Shin-Etsu Silicone

Silicone Release Coatings

Shin-Etsu Integrated System®

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The Shin-Etsu Integrated System® is a solvent free, multicomponent system

System features

- By combining these distinctive base polymers and crosslinkers in different combinations, the user can achieve a variety of release properties can be achieved.
- KNS-341/342/346 were designed to be diluted with a solvent.
  Compared to other products designed for high concentration coating and regular solvent-based types, these products offer various advantages, such as decreasing of solvent.

Product type

Base polymer

Product name	Viscosity 25°C mm²/s	Features	Release force	Packaging
KNS-330	400	General purpose	Easy release	18 kg (can), 180 kg (drum), 900 kg (container)
KNS-340	180	High vinyl	Tight release	18 kg (can), 180 kg (drum), 900 kg (container)
KNS-350	250	Fast cure	Easy release	18 kg (can), 180 kg (drum), 900 kg (container)
KNS-341	30,000	Low vinyl	Easy release	18 kg (can), 180 kg (drum)
KNS-342	30,000	High vinyl	Tight release	18 kg (can), 180 kg (drum)

(Not specified values)

Crosslinker

Product name	Viscosity 25°C mm²/s	Features	Release force	Packaging
KNS-336	160	General purpose	Easy release	18 kg (can), 180 kg (drum)
KNS-338	130	Fast cure	Easy release	18 kg (can), 180 kg (drum)
KNS-339	160	Contains additive which promotes ultra-easy release	Ultra-easy release	18 kg (can), 180 kg (drum)
KNS-361	130	Fast cure with very low Pt-catalyst	Easy release	18 kg (can), 180 kg (drum)
KNS-347	30	For KNS-340	Tight release	18 kg (can), 180 kg (drum)
KNS-346	210	General purpose	Easy release	18 kg (can), 180 kg (drum)

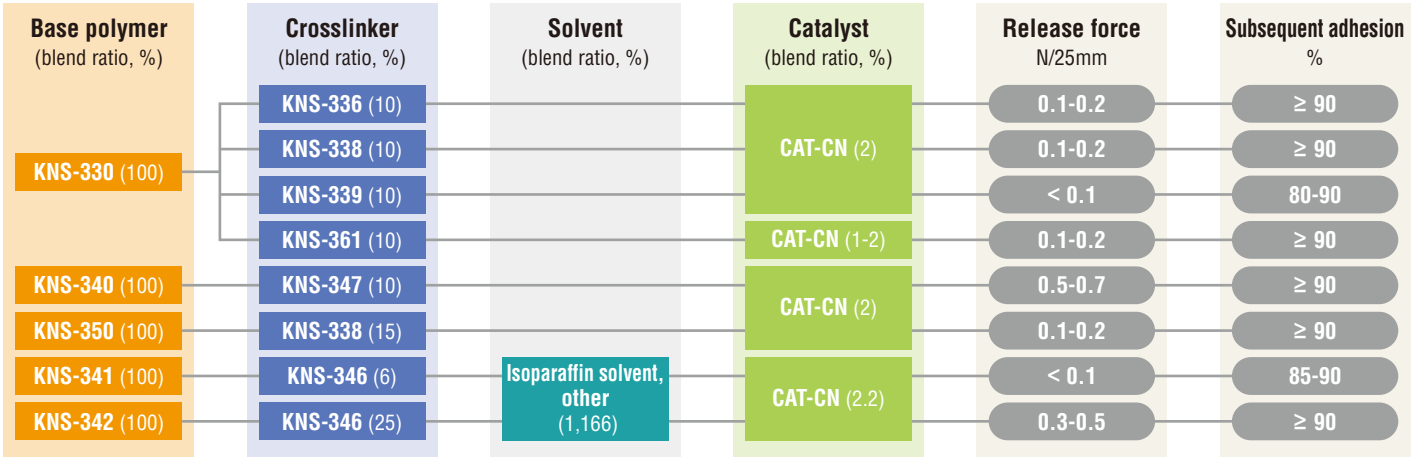
(Not specified values)

Catalyst

Product name	Viscosity 25°C mm²/s	Packaging
CAT-CN	250	1 kg (bottle), 18 kg (mini drum)

(Not specified values)

Release force and subsequent adhesion as function of blend ratio



Substrate: polyethylene-coated kraft paper (PEK), Curing conditions: 120 °C×30 sec., Coating weight: 1.1 g/m², Release force test tape: Tesa® 7475

