

# Functional Sealants Product Guide



# Shin-Etsu Silicone Always Supports Your Project

Shin-Etsu silicone sealants and primers may be used for a variety of applications on many substrate types on a wide range of building designs and will enable enhanced performance, sustainability and durability.

Shin-Etsu Silicone will give recommendations for each application or project as required upon request.

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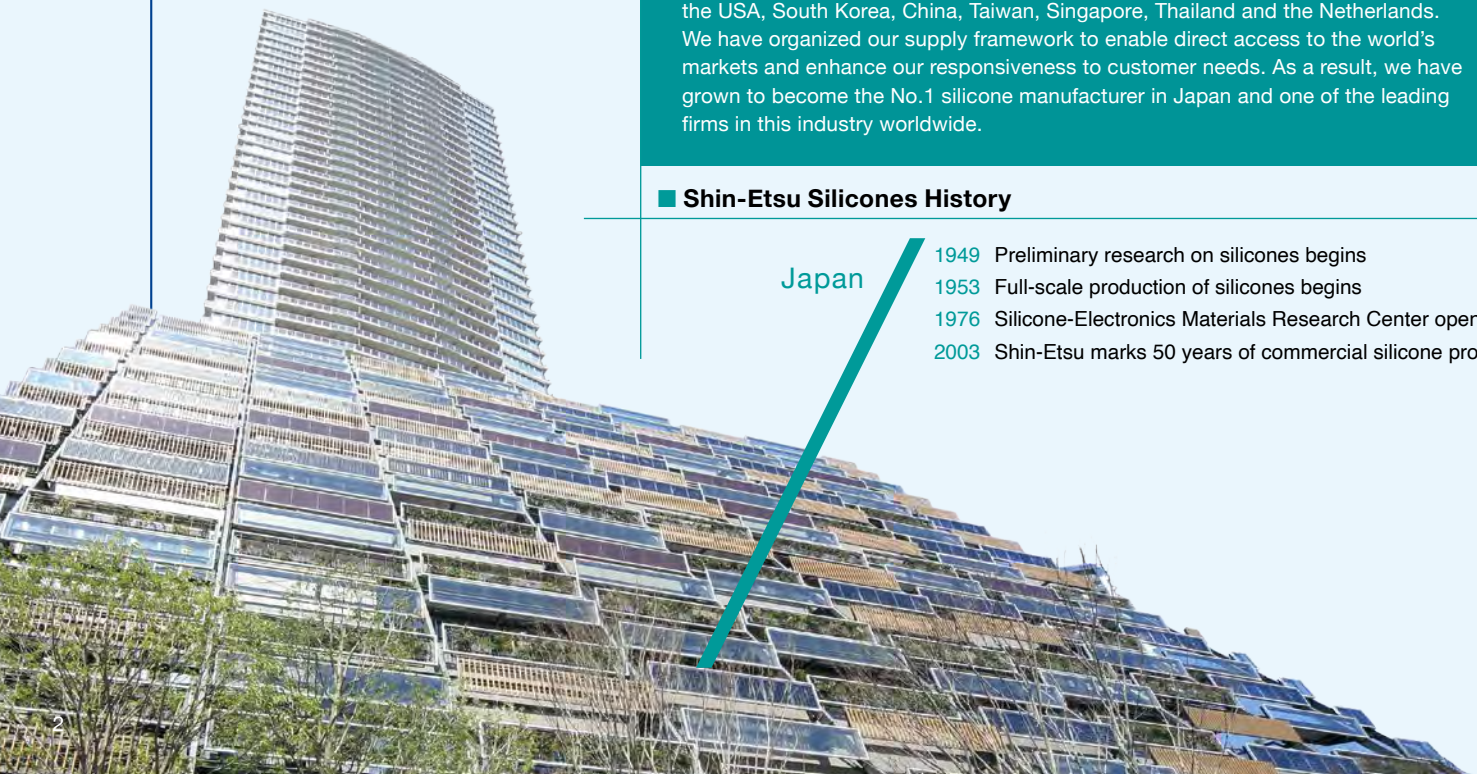
## About Shin-Etsu Silicone

