

LIMS (Liquid Injection Molding System): **SELECTIVE SELF-ADHESIVE LIQUID SILICONE** allows integral plastic molding without primers

Shin-Etsu Selective Self-adhesive Liquid Silicone offers good adhesion to thermoplastics without the need to apply primers. This Silicone bonds well to a variety of plastics but does not adhere to the metal surfaces of molds.

The short cycle times required for molding this Silicone, coupled with the ease with which the molding processes may be automated, leads to improved quality and productivity.

Major advantages

- Provides integral molding system through co-injection molding or insert molding
- Suitable for use with complicated thermoplastic parts
- Shortened process time through the elimination of primer application
- Provides a safer working environment by eliminating the use of solvent based primers

Major applications

- Automotive parts
- Electrical and electronic components
- Films and other industrial uses

Selective Self-adhesive Liquid Silicone allows the fabricator to while at the same time improving product quality.

The new Shin-Etsu Selective Self-adhesive Liquid Silicone bonds well to a variety of plastics, including the following: • Polycarbonate (PC) • Polybutylene-terephthalate (PBT) • Polyphenylene oxide (PPO) • Polyamide resins (Nylon 66, Nylon 6) • Polyphthalamide (PPA)

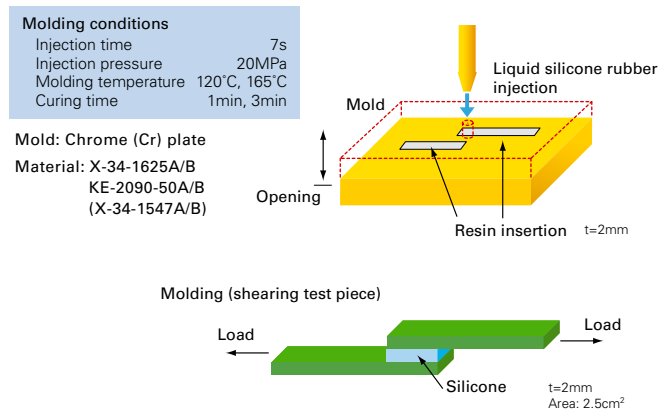
The adhesion obtained with each of these resins has proven resistant to degradation under a wide range of temperatures and humidity.

Results of adhesion testing on various resins

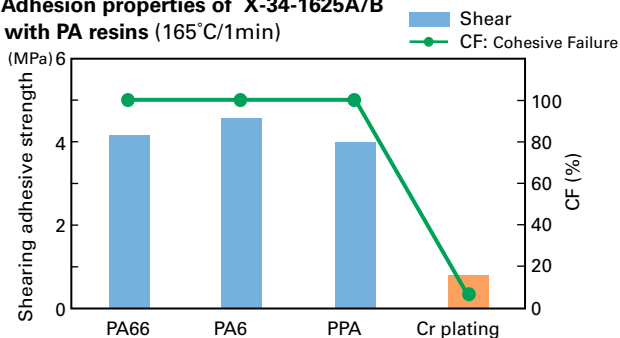
Adhesion studies on a part using a previously molded insert:

Shin-Etsu Selective Self-adhesive Liquid Silicone adheres well to plastic inserts, yet shows very little adhesion to mold surfaces (chromed steel, etc.).

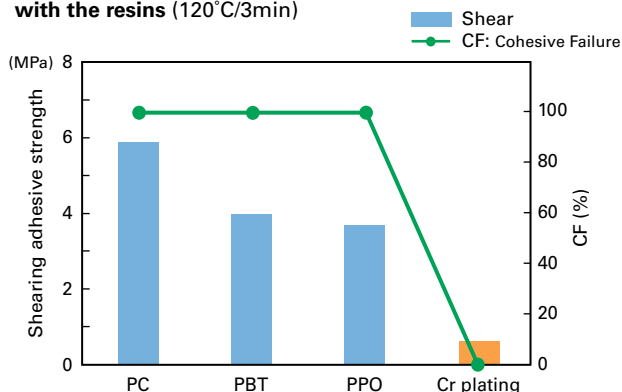
Insert molding sketch



Adhesion properties of X-34-1625A/B with PA resins (165°C/1min)



Adhesion properties of KE-2090-50A/B (X-34-1547A/B) with the resins (120°C/3min)

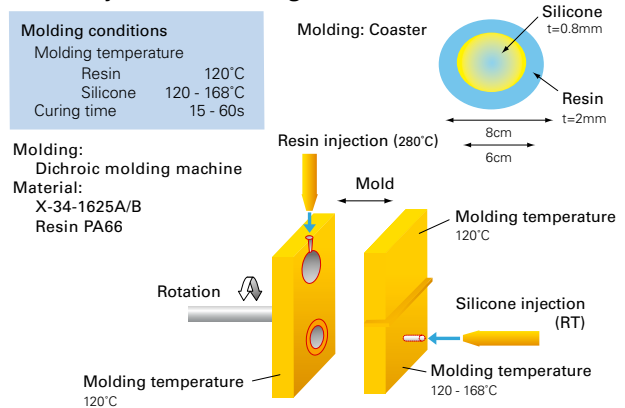


Adhesion studies on a part made by co-injection molding:

A coaster was molded by using X-34-1625A/B and PA66 in a co-injection molding machine.

