing	Impregnation	Functions	Applications
VISTEX V-4000	Pale yellow liquid	50 mPa·s	170℃ for 2hours	Vacuum system	• Applicable for various metals • Easy to be used • Low odor	For cut core, gap core, lamination core, and motor core

Make to Order

Products Name	Appearance	Viscosity (25℃)	Curing	Impregnation	Functions	Applications
VISTEX V-2200	Pale yellow liquid	35 mPa·s	190℃ for 3hours	Vacuum system	• Low viscocity • Easy to be used • Low odor	For motor core, thin lamination core, and amolphas core

<Productivity comparison between VISTEX and epoxy resin>

VISTEX® — Production process

Preparatory drying of cores	Air cooling	Dipping or vacuum impregnation	Draining	Curing (Oven)	Air cooling
120℃ 30minutes	50℃ 30minutes	Room temp 30minutes	Room temp 30minutes	170℃ 2hours	Room temp 30minutes

(An advantage)
It requires a shorter time for the process than epoxy resin.

5 hours and 15 minutes for entire process

Epoxy resin (one-component) — Production process

Preparatory drying of cores	Air cooling	Dipping	Vacuum impregnation	Draining	Curing (Oven)	Air cooling
120℃ 30minutes	50℃ 30minutes	Room temp 30minutes	Room temp 1hour	Room temp 1hour	170℃ 12hours	Room temp 90minutes

17 hours for the entire process

※Example with a 300-watt transformer core (core weight:800 g).

Typical package (Example)

(1) 18L can NET: 15kg
(2) 200L drum NET: 180kg

Other remarks

1. Instructions for use

Organic titanium compounds have particularly low toxicity among the products listed in the catalogue.

An example of acute oral toxicity in rats (LD50)

ORGATIX TA-8: 7,500mg/kg **ORGATIX TA-30: 2,000mg/kg**
ORGATIX TA-21: 3,122mg/kg **ORGATIX TC-100: 2,125mg/kg**

Most products in the catalogue are flammable materials.ORGATIX SI and some products have high toxicity (SI-400: LD50 (mouse) = 371 mg). Make sure to read the Safety Data Sheet of each product before use.

2. Instructions for storage

The products listed in the catalogue are generally susceptible to hydrolysis and react with water and moisture in the air. Caution should be exercised in storage and handling of the products. Deterioration or discoloration may occur if they are exposed to direct sunlight and high temperatures for a long period of time. Avoid exposure during storage. Keep the container tightly closed and store in a cool, dark place (below 25°C unless otherwise specified).

3. Available supply quantity

Some products may be limited in supply. Contact your local sales representative before placing an order.

The information provided in the catalogue is based on the knowledge available as of the date of issuance and the data measured by Matsumoto Fine Chemical under certain conditions. No warranty is made as to the fitness of products for individual purposes.

FAQ

Q. Do you offer sample free of charge?

A. Yes. We offer samples in a 100 ml glass container (with some exceptions).

Q. I found white precipitate in the sample. What caused the deposits?

A. The precipitate are metal oxide produced by hydrolysis. Deposits may occur if you open and close the cap of the container repeatedly. If there are precipitate in unopened sample, contact us and we will send you a new sample for replacement.

Q. The entire product (sample) is frozen. What should I do?

A. Some products have a high melting point and may be frozen. If your sample is frozen, melt it unopened in a hot water bath (at 40°C to 60°C). High-melting-point products include ORGATIX TA-8 (17°C), TC-750(28°C) and SI-400 (26°C).

Q. The product to which ORGATIX was applied is colored . What caused this?

A. Organic titanium compounds readily cause coloration. It is primarily because of “color development by chemical reaction.” This occurs when an organic titanium compound forms a coordinate bond particularly with a substance having a conjugated double bond such as acetylacetone and phenol. Coloration in yellow to red-brown tends to occur. Organic zirconium compounds, on the other hand, are less likely to cause such coloration.

ORGATIX®

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