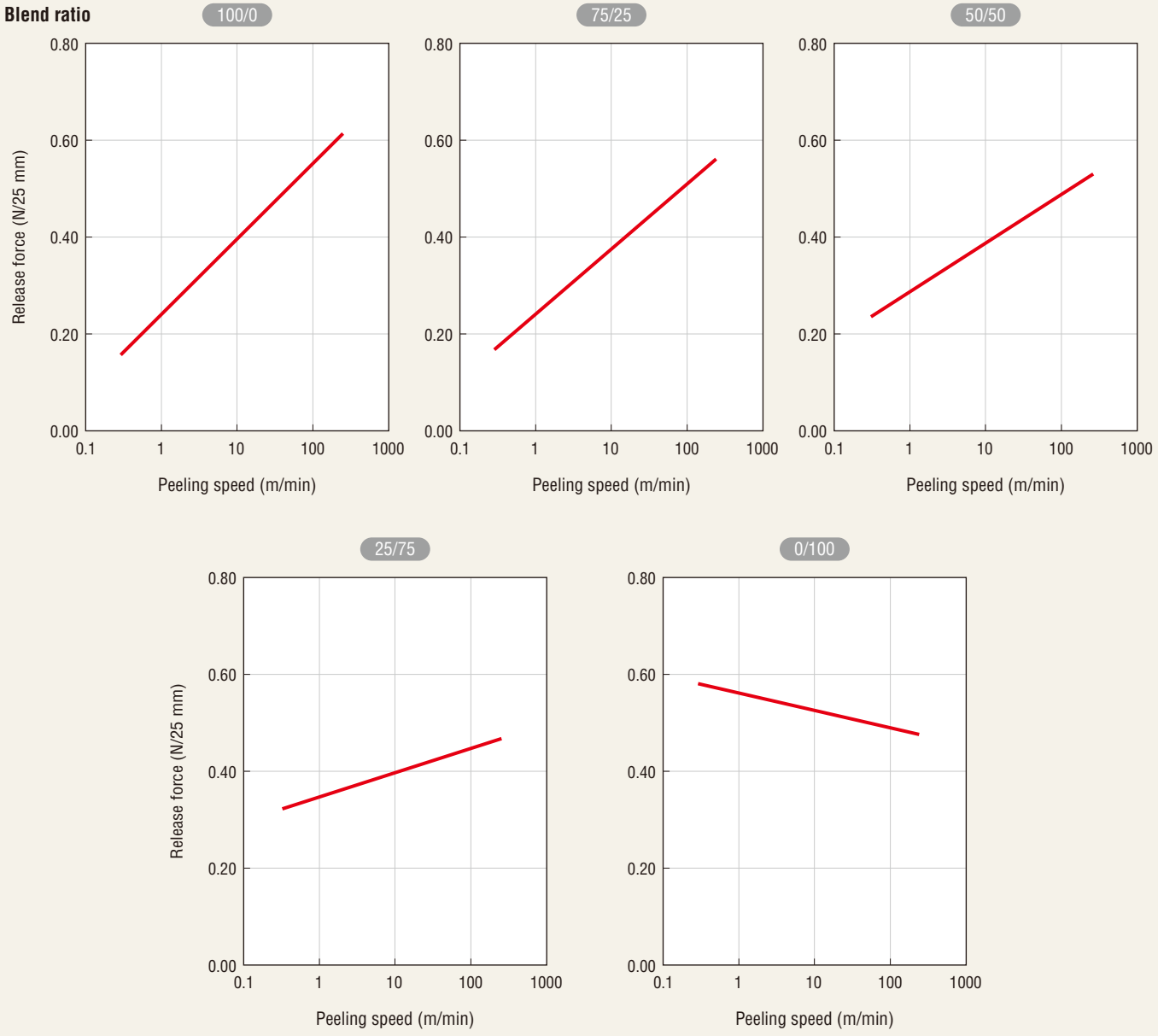
consisting of a base polymer, crosslinker agent and catalyst.

Adjusting release properties

By using different combinations of base polymers,
A wide variation of release properties can be achieved from easy to tight release.
The figures below show the change in release force as tested using a combination of two base polymers.