In 1953, Shin-Etsu Chemical became the first firm in Japan to venture into the silicones business. In the decades since, Shin-Etsu has created a diverse line of products designed to exploit the unique and useful properties of silicones. The Company's operations have spread beyond Japan's shores; we now have production facilities and marketing bases in countries around the globe, including the USA, South Korea, China, Taiwan, Singapore, Thailand and the Netherlands. We have organized our supply framework to enable direct access to the world's markets and enhance our responsiveness to customer needs. As a result, we have grown to become the No.1 silicone manufacturer in Japan and one of the leading firms in this industry worldwide.

## Shin-Etsu Silicones History

### Japan

- 1949 Preliminary research on silicones begins
- 1953 Full-scale production of silicones begins
- 1976 Silicone-Electronics Materials Research Center opens
- 2003 Shin-Etsu marks 50 years of commercial silicone production



## Features of Silicone Sealant

### **H**eat resistance

Silicone sealants exhibit stable properties and elasticity throughout a wide range of temperatures typically between  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$ .

### **D**urability and weatherability

Silicone sealants have excellent durability and are able to resist extremes in weather throughout all seasonal changes making them a natural choice for both glass and non-glass building facades.

### **A**dhesion

Silicone sealants have excellent unprimed adhesion to most common building materials but for those difficult to bond to substrates there is a range of primers, which can be used to maximize adhesion.

### **H**andling and use

Both the rheology and cured properties of silicone sealants remains almost unchanged throughout extremes in temperature and climatic conditions.

### **A** variety of applications

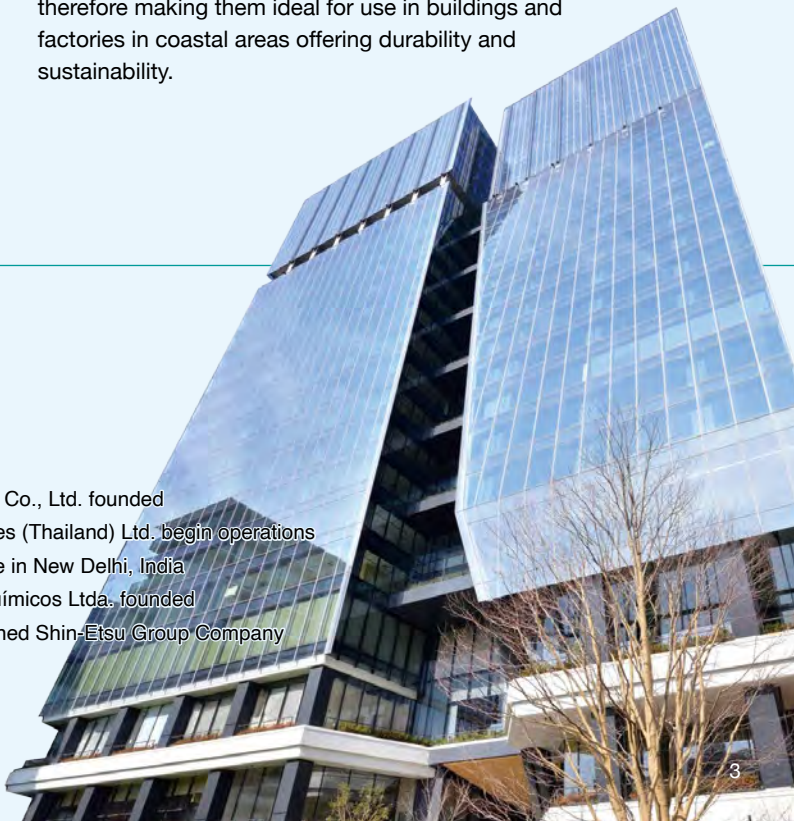
Silicone sealants can be formulated for a wide range of applications including structural and insulated glazing, weather sealing including low-staining type and fire retardant applications to name but a few.

