SWANCOR 2213-A/B

Epoxy Adhesive for Composite Pipe Bonding

Green Energy & Environmental Protection

Product Description

SWANCOR 2213-A/B is a two component, ambient temperature curing paste adhesive. It shows high temperature resistance, up to 100 °C and excellent resistance to common chemicals.

Applications

SWANCOR 2213-A/B, is used for a wide range of applications, including crude oil conveyance, flow lines, fire water lines, potable water lines, seawater cooling systems, industrial waste and marine and offshore applications. Small packs for convenient handling, which allow the user to accurately deliver a measured quantity of adhesive with minimum wastage.

Fabrication Methods

Adhesive bonding

Typical Properties of Liquid Resin

Item		SWANCOR 2213-A	SWANCOR 2213-B
Appearance		Black paste	White paste
Viscosity*1	cps	600,000 ~ 1,000,000	100,000 ~ 400,000
Density	g/cm^3	1.55 ~ 1.75	1.20 ~ 1.40
A/B ratio (weight)		100 : 25	
Tg*2	°C	≧135	
Pot life			
25 °C /250g	min	30 ~ 50	
40 °C /250g	min	15 ~ 25	
Peak temperature			
25 °C /250g	°C	140 ~ 180	
40 °C /250g	°C	180 ~ 240	

*1 RVT#F-10rpm@25℃

*2 Curing condition：One hour at 125℃

Typical Cured Properties

A. FRP-FRP Tensile lap Shear Strength versus temperature

Temperature (°C)	Test result (MPa)	Test method
20	14.23 ~ 16.97	ISO 4587
40	12.33 ~ 14.51	ISO 4587
60	10.13 ~ 11.11	ISO 4587
80	10.40 ~ 11.00	ISO 4587
100	9.53 ~ 10.45	ISO 4587

* Curing condition: One hour at 125 °C

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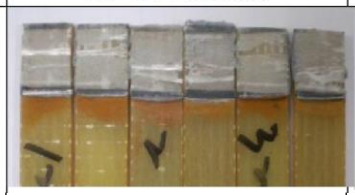
B. FRP-FRP Tensile lap Shear Strength versus water immersion

Test condition	Test result (MPa)	Test method
20 QC / 500 hrs	13.10 - 16.40	ISO 4587
20QC / 1000 hrs	12.27 - 15.89	ISO 4587
20 QC / 2000 hrs	7.78 - 15.98	ISO 4587
80 QC / 500 hrs	6.62 - 8.90	ISO 4587
80QC / 1000 hrs	7.12-8.22	ISO 4587
80 QC / 2000 hrs	6.20 - 7.36	ISO 4587
100°c / 500 hrs	5.27 - 7.29	ISO 4587
100°C / 1000 hrs	5.13 - 6.11	ISO 4587
100°C / 2000 hrs	4.41 - 5.41	ISO 4587

* Curing condition: One hour at 125°C

C. Water exposure test

	20 °C / 2000hrs	80 °C / 2000hrs	100 °C / 2000hrs
SWANCOR 2213-A/B			
Failure surface of fiberglass	Yes	Yes	Yes

D. Shear Strength by compressive loading

Test temperature	Test result (MPa)	Test method
20QC	19.75 - 21.85	ASTM 2564

* Curing condition: 7 days at room temperature+ 125°C for one hour

E. Weight absorption test

Chemical condition			Result(%)
Water	80QC	2000 hour	4.66
Methanol 100%	20Qc	2000 hour	1.54
Acetone 100%	20Qc	2000 hour	0.13
Xylene 100%	20Qc	2000 hour	0.3
Xylene 100%	80QC	2000 hour	0

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Notice :

1. The epoxy and hardener have to well mix by regular proportion for use.
2. Suggest curing at 125°C to obtain better performance.
3. After epoxy and hardener are mixed, it should be used in valid period, in case it gels and can't be use.
4. All implement for daubing and stowing should be cleaned right after used.

Material Safety and Handling Informaiton

SKIN CONTACT:
Thoroughly wash exposed area with soap and water immediately. Remove contaminated clothing. Launder contaminated clothing before re-use.
EYE CONTACT:
Flush with large amount of water immediately and continuously for 20 minutes, lifting upper and lower lids occasionally. Get medical attention.
INGESTION:
Do not induce vomiting. Keep person warm, quiet and get medical attention. Aspiration of material into the lungs can cause chemical pneumonitis which can be fatal.
INHALATION:
If affected, remove individual to fresh air. If breathing is difficult, administer oxygen. If breathing has stopped, give artificial respiration. Keep person warm, quiet, and get medical attention.
PERSONAL PROTECTION:
Do not breathe vapors. High concentration of vapor can be hazardous. Keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. For large spills, warn public of downwind explosion hazard. Check area with explosion meter before re-entering area. Ground and bond all containers and handling equipment.

