

Understand the VCI Paper in 10 min ～ adpack® ～



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ADCOAT CO., LTD.
Technical Division

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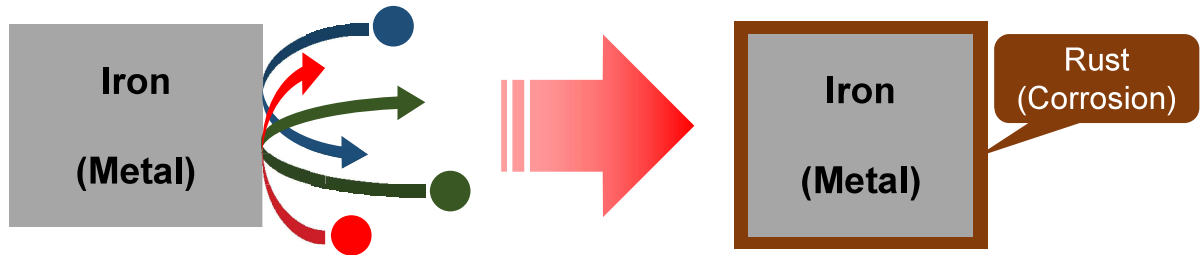
Items

1. What's the rust (corrosion)?
2. General anti-rust methods
3. Attention for using the VCI paper
4. Performance of adpack® [main test]

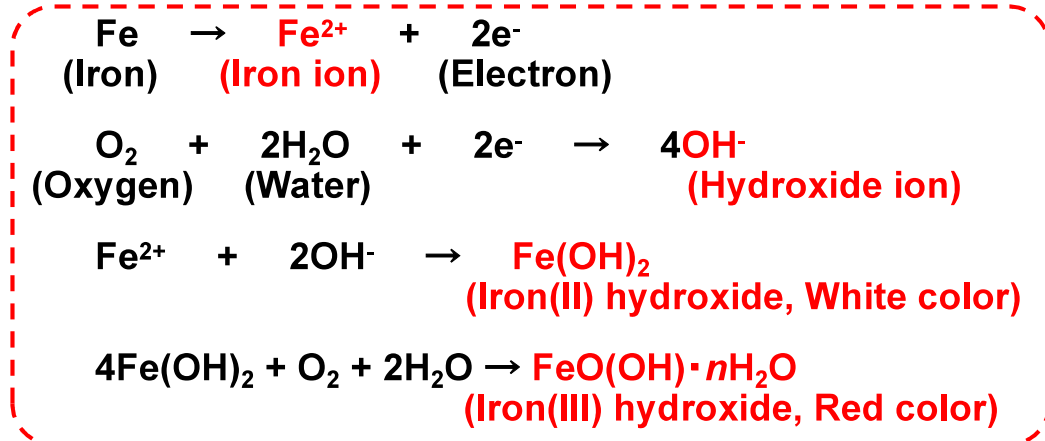
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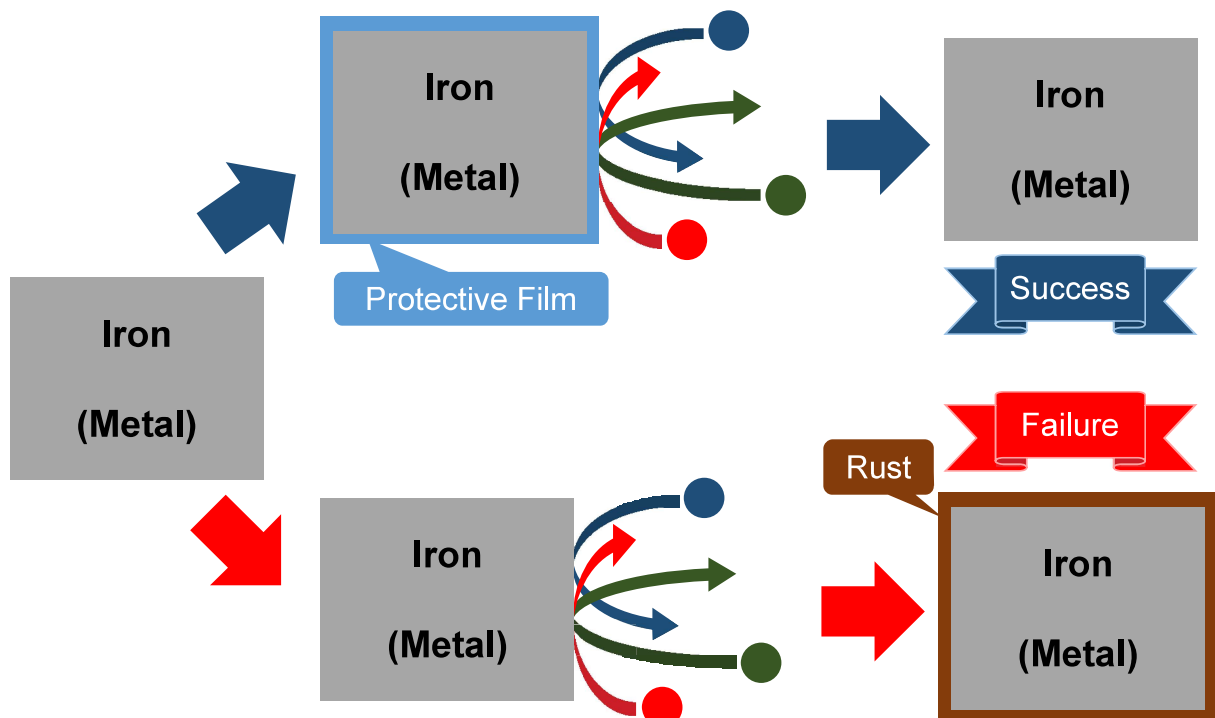
Cause of Rust / Corrosion



