Shin-Etsu

Shin-Etsu Silicone

Reactive & Non-Reactive
Modified Silicone Fluid
(For North and South America)

With various organic groups attached to some of the silicon atoms, our modified silicone fluids offer the features of dimethyl silicone fluid, plus an array of other functions.

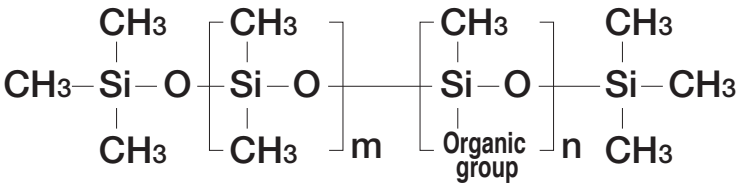
CONTENTS

- **Reactive Silicone Fluids** 2-6
- **Non-Reactive Silicone Fluids** 7-9
- **Storage & Handling Precautions** 9

The reactive and non-reactive silicone fluids in this catalog are arranged by molecular structure. If you have a product in mind that is not featured in this catalog, we may be able to offer trial production. Don't hesitate to consult with a Shin-Etsu representative for details.

■ Reactive Silicone Fluids

Side chain type



Amino-modified [side chain type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Mono amino	$-RNH_2$	KF-868	90	0.95	1.403	8,800	Water repellency Reactive Adsorptive Good lubricity Good releasability
		KF-865	110	0.97	1.405	5,000	
		KF-864	1,700	0.98	1.406	3,800	
Diamino	$-RNR'NH_2$ (H)	KF-859	60	0.96	1.403	6,000	
		KF-393	70	0.98	1.422	350	
		KF-860	250	0.97	1.404	7,600	
		KF-880	650	0.98	1.407	1,800	
		KF-8004	800	0.98	1.408	1,500	
		KF-8002	1,100	0.98	1.408	1,700	
		KF-8005	1,200	0.97	1.403	11,000	
		KF-867	1,300	0.98	1.407	1,700	
		KF-8021	15,000	0.97	1.403	55,000	
		KF-869	1,500	0.97	1.405	3,800	
		KF-861	3,500	0.98	1.408	2,000	
Amino-Polyether	$-RNH_2$ $-R(C_2H_4O)_a(C_3H_6O)_bR'$	X-22-3939A	3,300	1.03	1.448	1,800	Reactive Compatibility
Special amino	—— ※	KF-877	5,700	0.98	1.406	5,200	Low yellowing Adsorptive

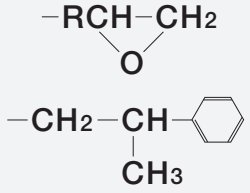
※ : Please contact our Sales Department for further information.

Epoxy-modified-1 [side chain type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Epoxy	$-RCH-CH_2$ (O)	X-22-343	25	1.01	1.423	525	Reactive Adsorptive Good releasability
		KF-101	1,500	1.01	1.437	350	
		KF-1001	17,000	0.98	1.407	3,500	
Epoxy (side-chain phenyl type)		X-22-2000	190	1.04	1.443	620	Reactive Compatibility
Alicyclic epoxy		X-22-2046※	45	0.96	1.474	600	Reactive Adsorptive Good releasability
		KF-102	3,500	0.97	1.408	3,600	
Epoxy - Polyether	$-R-CH-CH_2$ (O) $-R(C_2H_4O)_a(C_3H_6O)_bR'$	X-22-4741	350	1.06	1.448	2,500	Reactive Compatibility
		KF-1002	4,500	1.00	1.426	4,300	

※ : Active ingredient 50% (toluene dilution)

Epoxy-modified-2 [side chain type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Epoxy-Aralkyl		KF-1005	2,500	1.10	1.484	250	Reactive Compatibility

Carbinol-modified [side chain type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Hydroxyl group value [mgKOH/g]	Features
Carbinol	−ROH	X-22-4039	90	0.99	1.413	58	Reactive Adsorptive Good releasability Antifouling property
		X-22-4015	130	0.98	1.408	30	

Note: functional group equivalent weight [g/mol] = 56,000/hydroxyl group value [mgKOH/g]