### **C**hemical stability

Silicone sealants are highly resistant to salt damage, therefore making them ideal for use in buildings and factories in coastal areas offering durability and sustainability.

### Overseas

- 1985 Shin-Etsu Silicones of America, Inc. founded
- 1986 Shin-Etsu Silicone Korea Co., Ltd. founded
- 1987 Shin-Etsu Silicone Taiwan Co., Ltd. founded
- 1990 Shin-Etsu Singapore Pte. Ltd. founded
- 2001 Shin-Etsu Silicones (Thailand) Ltd. founded  
Asia Silicones Monomer Ltd. founded
- 2003 Shin-Etsu Silicone International Trading (Shanghai) Co., Ltd. founded
- 2004 Asia Silicones Monomer Ltd. and Shin-Etsu Silicones (Thailand) Ltd. begin operations
- 2008 Shin-Etsu Singapore Pte.Ltd. sets up a liaison office in New Delhi, India
- 2012 Shin-Etsu do Brasil Representação de Produtos Químicos Ltda. founded
- 2013 Asia Silicones Monomer Ltd. becomes a wholly-owned Shin-Etsu Group Company
- 2016 Shin-Etsu Silicones India Pvt. Ltd. founded
- 2020 Shin-Etsu Silicones Vietnam Co., Ltd. founded



## General Properties

Parameters		Type	Structural Glazing Sealants (SSG)		Insulated Glass Sealants	
		Product name	SEALANT-90N	SEALANT-FC-295SG	SEALANT-FC-312	SEALANT-FC-365
Consistency			Paste	Base: Paste/Cat: Paste	Base: Paste/Cat: Paste	Base: Paste/Cat: Paste
Slump		mm	0			
Skin-over time at 23°C/50%RH		min	10	20 to 50*2	30 to 60*2	60 to 100
Density at 23°C		g/cm <sup>3</sup>	1.40*1	1.40*1/1.06	1.40/1.09	1.52/1.07
Density at 23°C (After mixing)		g/cm <sup>3</sup>	—	1.38	1.39	1.50
VOC content		g/L	30	15	17	14
Hardness Shore A		ASTM D2240	36	35	45	51
Tensile strength		MPa	2.4	2.0	2.1	2.3
Elongation at break		%	560	490	290	250
50% tensile stress		MPa	0.6	0.2*3	0.2*3	0.3*3
Maximum tensile stress		MPa	1.5	1.3	1.2	1.1
Joint movement capability		%	±50	±25	—	—
Specifications			<ul style="list-style-type: none"> <li>•UL 2818-2013 Gold Standard for Chemical Emissions for Building Materials</li> <li>•ASTM C1184</li> <li>•ASTM C920 Type S, Grade NS, Class 50, Use NT, G, A</li> <li>•KS F4910 G-25HM</li> </ul>	<ul style="list-style-type: none"> <li>•UL 2818-2013 Gold Standard for Chemical Emissions for Building Materials</li> <li>•ASTM C1184</li> <li>•ASTM C920 Type M, Grade NS, Class 25, Use NT, G, A</li> <li>•KS F4910 G-25HM</li> </ul>	<ul style="list-style-type: none"> <li>•UL 2818-2013 Gold Standard for Chemical Emissions for Building Materials</li> <li>•ASTM C1184</li> <li>•ASTM C920</li> <li>•KS F4910 G-20HM</li> </ul>	None
Green certification			<ul style="list-style-type: none"> <li>•SGBC (Excellent)</li> <li>•GREENGUARD GOLD</li> </ul>	<ul style="list-style-type: none"> <li>•SGBC (Excellent)</li> <li>•GREENGUARD GOLD</li> </ul>	<ul style="list-style-type: none"> <li>•SGBC (Excellent)</li> <li>•GREENGUARD GOLD</li> </ul>	None
Package			300 mL, 600 mL	Base: 250 kg/Cat: 19 kg	Base: 260 kg/Cat: 20 kg	Base: 285 kg/Cat: 20 kg
Warranty period (after production)			12 months	Base: 18 months Cat: 12 months	Base: 18 months Cat: 12 months	12 months