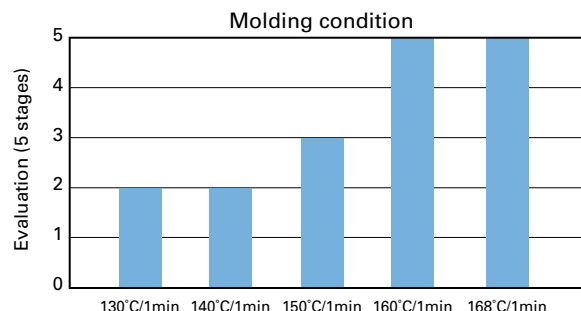
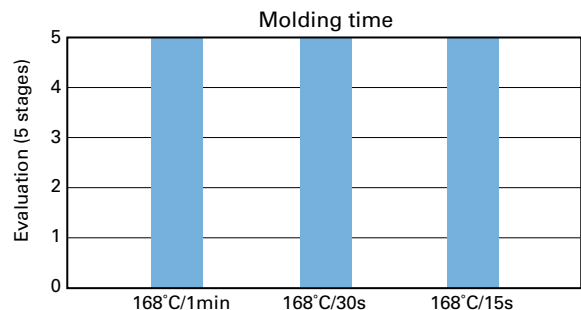
Using a temperature of 160°C on the silicone side of the mold permitted molding times as short as 15 sec. Adhesion values were comparable to those obtained in the insert molding process. Other resins (PC, PBT) require lower molding temperatures (120°C).

Co-injection molding sketch



Co-injection molding of X-34-1625A/B and PA66

Evaluation criteria: 5: Excellent(100% cohesive failure)
4: Good(Partial cohesive failure) 3: Marginal 2: Poor 1: No adhesion



shorten the time required for insert molding processes,

High, durable adhesion

Selective Self-adhesive Liquid Silicone also exhibits resistance to temperature and humidity extremes. Bond strengths remained greater than 3 MPa in each of the following studies after 300 hours of aging:

PC resin: Heat aging @ 110°C

Moisture resistance: 85°C/ 85% relative humidity

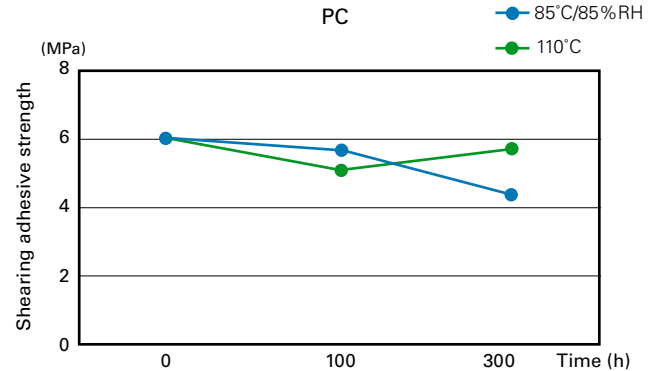
PA resin: Heat aging @ 120°C

Moisture resistance: 85°C/ 85% relative humidity

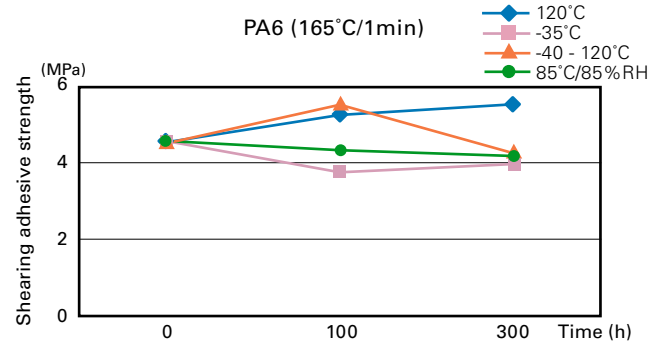
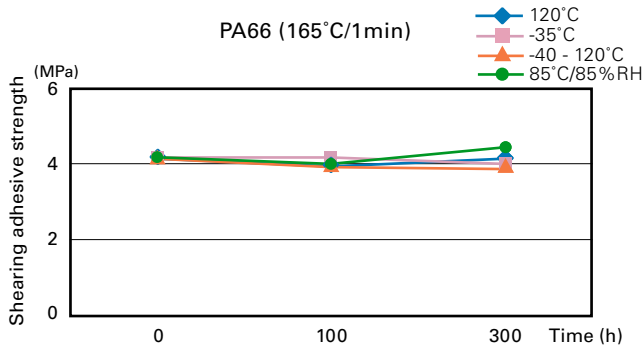
Cold temperature aging: -35°C