- Water [H₂O]
- Oxygen [O₂]
- Corrosive substance [NO_x, Cl, etc.]



Method of Anti-Rust / Anti-Corrosion



- Water [H₂O]
- Oxygen [O₂]
- Corrosive substance [NO_x, Cl, etc.]

Anti-Rust / Anti-Corrosion Method

	Form	Method
VCI Paper	Paper	Corrosion Inhibitors
VCI Film	Film	Moistureproof (main)
Corrosion Inhibitors	Powder, Folding	Corrosion Inhibitors
Rust Preventive Oil	Liquid	Corrosion Inhibitors, Oil Film
Desiccant	Powder, Beads	Dehumidification
Painting	Liquid → Solid	Protection of Metal Surface
Plating	Solid	Protection of Metal Surface

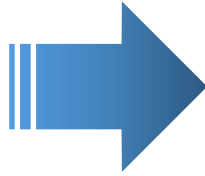
VCI: Volatile Corrosion Inhibitor

Attention for Using the VCI Paper

1. If possible, use VCI Paper in a sealed container (bag)	→	VCI gas fills the container (bag)
2. Clean on the metal surface	→	Fingerprinting or dust etc. is the cause of rust/corrosion.
3. Do not recommend reuse	→	VCI in VCI Paper is decreasing
4. Do not mistake combination of VCI Paper and metals	→	No effect Discoloration of metal surface
5. Put the remaining product in a sealed container (bag)	→	If not sealed, deterioration of VCI paper will be accelerated