\*1 25°C \*2 Snap time \*3 10%

(Not specified values)

Parameters		Type	Weather Sealants		
		Product name	SEALANT-72N	SEALANT-457	SEALANT-556LS
Consistency			Paste	Paste	Paste
Slump		mm	0	0	0
Skin-over time at 23°C/50%RH		min	10	6	8
Density at 23°C		g/cm <sup>3</sup>	1.50*	1.44	1.30
VOC content		g/L	23	—	52
Hardness Shore A		ASTM D2240	30	21	24
Tensile strength		MPa	1.6	1.0	1.9
Elongation at break		%	550	650	900
50% tensile stress		MPa	0.4	0.3	0.3
Maximum tensile stress		MPa	0.9	0.52	1.1
Joint movement capability		%	±50	±35	±50
Specifications			<ul style="list-style-type: none"> <li>•UL 2818-2013 Gold Standard for Chemical Emissions for Building Materials</li> <li>•ASTM C920 Type S, Grade NS, Class 50, Use NT, G, A, M</li> <li>•KS F4910 F-25HM</li> </ul>	<ul style="list-style-type: none"> <li>•ASTM C920 Class 35</li> <li>•KS F4910 F-25LM</li> </ul>	<ul style="list-style-type: none"> <li>•ASTM C920 Type S, Grade NS, Class 50, Use NT, G, A, M</li> <li>•KS F4910 F-25LM</li> </ul>
Green certification			<ul style="list-style-type: none"> <li>•SGBC (Excellent)</li> <li>•GREENGUARD GOLD</li> </ul>	—	<ul style="list-style-type: none"> <li>•SGBC (Very good)</li> <li>•GREENGUARD GOLD</li> </ul>
Package			300 mL, 600 mL	300 mL, 600 mL	300 mL, 600 mL
Warranty period (after production)			18 months	18 months	18 months

\* 25°C

(Not specified values)

■ Primers

Product name	PRIMER-AQ-P	PRIMER-AQ-1	PRIMER-MT
Parameter			
Appearance	Transparent pale yellow liquid	Transparent pale yellow liquid	Transparent liquid
Viscosity	Low	Low	High
Solvent	n-hexane	n-hexane	Toluene, IPA
Coverage rate g/m <sup>2</sup>	50	50	200
Drying time at 23°C	>10 min	>30 min	>60 min
Package	700 g can	250 g can	250 g can
Applications	Glass, Metal, Plastic	Glass, Metal, Enamel, Tile	Mortar, Concrete, Stone, Maoble, Timber
Remark	A one-part silicone resin based primer to a wide range of substrates. Shorter drying time than conventional primer.	A one-part silicone resin based primer for use with Shin-Etsu sealants in many applications.	A one-part film-forming primer for use with Shin-Etsu sealants on porous and cementitious surface to promote adhesion. <b>Don't use for glass substrate.</b>

(Not specified values)

Since the above information of primers is just a reference, please make sure to conduct adhesion tests with actual substrates before using. Also, as for the instructions for use and storage conditions of primers, please refer to the Functional Sealants Technical Manual or contact the Shin-Etsu Sales Department.

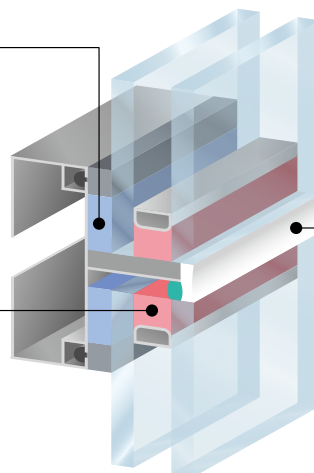
■ Functional Sealants Product Applications