■Blend examples

Adjusting release properties by varying blend ratio of KNS-330 and KNS-340



Blend ratio: KNS-330/KNS-340/KNS-338/KNS-347/CAT-CN = 100–0/0–100/10–0/0–10/2 Substrate: polyethylene-coated kraft paper (PEK)

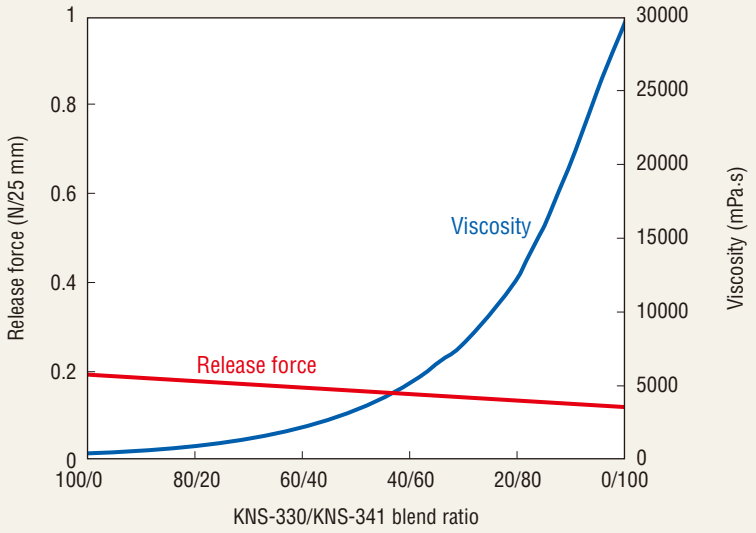
Shin-Etsu Integrated System®

Adjusting viscosity properties

A low viscosity base polymer can be mixed with a high viscosity base polymer.
The release force will remain almost unchanged, so users can adjust the viscosity for application as desired.

■ **Blend examples**

Adjusting viscosity properties by varying blend ratio of KNS-330 and KNS-341

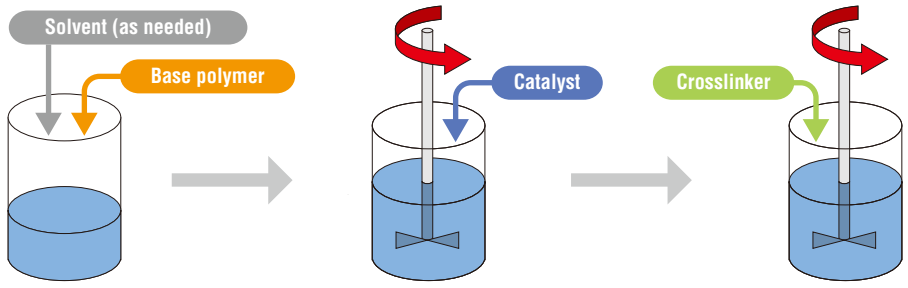


Blend ratio: KNS-330+KNS-341/KNS-346/CAT-CN/Isoparaffin solvent = 100/4.5–13.0/2.2/1166
Substrate: polyethylene-coated kraft paper (PEK)

Instructions for Use

Shin-Etsu Integrated System®
The standard blend ratio for base polymer/crosslinker/catalyst = 100/10/2.

First, combine the base polymer and catalyst, then mix to a uniform consistency. Next, add the crosslinker and again mix until uniform. Once all liquids are evenly mixed, the compound can be used immediately. If diluting with a solvent, put the solvent into the mixing vessel first, and make a treatment bath by following the steps below.



Precautions **Never mix crosslinker together only with catalyst.**
This will cause a reaction which releases hydrogen gas and generates heat.

Precautions

■Handling precautions

- The products contained in this catalog are for industrial use. Before using them in medical applications, food products, personal care products or other applications with special requirements for safety, be sure to determine whether these products meet the applicable standards.

- Never mix crosslinker together only with catalyst. This will cause a reaction which releases hydrogen gas and generates heat.

- Addition-cure products may not cure properly if they become contaminated by “catalyst poisons” such as tin compounds, amine compounds, phosphorus compounds or sulfur compounds, so take care to avoid contamination by these substances.

- Store containers tightly sealed in a cool, dark place with low humidity, and avoid exposure to high temperatures and direct sunlight. After the container has been opened initially, the product should be used up as quickly as possible.

