

SUNSTAR

MS2500

Resistant to movement
Creates decorative joints

Construction Sealant

Penguin Seal

MS2500

Curtain wall joint (Metal/PCa)

Two-component modified silicon

JSIA F★★★★



**MS2500 will flexibly follow joint movements,
providing stable performances**

|| The sealant will flexibly follow joint movements, providing stable performances

Once cured, the sealant will take on excellent rubber elasticity, flexibly following joint movements caused by various external factors and providing excellent durability and high waterproofing capability.

|| Stable hardening property in a wide range of temperatures

Since Penguin Seal MS2500 is not greatly affected by temperature change in the hardening property, it will show stable physical properties and provide excellent workability in a wide range of temperatures.

|| Conformance to JIS A 5758, Type F-25LM, Durability classification 9030 (JIS mark certified product)

Applications

- Joint sealing of curtain walls (Metal/PCa)
- Joint sealing of extruded cement plates
- Various joint sealing of RC constructions
- Joint sealing of various sash frames

*The sealant cannot be used for joint sealing of glass.

*The sealant, when used in the curtain wall knock-down construction method, should be carefully handled so as not to merge into the joint sealing of glass.

|| Guidelines for indoor air pollution – Guideline values for indoor concentration None of 13 volatile organic compounds (VOCs) that can cause sick-house syndrome is used.

|| It conforms to the Voluntary Regulations for Controlling Formaldehyde Pollution issued by Japan Sealant Industry Association (JSIA): Approval number: JSIA-004001 F ☆☆☆☆

Properties

	Base material	Hardener	Toner
Appearance	Milk-white paste	Milk-white paste	Paste of various colors
Mixing ratio (weight ratio)	100 / 10 / 5.2		
Density (20°C)	1.09		
Shelf life	6 months (in storage at 25°C or lower)		

Characteristics JIS A 5758 : 2010

Test item		Test results		
Classification according to JIS 5758 (2010)		F25LM - 9030 (MS-2)		
Slump (mm)	Vertical	50°C	0	
		5°C	0	
	Horizontal	50°C	0	
		5°C	0	
Elasticity recovery rate (%)		92		
Tensile Property	Tensile Strength (N/mm ²)	Aluminum plate	23°C	0.2
		Mortar plate	23°C	0.2
		Aluminum plate	-20°C	0.3
		Mortar plate	-20°C	0.3
Adherability at maintained extension (at 23°C / -20°C)		Aluminum plate	No failure/No failure	
		Mortar plate	No failure/No failure	
Adherability after compression heating and tensile cooling		Aluminum plate	No failure/No failure	
		Mortar plate	No failure/No failure	
Adherability at maintained extension after immersion in water		Aluminum plate	No failure/No failure	
		Mortar plate	No failure/No failure	
Volume loss (%)				1.1
Durability		Conforming to 9030		

* Test results show typical values.

Tensile adherability conforming to JIS A 1439 (2010)

Test substrate	Processing conditions	Test temperature	M ₅₀ (N/mm ²)	T _{max} (N/mm ²)	E _{max} (%)
Aluminum plate	After curing	23°C	0.14	0.30	600
	After heating	23°C	0.17	0.36	580
	After water immersion	23°C	0.15	0.32	530
Mortar Plate	After curing	23°C	0.14	0.32	680
	After heating	23°C	0.19	0.43	620
	After water immersion	23°C	0.15	0.30	510

* Test results show typical values.

Hardening property Shown below are pot life and tack-free time

Temperature at application	Pot life	Tack-free time
5°C	5 hours	Within 24 hours
23°C	4 hours	Within 24 hours
35°C	2 hours	Within 24 hours

Selecting primers

Application (Substrate)	Product name
Metal and varnished metal surfaces	Primer UM-2
PCa, concrete, and other porous surfaces	Primer-UM-2

*Use Primer SS-1 for heat-insulating made of coated steel sheet

● Open time for Primer UM-2

Temperature	Time
5°C - 20°C	30 minutes - 8 hours
20°C -	20 minutes - 8 hours

● Standard applicable quantity for Primer UM-2

	Applicable length in meters (per can)
Non porous materials	180
Porous materials	90

*UM-2; 500 ml / can

* The values are calculated based on joint width of 10 mm x joint depth of 10 mm and application loss of 30%.