**Structural Glazing Sealants**

SEALANT-FC-295SG  
SEALANT-90N

**Insulating Glass Sealants**

SEALANT-FC-312



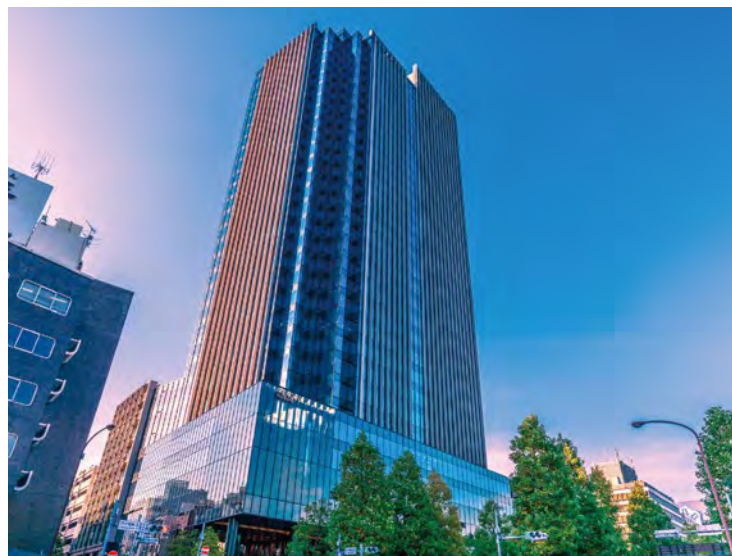
**Weather Sealants**

SEALANT-72N  
SEALANT-457

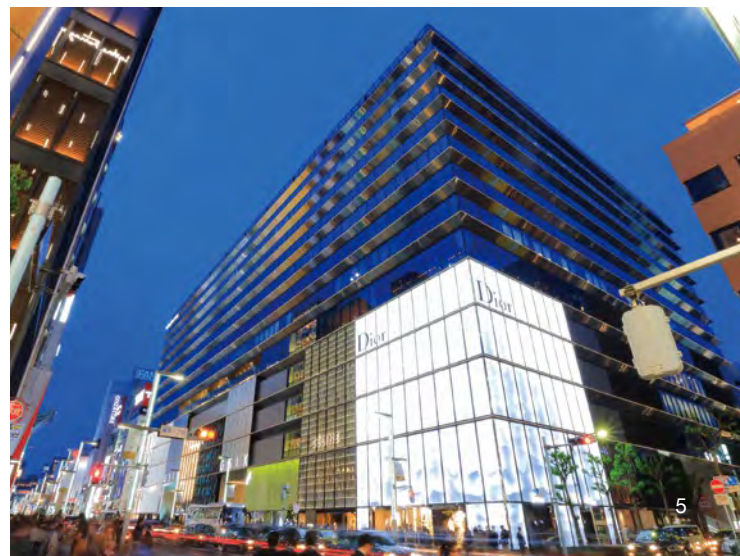
**Weather Sealant (Non Stain ASTM C1248)**

SEALANT-556LS

CO·MO·RE YOTSUYA YOTSUYA TOWER (Japan)



Ginza Six (Japan)



# P roject Support Service

We provide technical service support throughout the project from drawing and print reviews at the beginning of your project to sealant application training and final inspection. Project quality can be easily managed by using our Project Support Service (PSS).

## Project Review

By completing and submitting a project review and drawing details, Shin-Etsu are able to confirm the sealant selection and the joint dimension for a project based upon the information given.

## Laboratory Testing Service

At our Tech-Center, Shin-Etsu will perform adhesion and compatibility testing to all substrates and ancillary materials that are in either direct contact or close proximity to the sealant. If required we are also able to carry out stain tests to natural stone or sensitive porous substrates. Following completion of the testing, we will issue individual reports for adhesion, and compatibility confirming any pretreatment or primer required as well as the suitability of ancillary materials tested. If requested a stain test report may also be issued for each project.

## Quality Control

Also within our PSS, we offer training for the use of our products as well as a managed approach to the application by means of daily report forms, peel adhesion tests and deglaze tests that can be done either in the fabricators factory or at the project site.