Mercapto-modified [side chain type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Mercapto	−RSH	KF-2001	200	0.98	1.410	1,900	Reactive Adsorptive
		KF-2004	300	0.97	1.404	30,000	

Carboxyl-modified [side chain type]

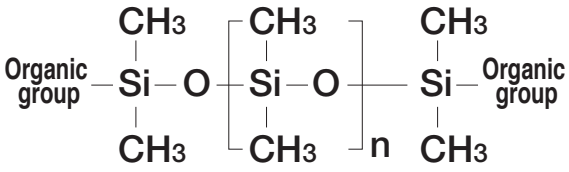
Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Carboxyl	−RCOOH	X-22-3701E	2,000	0.98	1.409	4,000	Reactive Good lubricity Good releasability

Methylhydrogen silicone fluid [side chain type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Hydrogen	−H	F-9W-9	20	1.00	1.396	60	Reactive Water repellency Good releasability
		KF-9901	20	0.97	1.399	140	

■ Reactive Silicone Fluids

Dual-end type



Amino-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Amino	$-RNH_2$	PAM-E	4	0.90	1.448	130	Reactive Adsorptive Good releasability Flexibility
		KF-8010	12	1.00	1.418	430	
		X-22-161A	25	0.97	1.411	800	
		X-22-161B	55	0.97	1.408	1,500	
		KF-8012	90	0.97	1.407	2,200	
		KF-8008	450	0.97	1.405	5,700	
Amino (side-chain phenyl type)		X-22-1660B-3	550	1.07	1.497	2,200	Reactive Compatibility
		X-22-9409	105	1.05	1.500	670	

Epoxy-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Epoxy	$-RCH-CH_2$ (O)	X-22-163	15	1.00	1.450	200	Reactive Adsorptive Good releasability Flexibility
		KF-105	15	0.99	1.422	490	
		X-22-163A	30	0.98	1.413	1,000	
		X-22-163B	60	0.98	1.409	1,800	
		X-22-163C	120	0.98	1.408	2,700	
Alicyclic epoxy	$-R$ (epoxycyclohexane)	X-22-169AS	30	0.99	1.433	500	
		X-22-169B	70	0.98	1.412	1,700	

Carbinol-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Hydroxyl group value [mgKOH/g]	Features
Carbinol	$-ROH$	KF-6000	35	0.98	1.422	120	Reactive Good releasability Oxygen permeability
		KF-6001	45	0.98	1.413	62	
		KF-6002	70	0.98	1.409	35	
		KF-6003	110	0.98	1.407	22	

Note: functional group equivalent weight [g/mol] = 56,000/hydroxyl group value [mgKOH/g]

Methacryl-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Methacryl	$-ROCC(CH_3)=CH_2$ (O)	X-22-164	10	0.97	1.450	190	Reactive Adsorptive Oxygen permeability
		X-22-164AS	12	0.97	1.425	450	
		X-22-164A	25	0.98	1.415	860	
		X-22-164B	55	0.98	1.410	1,600	
		X-22-164C	90	0.98	1.408	2,400	
		X-22-164E	190	0.97	1.406	3,900	

Polyether-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Hydroxyl group value [mgKOH/g]	Features
Polyether	$-R(C_2H_4O)_a(C_3H_6O)_bH$	X-22-4952	100	0.99	1.428	50	Reactive Good releasability Compatibility
		X-22-4272	270	1.02	1.430	50	
		KF-6123	420	1.03	1.434	50	

Note: functional group equivalent weight [g/mol] = 56,000/hydroxyl group value [mgKOH/g]

Mercapto-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Mercapto	$-RSH$	X-22-167B	55	0.97	1.411	1,700	Reactive Adsorptive
		X-22-167C	90	0.97	1.408	2,300	

Carboxyl-modified [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Carboxyl	$-RCOOH$	X-22-162C	220	0.98	1.406	2,300	Reactive Good releasability Good lubricity Flexibility

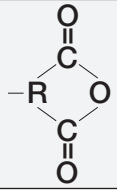
Silanol end-capped [dual-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Silanol	$-OH$	X-21-5841	30	0.970	1.404	500	Reactive
		KF-9701	60	0.977	1.404	1,500	

Acrylic-modified [dual-end type]