● Precautions for selection and use of primers

- Be sure to use Primer UM-2
- Before applying the primer, clean the joints thoroughly and check that the surface of the substrate is completely dry.
- Avoid using a brush that has been used for application of some other primers.
- Apply the primer in a thick coat to porous material surfaces and in a thin and even coat to non-porous material surfaces.
- If more than 8 hours have passed since the primer was applied, apply the primer again.
- Do not apply the primer to other than the application surfaces. If the primer is applied to other than the application surfaces, immediately wipe off the primer with a cloth immersed in a solvent.
- Once you open a primer can, use all the primer in the can within the day. If not, pour necessary amount of the primer into some other container and use it.
- Place the lid immediately after use, because the primer is very sensitive to moisture in the air
- The shelf life of Primer UM-2, when kept unopened in a dark cold place, is 6 months after the manufacturing date.

Note for designing joints

To fully enjoy the 100% waterproof performance of Penguin Seal MS2500, the dimensions of joints should be designed so as to minimize the sealant fatigue that can be caused by possible movement of the sealant after joint sealing. The required width of the joint should be determined with the following taken into consideration: acceptable distortion of the sealant, linear expansion coefficient of components, and temperature range.

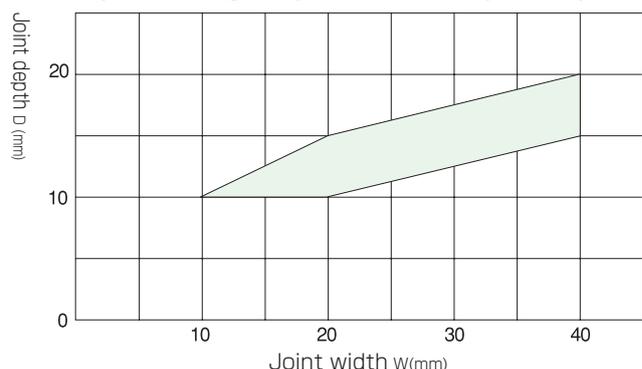
● Acceptable extension ratio and shear transformation ratio of the sealant

	Extension		Shear transformation		Durability Classification JIS A5758:2010
	M1	M2	M1	M2	
Penguin Seal MS2500	20%	30%	30%	60%	9030

M1: Movement with temperature change considered

M2: Movement with wind, earthquake, and vibration considered

● Acceptable range of joint width and joint depth



General precautions for Penguin Seal MS2500

- The sealant will not adhere to surfaces where no primer has been applied beforehand. Be sure to use a primer specified, and apply it thoroughly onto the intended surface. Make sure there is no portion left unprimed or unevenly primed.
- Application of the sealant in a thin coat of 0.5 mm or less can cause so-called a phenomenon of thin-layer uncuring. To prevent thin-layer application of the sealant, avoid using round finish. Instead, adopt straight-line finish.
- Prior to application to poorly adherable substrates, including acrylic mat-finish electropainted substrates and fluoropolymer painted substrates, and to various molded rubbers and gaskets, check for adherability to determine whether or not the sealant should be used.
- Do not use silicon-coated tapes as bond breakers. Always use polyethylene tapes.
- When the sealant is applied to interior surfaces, it may remain tacky on them.
- Prior to spraying a paint over the sealant, check that 48 hours or more (at 20°C) have passed since the sealant was applied and that the surface of the sealant has cured.
- Some aqueous sealers and aqueous paints can be repelled when applied on the sealant. Besides, they can cause contamination (surface tack and discoloration) with time. Check for applicability to the sealant prior to use through paint manufacturers or through contact with us.
- Avoid using oil paints (alkyd and phthalic acid resin paints) and 1-liquid mild solvent soluble urethane resin paint and other oxidation polymerization paints because they will not get dry.
- The shelf life of Penguin Seal MS2500 is 6 months (unopened).

Precautions for application

- Do not try to apply the sealant when the application surface is wet, including when it is raining or snowing.
- Do not apply the sealant to damp or wet joint surfaces such as those of concrete, mortar, or ALC having a high water content. Otherwise, poor curing, poor adhesion, swelling and other failures may occur. Check that the surfaces are completely dry prior to application.
- Prevent water from mixing in the sealant.
- To clean the application surfaces, select a cleaning detergent that will not damage the joining surface. Do not use alcohols.
- Blend to use the base materials and hardening materials provided in a set and a specified toner. Once you open the cans, try to finish them up at a time.
- To prevent poor hardening and pockmarks on the surface layer, always use a can-rotating mixer to provide stable mixing and reduce trapped bubbles. Prior to operation of the mixer, check that the paddle size is suitable for the volume of materials.
- Using a can-rotating mixer, mix the materials thoroughly until they are uniformly mixed (for 15 minutes). Be sure to follow the mixing ratio. Scrape the mixture off the paddles while mixing.