- When diluting emulsion type silicones, contamination by strong acids, strong bases, large amounts of alcohol, salts (inorganic) or other substances may cause the emulsion to become less stable, so take care to avoid contamination by these substances.

- Emulsion type silicones should be agitated thoroughly before use.

- Emulsion type silicones may freeze at low temperatures, so users in colder regions should take special care with regard to storage.

- The Pot life of these products will vary depending on the amount of catalyst used and the usage environment. The user should determine how long this is prior to actual use.

- Platinum catalysts may exhibit precipitation of some ingredients over time depending on the storage conditions, but this does not indicate a problem with product quality. Agitate well before use. Also, the water content of solvents used for dilution may cause the platinum catalyst to turn black. Be sure to use dehydrated solvent.

■Safety and hygiene

1. Some of these silicones for release paper and the catalysts used with them contain flammable organic solvents (toluene, xylene, etc.), and so must be kept away from sources of ignition. Also, under the UN classification system, products containing these organic solvents are classified as Flammable Liquids. Be sure to handle these products in accordance with applicable laws governing transport, storage, etc.

2. Inhalation of organic solvents can be toxic, so be sure to handle these products in areas provided with ventilation equipment (localized ventilation, general ventilation). If adequate ventilation cannot be provided, be sure to wear a respirator mask designed to filter organic gases. Also, mist from our solvent-free addition-cure products may irritate the respiratory system, so be sure to handle these products in a ventilated area. If adequate ventilation cannot be provided, be sure to wear a respirator mask designed to filter organic gases.

3. Always wear protective gear (goggles, gloves) when using these products to prevent contact with skin and mucous membranes. In case of contact, wash immediately with soap and water or a neutral detergent, then rinse thoroughly with running water. In case of eye contact, flush immediately with clean water for at least 15 minutes and then seek medical attention.

4. If addition-cure products become contaminated with alcohols, acids, bases, or certain other substances, the resulting reaction may release small amounts of flammable hydrogen gas.

5. Keep out of reach of children.

6. Please read the Safety Data Sheets (SDS) for these products before use. SDS can be obtained from our Sales Department.

UN Hazard Classification

UN Classification	UN No.	Product name
Class 3 (Flammable Liquids)	UN1993	**KNS-336, KNS-338, KNS-339 KNS-346, KNS-347**
Not covered	—	**KNS-330, KNS-340, KNS-350 KNS-341, KNS-342, KNS-361, CAT-CN**

Silicones release coatings

Shin-Etsu produces silicones release coatings which utilize a variety of curing systems.
Users can select from a wide array of products to suit their specific applications and usage conditions.

Product type

Category	Product name	Viscosity 25°C mPa·s	Silicone active ingredient %	Migration properties	Release level	Intended substrates	
Solvent-based addition-cure	**KS-847T**	15,000	30	No migration	Easy	Paper, film	
	KS-3703	15,000	30	No migration	Medium to tight	Paper, film	
	KS-3707	15,000	30	No migration	Easy to medium	Paper	
	KS-3708F	15,000	30	No migration	Medium to tight	Paper, film	
	KS-3755	15,000	30	Low migration	Easy	Paper, film	
	KS-841	5,000	30	No migration	Medium	Paper	
	KS-774	15,000	30	No migration	Medium	Film, aluminum	
	KS-3601	7,000	30	No migration	Tight	Paper, film	
	KS-3800	1.4 mm^2/s	30	No migration	Tight	Paper, film	
Solvent-free addition-cure	**KNS-3051**	400	100	Migration	Easy	Paper	
	KNS-320A	400	100	No migration	Easy to medium	Paper	
	KNS-316	450	100	No migration	Medium	Paper	
	KNS-3002	300	100	No migration	Tight	Paper	
	KNS-3300	500	100	No migration	Tight	Paper	
UV-cure	**X-62-7205**	200	100	No migration	Medium	Paper, film	
	KF-2005	420	100	No migration	Easy	Paper	
	X-62-7028A/B	5,000	100	Migration	Easy	Paper, film	
	X-62-7052	35,000	100	Migration	Easy	Paper	
	X-62-7622	150	100	No migration	Easy	Paper, film	
	X-62-7629	900	100	No migration	Easy	Paper, film	
	X-62-7660	90	100	No migration	Tight	Paper, film	
Emulsion	**KM-3952**	—	40	No migration	Easy	Paper	
	KM-3951	—	40	No migration	Easy	Paper	
	X-52-6015	—	40	No migration	Medium to tight	Paper, film	