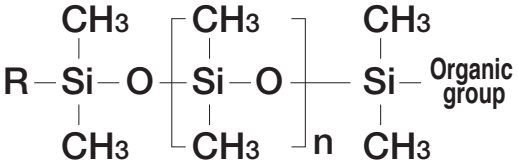
Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Acrylic	$-R-OCCH=CH_2$ (O above C)	X-22-2445	55	0.98	1.407	1,600	Reactive

Carboxylic acid anhydride-modified [dual-end type]

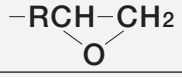
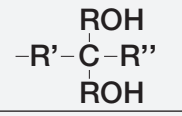
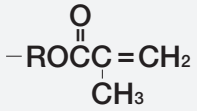
Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Carboxylic acid anhydride		X-22-168AS	160	1.03	1.432	500	Reactive
		X-22-168A	140	1.01	1.418	1,000	
		X-22-168B	180	1.00	1.412	1,600	
Carboxylic acid anhydride (side-chain phenyl type)		X-22-168-P5-B	1,300	1.09	1.498	2,100	Reactive Compatibility

■ Reactive Silicone Fluids

Single-end type



Single-end, reactive, modified [Single-end type]

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Epoxy		X-22-173BX	30	0.97	1.408	2,500	Reactive Good releasability Good lubricity Water repellency Antifouling property
		X-22-173DX	60	0.97	1.406	4,600	
Carbinol		X-22-170BX	40	0.97	1.407	20※	
		X-22-170DX	65	0.97	1.406	12※	
Diol		X-22-176DX	130	0.97	1.409	35※	
		X-22-176F	500	0.98	1.405	9※	
		X-22-176GX-A	400	0.97	1.405	8※	
Methacryl		X-22-174ASX	9	0.95	1.415	900	
		X-22-174BX	27	0.96	1.409	2,300	
		KF-2012	60	0.97	1.407	4,600	
		X-22-2426	200	0.97	1.405	12,000	
		X-22-2404	5	0.93	1.418	420	Reactive Adsorptive Oxygen permeability

※ : hydroxyl group value [mgKOH/g], functional group equivalent weight [g/mol] = 56,000/hydroxyl group value [mgKOH/g]

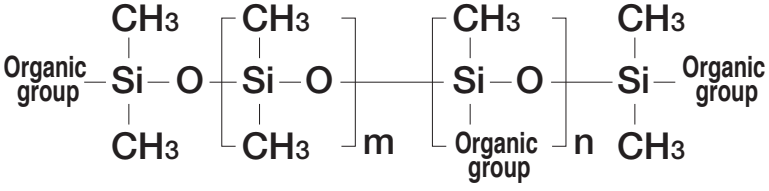
Single-end carboxyl-modified

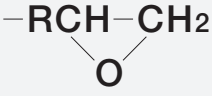
Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Carboxyl	—RCOOH	X-22-3710※	60	0.97	1.412	1,450	Reactive Good releasability Good lubricity

※ : Including non-reactive & dual-end type carboxyl-modified silicone fluid

■ Reactive Silicone Fluids

Side-chain, dual-end



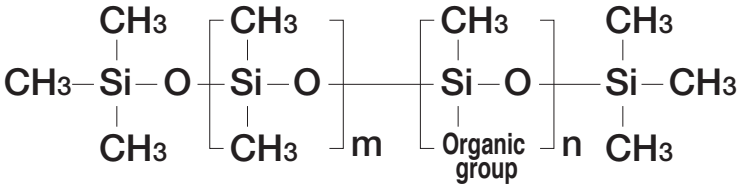
Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Functional group equivalent weight (FGEW) [g/mol]	Features
Side-chain amino, dual-end methoxy	—RNH₂, —OR'	KF-857	65	0.98	1.411	790	Reactive Adsorptive
		KF-862	650	0.98	1.407	1,900	
		KF-858※	23	0.88	1.394	—	
Epoxy		X-22-9002	900	0.98	1.406	5,000	Reactive Good releasability

※ : Active ingredient 50% (acetate IPA dillusion)