Outdoor Exposure Test



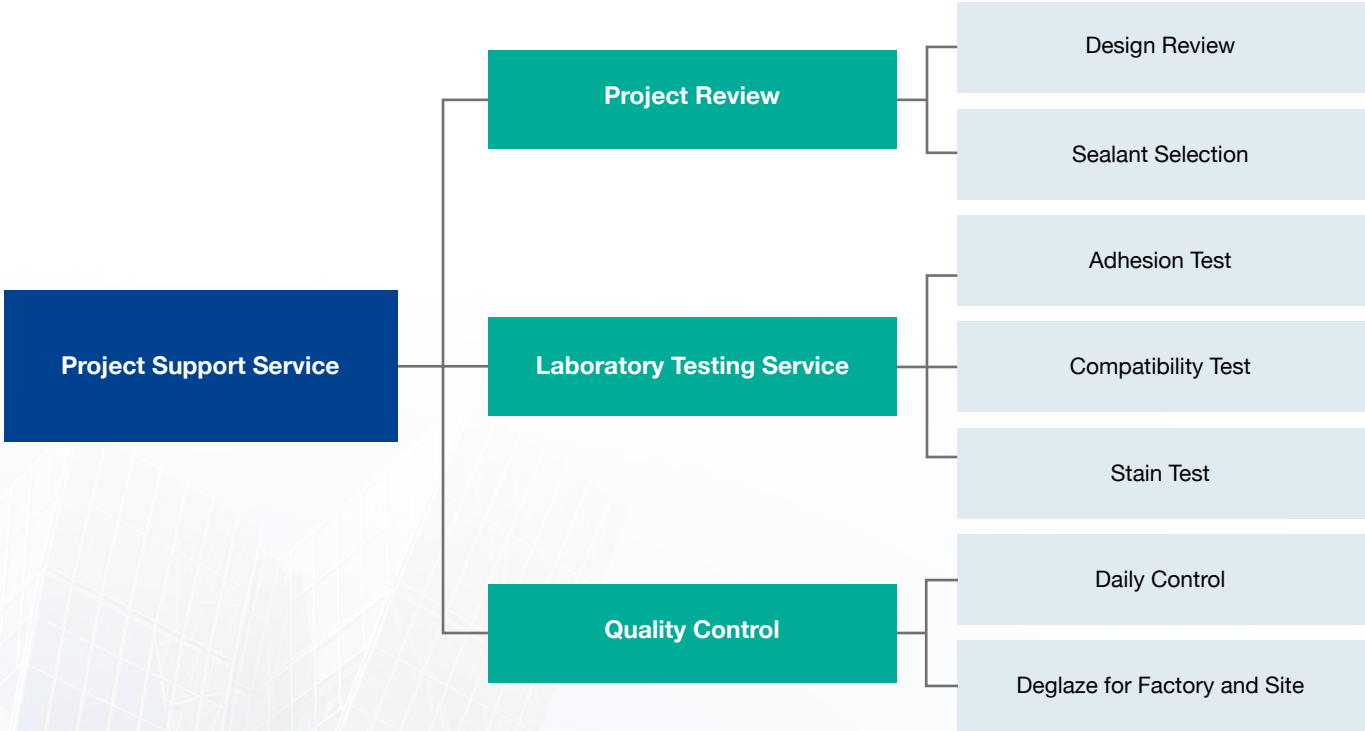
Sunshine Weather Meter Test



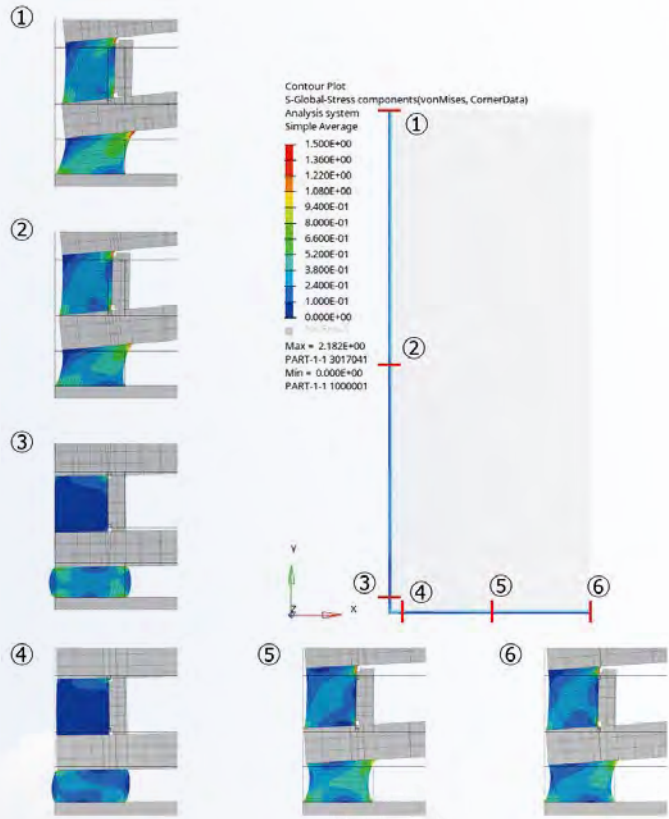
Pump Maintenance



Application Support



Global Training



Fatigue Analysis in our Lab

For more information concerning this, please contact your local distributor or Shin-Etsu sales office.

# P roject References



O-NES Tower (Thailand)



Brindabella Circuit (Australia)



HOTA, Home of the Arts (Australia)



Abeno Harukas (Japan)





Gold Coast Airport (Australia)



Queenscliff Ferry Terminal (Australia)



Daejeon Expo Science Complex (South Korea)



Alpha Dome City (South Korea)

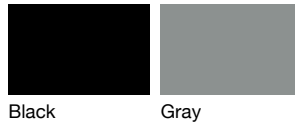
# C color Reference Chart

## Structural Sealants

### SEALANT-90N One-Part

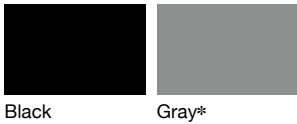


### SEALANT-FC-295SG Two-Part

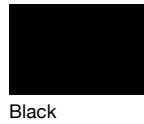


## Insulating Glass Sealants

### SEALANT-FC-312 Two-Part



### SEALANT-FC-365 Two-Part



## Weather Sealants

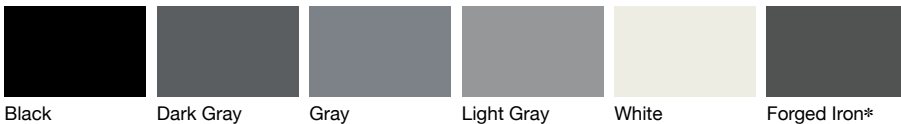
### SEALANT-72N One-Part



### SEALANT-457 One-Part



### SEALANT-556LS Non-Stain, One-Part



\* Made to order  
Custom colors are available. Colors shown serve as estimates only. For accurate depiction, kindly contact our sales rep. for actual cured samples.

# Handling Precautions

## Important

1. Please insure that the application procedures and quality control are in strict compliance with the latest Shin-Etsu published Project Support Services and Functional Sealants Technical Manual.  