Resin Storage

The epoxy resin should retain its chemical properties for at least 36 months when stored in a dry place in its original closed packaging under 30°C.
These hardeners should retain their chemical properties for at least 36 months when stored in their original closed packaging, in a cool, dry environment, away from direct sunlight and at a temperature not over 30°C. If possible, provide nitrogen padding in the headspace of opened containers and bulk storage facilities. Hardeners are hygroscopic and will absorb moisture and carbon dioxide from the atmosphere if not stored properly. Be sure to close containers immediately after use. The absorption of moisture and/or carbon dioxide will affect the chemical behavior of the material and the performance properties of the final product.

Package

1. **SWANCOR 2213-A** is supplied in 200 g PP jar..
2. **SWANCOR 2213-B** is supplied in 50 g PP jar..

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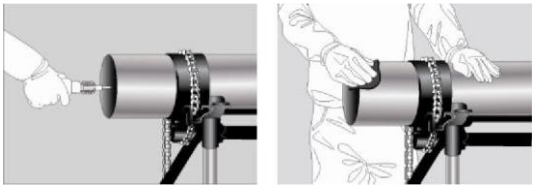
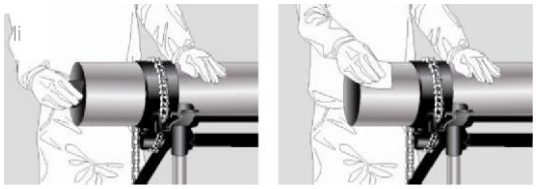
Procedure

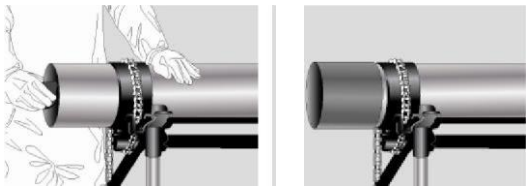
1. The removal of all traces of oil and grease from the surface is essential. Degrease by solvent such as acetone, MEK, Ethanol or iso-propanol solvent vapor in a vapor degreasing unit. Remove inner and outer surface deposits, e.g. tarnish, rust or mill scale, preferably by blasting with sharp grit.



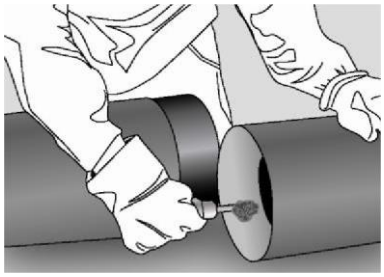
2. Clean the joint surfaces with a wire brush, or with abrasive cloth, or with waterproof abrasive paper. Dry, and remove all particles.



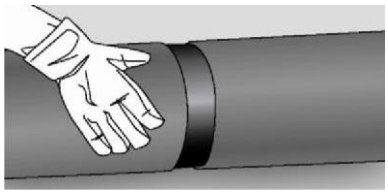
3. If bonding schedule has not taken place within one hour after pretreatment, preserve by priming the bond surfaces immediately or re-cleaning of all surface must be done.



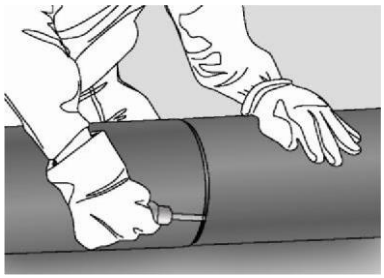
4. Mix SW 2213A and SW2213B between 20°c to 35°c manually or robotically at least 3 minutes until the mixture becomes an uniform color. A thin, uniform layer of adhesive 0.02 to 0.03 in (0.5-0.8 mm) thick to inner surface and 0.03 to 0.04 in (0.8 to 1 mm) thick to outer surface will normally impart the greatest lap shear strength to the joint.



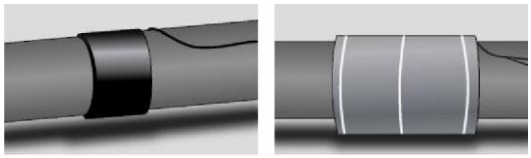
5. Insert the spigot into the socket end push it home, rotating the pipe slowly one quarter of a turn if possible. Be sure the spigot butts against the pipe stop and when necessary tap on a wooden block, placed over the pipe end. Never hit with a metal hammer directly on pipes and fitting.



6. Remove excess adhesive from the surface with the spatula (and from the inside of the joint if possible). *Attention: Do not disturb the curing of the adhesive by moving or vibrating the joint.



7. Good properties are obtained after ambient temperature curing, but in order to achieve optimum performance properties, an elevated temperature cure or post-cure is recommended. Insulate the heating blanket and to close one of the pipe ends is a way to prevent draught. For maximum chemical resistance, the product should be cured at 125°C for 1 hour.



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