Non-Reactive Silicone Fluids

■ Non-Reactive Silicone Fluids

Side chain type



Polyether-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	H L B	Features
Polyether	$-R(C_2H_4O)_a(C_3H_6O)_bR'$	KF-351A	70	1.06	1.450	12	Water soluble Water dispersible Easily emulsifiable Low surface tension Good permeability Anti-fogging property Compatibility
		KF-352A	1,600	1.03	1.446	7	
		KF-353	430	1.04	1.438	10	
		KF-354L	200	1.10	1.463	16	
		KF-355A	150	1.07	1.453	12	
		KF-615A	920	1.05	1.451	10	
		KF-945	130	1.00	1.420	4	
		KF-640	20	1.01	1.444	14	
		KF-642	50	1.04	1.443	12	
		KF-643	19	1.01	1.442	14	
		KF-644	38	1.02	1.446	11	
		KF-6020	180	1.00	1.417	4	
		KF-6204	70	1.05	1.451	10	
		X-22-4515	4,000	1.03	1.445	5	
Polyether (odorless)	$-R(C_2H_4O)_a(C_3H_6O)_bR'$	KF-6011	130	1.07	1.450	12	
		KF-6012	1,500	1.03	1.448	7	
		KF-6015	130	1.00	1.419	5	
		KF-6017	530	1.01	1.420	5	
Polyether, long-chain alkyl, aralkyl	$-R(C_2H_4O_a(C_3H_6O)_bR'$ $-C_aH_{2a+1}$ $-CH_2-CH(CH_3)-C_6H_5$	X-22-2516	70	0.96	1.424	1	Good releasability Compatibility

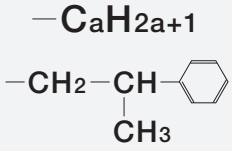
Aralkyl-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Features
Aralkyl	$-CH_2-CH(CH_3)-C_6H_5$	KF-410	900	1.02	1.480	Good releasability Compatibility Good lubricity

Fluoroalkyl-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Features
Fluoroalkyl	$-CH_2CH_2CF_3$	FL-5	120	0.99	1.400	Good lubricity Chemical resistance Oil & solvent resistance High specific gravity Poor solubility Good releasability
		X-22-821	120	1.09	1.390	
		X-22-822	100	1.15	1.384	
		FL-100-100cs	100	1.23	1.379	
		FL-100-450cs	450	1.26	1.381	
		FL-100-1,000cs	1,000	1.28	1.381	
		FL-100-10,000cs	10,000	1.30	1.382	

Long-chain alkyl-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Features
Long-chain alkyl	$-C_aH_{2a+1}$	KF-412	500	0.90	1.450	Paintable Good releasability Compatibility Good lubricity Water repellency
		KF-413	190	0.89	1.443	
		KF-414	100	0.93	1.428	
		KF-415	630	0.96	1.412	
		KF-4003	40	0.93	1.420	
		KF-4701	750	0.89	1.455	
		KF-4917	20	0.92	1.420	
		KF-7235B	450	0.93	1.438	
		X-22-7322	100	0.90	1.445	
Long-chain alkyl, aralkyl		X-22-1877	850	0.92	1.466	

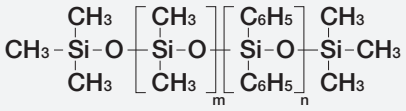
Higher fatty acid ester-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Features
Higher fatty acid ester	$-OCOR$	X-22-715	14,000	0.88	1.448	Compatibility

Contains higher fatty acids

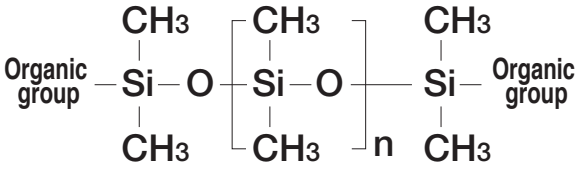
Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Features
Higher fatty acid amide	$-RNHCOR'$	KF-3935	Paste consistency (melt point: 49℃)	—	—	High melt point Water repellency

Phenyl-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	Features
Phenyl		F5W-0-100cs	100	0.995	1.427	Heat resistance High refractive index Compatibility Low-temperature resistance
		F5W-0-300cs	300	0.998	1.427	
		F5W-0-1,000cs	1,000	1.00	1.427	
		F5W-0-3,000cs	3,000	1.00	1.427	
		KF-53	170	1.06	1.485	
		KF-54	400	1.07	1.505	