Before the commencement of any sealant application, fabricators and applicators are required to obtain and read the contents of the manual.  
It can be downloaded from the Shin-Etsu website.  
<https://www.shinetsusilicone-global.com/>
2. All quality control test results must be logged and archived.
3. The Shin-Etsu Sales Department is available for specific advice.
4. It is necessary to determine whether a primer is required before application of sealant.

## Limitations

1. Shin-Etsu Project Support Service (PSS) is a series testing and quality control procedures and is available for project specific testing and is mandatory for all four sided structural glazing applications.
2. Only SEALANT-90N and SEALANT-FC-295SG are approved for structural glazing applications.
3. All products in this catalog must not be used in food, medical or pharmaceutical applications.
4. The contents of this catalog are believed to be correct, but project conditions regarding actual application and use of Shin-Etsu sealant are beyond Shin-Etsu's control.  
Therefore it is the users responsibility to confirm the product meets the requirements of the application.
5. Shin-Etsu Silicone warrants only that the sealant will conform to Shin-Etsu Silicone's product specifications at the time of shipment, and makes no further warranties in respect of the sealant.  
Warranty remedy for such failure is limited to refund of purchase price or replacement of product.  
If applicators need extended warranty for performance of sealants, please contact the Shin-Etsu Sales Department in advance of the project inception.