Temperature cycling: -40°C to 120°C

Adhesive endurance of KE-2090-50A/B (X-34-1547A/B) (120°C/1min)



Adhesive endurance of X-34-1625A/B (- 300h)



General properties

Types Products		PC, PBT Resins				PA Resin	
		KE-2090-40A/B	KE-2090-50A/B	KE-2090-60A/B	KE-2030-70A/B	X-34-1625A/B	
Viscosity	Pa-s						
	A	400	340	450	600	800	
	B	700	800	700	600	850	
Curing time*1	sec						
	T10	82	66	94	69	30	
	T90	105	102	154	98	55	
Specific gravity		1.11	1.12	1.12	1.13	1.09	
Hardness Durometer typeA*2		40	52	60	68	49	
Elongation at break		%	630	420	240	230	450
Tensile strength		MPa	9.0	8.3	7.3	7.7	7.5

*1 Rheometer condition: 120°C (X-34-1625A/B: 150°C) *2 Cure condition: 120°C/10min

(Not specified values)

Cautions in using Selective Self-adhesive Liquid Silicone

- Even among the same resin materials, some materials are not suited to addition reactions of silicone rubbers or cannot sufficiently exert adhesion depending on their method of polymerization, degree of refining and types of additive and resin. When designing, check the resin to be used in advance.
- In the situations where the resin surface is dirty, remove the dirt with a solvent or similar.
- As for polyamide resin, it is recommended to dry the resin before molding since it has high water absorption properties. Moreover, attention must be paid to the molding procedure and conditions in the situations where heat treatment and humidity conditioning are performed to acquire dimensional stability.

Silicone Division Sales and Marketing Department III < HTV Rubbers and LIMS >

6-1, Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan

Phone: +81-(0)3-3246-5151 Fax: +81-(0)3-3246-5362

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

Shincor Silicones, Inc.

1030 Evans Avenue, Akron, OH 44305, U.S.A.

Phone : +1-330-630-9460 Fax : +1-330-630-1491

Shin-Etsu Silicones Europe B. V.

Bolderweg 32, 1332 AV, Almere, The Netherlands

Phone : +31-(0)36-5493170 Fax : +31-(0)36-5326459

Shin-Etsu Silicone Taiwan Co., Ltd.

Hung Kuo Bldg. 11F-D, No. 167, Tun Hua N. Rd.,

Taipei, 10549 Taiwan, R.O.C.

Phone : +886-(0)2-2715-0055 Fax : +886-(0)2-2715-0066

Shin-Etsu Silicone Korea Co., Ltd.

Danam Bldg., 9F, 120, Namdaemunno5(o)-ga,

Jung-gu, Seoul 100-704, Korea

Phone : +82-(0)2-775-9691 Fax : +82-(0)2-775-9690

Shin-Etsu Singapore Pte. Ltd.

4 Shenton Way, #10-03/06, SGX Centre II, Singapore 068807

Phone : +65-6743-7277 Fax : +65-6743-7477

Shin-Etsu Silicones (Thailand) Ltd.

7th Floor, Harindhorn Tower, 54 North Sathorn Road,
Bangkok 10500, Thailand

Phone : +66-(0)2-632-2941 Fax : +66-(0)2-632-2945

Shin-Etsu Silicone International Trading (Shanghai) Co., Ltd.

29F Junyao International Plaza, No.789,

Zhao Jia Bang Road, Shanghai, China

Phone : +86-(0)21-6443-5550 Fax : +86-(0)21-6443-5868

- The data and information presented in this catalog may not be relied upon to represent standard values. Shin-Etsu reserves the right to change such data and information, in whole or in part, in this catalog, including product performance standards and specifications without notice.
- 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.
- 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.
- Users must never use the silicone products described herein for the purpose of implantation into the human body and/or injection into humans.
- Users are solely responsible for exporting or importing the silicone products described herein, and complying with all applicable laws, regulations, and rules relating to the use of such products. Shin-Etsu recommends checking each pertinent country's laws, regulations, and rules in advance, when exporting or importing, and before using, the products.
- Please contact Shin-Etsu before reproducing any part of this catalog.
Copyright belongs to Shin-Etsu Chemical Co., Ltd.



The Development and Manufacture of Shin-Etsu Silicones are based on the following registered international quality and environmental management standards.



Gunma Complex	ISO 9001	ISO 14001
Naoetsu Plant	ISO 9001	ISO 14001
Takefu Plant	ISO 9001	ISO 14001

<http://www.silicone.jp/>