■ Non-Reactive Silicone Fluids

Dual-end type



Polyether-modified

Modification type	Organic group	Product name	Viscosity (25℃) [mm²/s]	Specific gravity (25℃)	Refractive index (25℃)	H L B	Features
Polyether	$-R(C_2H_4O)_a(C_3H_6O)_bR'$	KF-6004	melt point 45℃	——	——	9	

⚠CAUTION

Storage & Handling Precautions

●Quality, Storage and Handling

Many modified silicone fluids contain organic functional groups or hydrolyzable groups, and their reactivity varies. Before using these products, carefully consider their respective characteristics.

Heat, light, acids and bases may cause deterioration of modified silicone fluids. Take care to prevent contamination, and seal tightly and store in a cool, dark place.

Our modified silicone fluids are not produced specifically for medical use. Accordingly, they should not be used as is for orthopedic or cosmetic surgery or other medical applications.

If amino-modified silicone fluid is being used as an aerosol and the particles are inhaled, there is a possibility of acute inhalation toxicity. Average consumers should not use amino-modified silicone fluid in spray applications.

Some silicone products described herein are classified as hazardous materials under the laws of certain countries. In such cases, the laws must be followed regarding storage, labeling, and handling.

●Safety & Hygiene

Some modified silicone fluids may cause skin irritation. If contact occurs, they are difficult to remove from the skin, so always wear rubber gloves (etc.) and avoid contact with the skin and mucous membranes. In case of contact, wipe with a rag or waste (etc.), then wash with soap and water or flush thoroughly with water.

In case of accidental eye contact, immediately flush with water for at least 15 minutes and then seek medical attention.

Be sure there is adequate ventilation when handling these products. If you feel ill after breathing the vapors, move immediately to an area with fresh air.

Keep out reach of children.

Please read the Safety Data Sheet (SDS) before use. SDS can be obtained from our Sales Department.

●Other

Some of the products (product name starting with X) featured in this catalog are preproduction prototypes. Please contact Shin-Etsu to confirm the availability of all products.

For cosmetics, "A Grade" products are available, but in some cases a separate application is required if modified silicone fluids are to be used as a cosmetic ingredient. Please contact Shin-Etsu regarding required documents.

Silicone Division, Sales and Marketing Department I

Marunouchi Eiraku Bldg. ,4-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo 100-0005, Japan
Phone: +81-(0)3-6812-2406 Fax: +81-(0)3-6812-2414

Shin-Etsu Silicones of America, Inc..

1150 Damar Drive, Akron, OH 44305, U.S.A.,
Phone : +1-330-630-9860 Fax : +1-330-630-9855

Shin-Etsu do Brasil Representação de Produtos Químicos Ltda..

Rua Coronel Oscar Porto, 736 - 8°Andar - Sala 84,
Paraíso São Paulo - SP Brasil CEP: 04003-003
Phone : +55-11-3939-0690 Fax : +55-11-3052-3904

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- Users are solely responsible for making preliminary tests to determine the suitability of products for their intended use. Statements concerning possible or suggested uses made herein may not be relied upon, or be construed, as a guaranty of no patent infringement.
- For detailed information regarding safety, please refer to the Safety Data Sheet (SDS).
- The silicone products described herein have been designed, manufactured and developed solely for general industrial use only; such silicone products are not designed for, intended for use as, or suitable for, medical, surgical or other particular purposes. Users have the sole responsibility and obligation to determine the suitability of the silicone products described herein for any application, to make preliminary tests, and to confirm the safety of such products for their use.
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The Development and Manufacture of Shin-Etsu Silicones are based on the following registered international quality and environmental management standards.

Gunma Complex	ISO 9001 (JCQA-0004	ISO 14001 JCQA-E-0002)
Naoetsu Plant	ISO 9001 (JCQA-0018	ISO 14001 JCQA-E-0064)
Takefu Plant	ISO 9001 (JQA-0479	ISO 14001 JQA-EM0298)

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https://www.shinetsusilicone-global.com/

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