Catalyst type

Catalyst	**CAT-PL-50T**	For solvent-based addition-cure silicones. Contains toluene. Standard blend ratio of main component to catalyst is 100:1 by weight.
	CAT-PL-3	For KS-774. Contains butanol. Standard blend ratio of main component to catalyst is 200:1 by weight.
	CAT-PL-56	For solvent-free addition cure silicones. Standard blend ratio of main component to catalyst is 100:2 by weight.
	CAT-7605E	For UV-cure (epoxy-based) silicones. Standard blend ratio of main component to catalyst is 100:1 by weight.
	CAT-PM-10A	For emulsion type silicones. Standard blend ratio of main component to catalyst is 100:5 by weight.

✻ For acrylic-based UV-cure products, the user will need to purchase a photoinitiator (sold separately).

(Not specified values)

	Features	Packaging
	Easy release, low-temperature cure. Contains toluene.	18 kg (can), 170 kg (drum)
	Good anchorage to film. Contains toluene.	18 kg (can), 170 kg (drum)
	Low platinum formula, easy release. Contains toluene.	18 kg (can), 170 kg (drum)
	Low platinum formula, tight release, can be applied to film. Contains toluene.	18 kg (can), 170 kg (drum)
	Easy release at both low and high speeds. Not slick. Contains toluene.	18 kg (can), 170 kg (drum)
	Medium release, low content viscosity.	18 kg (can), 170 kg (drum)
	Good anchorage to film & aluminum. Contains toluene.	18 kg (can), 170 kg (drum)
	Ultra-tight release. Contains toluene.	18 kg (can), 170 kg (drum)
	Release control agent. Cannot be used alone. Contains toluene & xylene.	16 kg (can), 160 kg (drum)
	Migration, easy release. General purpose.	18 kg (can), 180 kg (drum), 1,000 kg (container)
	No migration, easy release. General purpose.	18 kg (can), 180 kg (drum), 1,000 kg (container)
	Medium release, general purpose.	18 kg (can), 180 kg (drum), 1,000 kg (container)
	Tight-release.	18 kg (can), 180 kg (drum), 1,000 kg (container)
	Tight-release, release-control agent.	18 kg (can), 180 kg (drum), 1,000 kg (container)
	Fast cure acrylic type, requires nitrogen gas. Can be applied to film.	18 kg (can), 180 kg (drum)
	Fast cure acrylic type, requires nitrogen gas.	18 kg (can), 180 kg (drum)
	Does not require nitrogen gas, can be applied to printed surfaces.	18 kg (can)
	Does not require nitrogen gas, 1-component, can be applied using screen-printing techniques and in partial areas.	1 kg (bottle)
	Does not require nitrogen gas. Epoxy based, low-viscosity type.	16 kg (can), 180 kg (drum)
	Does not require nitrogen gas. Epoxy based, high-viscosity type.	16 kg (can), 180 kg (drum)
	Does not require nitrogen gas. Epoxy based, good anchorage to film.	16 kg (can), 180 kg (drum)
	General purpose, low platinum formula.	15 kg (can), 170 kg (drum)
	General purpose.	15 kg (can), 170 kg (drum)
	Good anchorage to film.	15 kg (can), 170 kg (drum)

(Not specified values)

Instructions for Use

Put the main component into the mixing vessel, then gradually add the catalyst while stirring until evenly mixed. Once the liquids are evenly mixed, the compound can be used immediately.
When also using a solvent or other diluent, first put the diluent into the mixing vessel and then perform the steps above to prepare the treatment bath.

UN Hazard Classification

UN classification	UN No.	Product name
Class 3 (Flammable Liquids)	UN1866	**KS-847T, KS-3703, KS-3707, KS-3708F KS-3755, KS-841, KS-774, KS-3601, KS-3800**
	UN1294	**CAT-PL-50T**
	UN1993	**CAT-PL-3, CAT-7605E, KNS-3300**
Not covered	—	**KNS-3051, KNS-320A, KNS-316 KNS-3002, X-62-7205, KF-2005 X-62-7028A/B, X-62-7052, X-62-7622 X-62-7629, X-62-7660, KM-3952, KM-3951 X-52-6015, CAT-PL-56, CAT-PM-10A**

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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)

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

This is an edited version of the product data released on Apr. 2023.