## Instructions for use & Handling precautions

Please read the latest Shin-Etsu published Functional Sealants Technical Manual.  
The manual can be obtained from the Shin-Etsu website.  
<https://www.shinetsusilicone-global.com/>

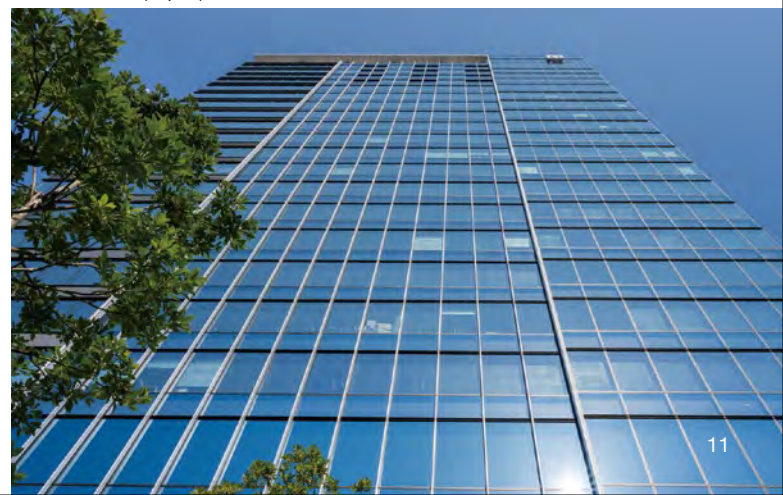
## Storage conditions and shelf life

- 1 Temperature: Please refer to each of the products technical data sheets
  - \* Seal container tightly and store in a cool, dark place (out of direct sunlight) with good ventilation.
2. Keep away from direct heat source and flame.
3. Shelf life for each product is described on P4.

## Safety and Hygiene

1. Uncured Sealants may cause skin irritation. When handling the products, take care to avoid contact with the skin and mucous membranes by wearing protective glasses and protective gloves.  
In case of skin contact, immediately wipe off with dry cloth and then flush thoroughly with running water.  
When using, be careful not to rub eyes with hands.  
In case of accidental eye contact, flush immediately with plenty of clean water for at least 15 minutes and then seek medical attention. Contact lens wearers must take special care.  
If the products get into the eye, the contact lens may become stuck to the eye.
2. Be sure to provide adequate ventilation when using the product. During curing, a small amount of Methanol gas is gradually generated from SEALANT-72N, SEALANT-90N, SEALANT-FC-295SG, SEALANT-FC-312 and SEALANT-FC-365.  
And a small amount of Methyl Ethyl Ketone Oxime (MEKO) gas is gradually generated from SEALANT-457 and SEALANT-556LS.  
If you become uncomfortable with inhaling vapors, move to an area with fresh air immediately.
3. Keep out of reach of children.
4. Please read the Safety Data Sheets (SDS) before use. SDS can be obtained from our Sales Department.

Abema Towers (Japan)



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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). Please download the SDS from our website. If the SDS is not listed on the website, please contact the sales department.  
 SDS download URL : <https://www.shinetsusilicone-global.com/support/sdstds>
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- Users must never use the silicone products described herein for the purpose of implantation into the human body and/or injection into humans.
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<b>Gunma Complex</b>	ISO 9001 (JCQA-0004)	ISO 14001 (JCQA-E-0002)
<b>Naoetsu Plant</b>	ISO 9001 (JCQA-0018)	ISO 14001 (JCQA-E-0064)
<b>Takefu Plant</b>	ISO 9001 (JQA-0479)	ISO 14001 (JQA-EM0298)

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