Precautions for handling

- The sealant is developed and manufactured for general industrial use. Do not use it for other than the intended purposes.
- Store the sealant in a dry, well-ventilated, dark and cold place (at 25°C or lower) while avoiding direct sun and rain.
- Be sure to wear protective gloves and glasses in handling the sealant.
- Make sure the working area is well ventilated in handling the sealant.
- For disposal of vacant containers of the sealant, have a licensed industrial waste disposal contractor handle it.

In case it happens--- First-aid treatment

- In case the sealant comes in contact with your skin, immediately remove it with a piece of cloth. Then thoroughly wash the skin with plenty of soap and water. If irritation or inflammation occurs, immediately consult a doctor.
- In case the sealant gets into your eyes, rinse them thoroughly with clean water for at least 15 minutes and immediately consult an eye doctor.
- In case you inhale a lot of vapor of the sealant, move to a fresh-air area, rest while keeping yourself warm. Then immediately consult a doctor.
- In case you ingest the sealant, rinse your mouth with water, and drink a lot of water to induce vomiting. Then immediately consult a doctor.
- In case the sealant is splashed onto your clothes, try to remove it with a piece of cloth. Since it will be very difficult to remove it completely, be careful not to splash it.

For more detailed information on storage, first-aid treatments, emergency measures (including fire and leakage), and disposition, refer to the Material Safety Data Sheet (MSDS).

Volume and packing

●Metal can specifications (Can diameter φ217)

Product name	Volume	Quantity
Penguin Seal MS2500 (Base material and hardener set)	4-liter set	2
Toner for common use for 2500/169N/980/7000	200g	20 packages x 2

●Eco can specifications

Product name	Volume	Quantity
Penguin Seal MS2500 Eco-CAN (Base material and hardener set)	4-liter set	2
Toner for common use for 2500/169N/980/7000	200g	20 packages x 2

*For mixing, a blender specific for Eco-CAN is required. Use the paddles for cans of φ 217 in diameter.

●Eco-pack specifications

Product name	Volume	Quantity
Penguin Seal MS2500 Eco-Pack (Base material and hardener set)	2-liter set	4
Toner for common use for 2500/169N/980/7000	100g	40 packages x 2

*For mixing, a blender specific for Eco Pack is required. Use the paddles for cans of φ 232 in diameter.

Color

●Tone for common use for 200/160N/980/7000

Light-gray, Con-gray, New-gray, Dark-gray, Black, Amber, Dark amber, Beige, Stainless-steel color, White

Pot- life regulators

Use a pot-life regulator ("hardening retardant" or "hardening accelerator") when the sealant is applied under severe conditions such as in mid-summer or in mid-winter.

Use up to one bag of regulator per can (set). As to retardants, using a more-than-necessary amount of retardant may result in a delay in the initial setting time for hardening.

- Hardening retarder: Use "2500/2570/7000 Hardening Retarder."
- Hardening accelerator: Use "2500/2570/7000 Hardening Accelerator."

Notes:

The information and data contained in this catalogue are based on results of the tests we carefully conducted. However, the performances and the properties of the product may differ according to materials and application conditions. Carefully consider and check the above before use. The product descriptions contained in this catalogue are subject to change without notice.

SUNSTAR ENGINEERING, INC.

< Main Office > Asahi-cho 3-1, Takatsuki, Osaka, Postal No. 569-1134
URL: <http://www.sunstar-engineering.com/>

Tokyo Office: Mita 1-3-36, Minato-ku, Tokyo, 108-0073	Phone (03)3457-1990
Sapporo Sales Office: Sapporo Ryutsu Soko Higashi Bldg, Kikusui-nanajo 2-7-1, Shiroishi-ku, Sapporo-shi, Hokkaido, 003-0807	Phone (011)820-2580
Sendai Sales Office: Ace 21 Bldg. 6F, Kitame-machi 1-15, Aoba-ku, Sendai-shi, Miyagi, 980-0023	Phone (022)261-3391
Nagoya Office: Kayaba 2-4-7, Chikusa-ku, Nagoya-shi, Aichi, 464-0086	Phone (052)722-6815
Osaka Office: Aketa-cho 7-1, Takatsuki-shi, Osaka, 569-0806	Phone (072)681-0759
Hiroshima Sales Office: Shoko Center 5-15-25, Nishi-ku, Hiroshima-shi, Hiroshima, 733-0833	Phone (082)277-8444
Shikoku Sales Office: Chokushi-cho 81, Takamatsu-shi, Kagawa, 761-8058	Phone (087)866-6231
Kyushu Sales Office: Kyukan-gofuku-cho Bldg, 3F, Tenya-machi 8-24, Hakata-ku, Fukuoka-shi, Fukuoka, 812-0025	Phone (092)281-3581

●Dealers