Usage of the VCI paper < I >

Container

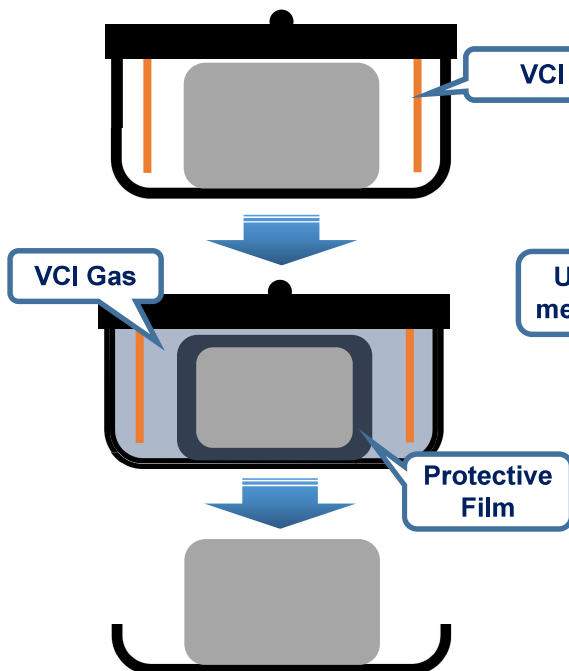


Wrapping

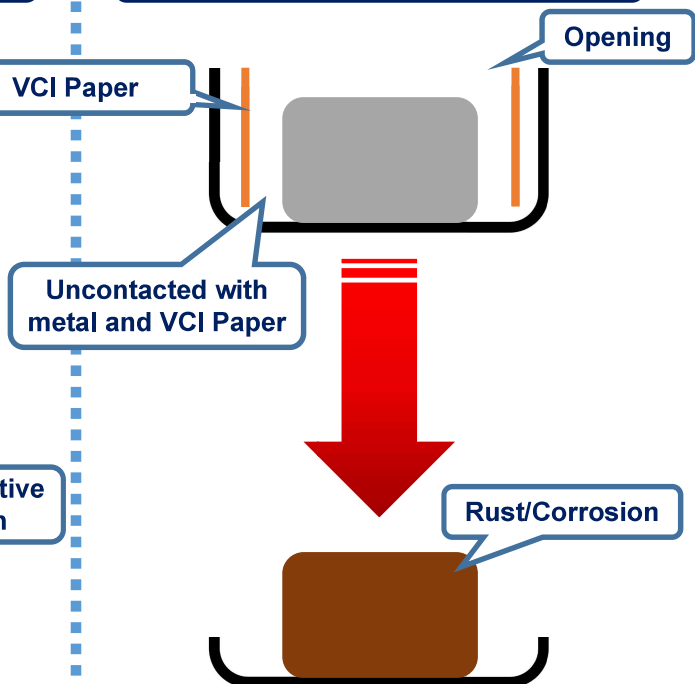


Usage of the VCI paper < II >





Correct Method



Wrong Method



VCI Paper << adpack® >> I

<p>adpack White Coated type for Iron & Steel [Long term]</p>	<p>adpack-G Impregnated for Iron & Steel</p>
 <p>anti-corrosion paper adpack®</p>	 <p>anti-corrosion paper adpack®</p>
<p>adpack-S Impregnated for Ferrous & Non-Ferrous</p>	<p>adpack-C Impregnated for Copper & Copper Alloy</p>
 <p>anti-corrosion paper adpack®</p>	 <p>anti-corrosion paper adpack®</p>

VCI Paper << adpack® >> II

		Iron Steel	Copper & Copper Alloy		
			Copper	Brass	Phosphor Bronze
adpack White (For Iron & Steel, Long term)	TK-610 (M) etc.	◎ (Long term)	×	×	×
adpack-G (For Iron & Steel)	GK-7 (M) etc.	◎	×	×	×
adpack-S (For Ferrous & Non-Ferrous)	SK-7 (M) etc.	○	◎	○	○
adpack-C (For Copper & Copper Alloy)	CK-6 (M) etc.	—	◎	◎	◎

◎: Very superior effect ○: Effective —: No effect ×: No good (Non Usable)

VCI Paper << adpack® >> III

		Plating			
		Zinc	Tin	Chrome	Nickel
adpack White (For Iron & Steel, Long term)	TK-610 (M) etc.	×	○	○	×
adpack-G (For Iron & Steel)	GK-7 (M) etc.	—	○	○	○
adpack-S (For Ferrous & Non-Ferrous)	SK-7 (M) etc.	○	○	○	○
adpack-C (For Copper & Copper Alloy)	CK-6 (M) etc.	—	○	○	○

◎: Very superior effect ○: Effective —: No effect ×: No good (Non Usable)

Negative Influence [Mismatch]

Packaging Phosphor Bronze in adpack-G

Method

JIS Z 0321: Volatile corrosion inhibitor paper for copper and copper alloys
Contact Test: 50°C / 95%RH / 3 days



Blank
Badly Discoloration



adpack-G
Slight Discoloration



adpack-S
Not Change

Cause

Blank: Components contained in paper [Sulfur compounds, etc.]
adpack-G: VCI for Iron & Steel

Effect on Rubber / Resin I

	Rubber		
	Silicone	Urethane	Nitrile
adpack White (For Iron & Steel, Long term)	×	×	○
adpack-G (For Iron & Steel)	○	×	◎
adpack-S (For Ferrous & Non-Ferrous)	◎	◎	◎
adpack-C (For Copper & Copper Alloy)	◎	◎	○

◎: Not Discoloration ○: Very Slight Discoloration △: Slight Discoloration
 ×: Discoloration ××: Badly Discoloration

- Contact test
- PE laminated type VCI Paper
- Check color only
- High temperature & humidity, 30 days

Effect on Rubber / Resin II

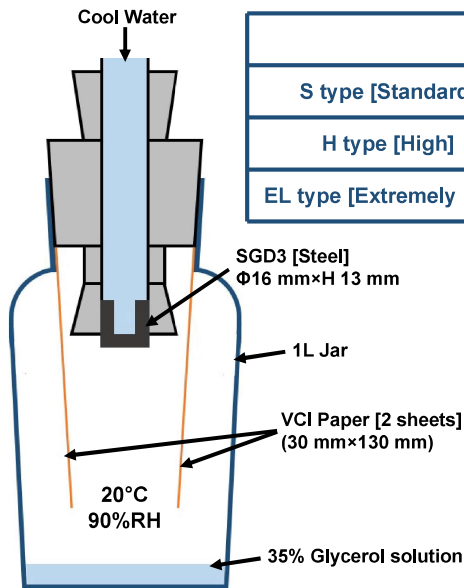
	Resin		
	Acrylic	ABS	Epoxy
adpack White (For Iron & Steel, Long term)	◎~○	△	×
adpack-G (For Iron & Steel)	◎~○	○	○~△
adpack-S (For Ferrous & Non-Ferrous)	◎~○	○	○~△
adpack-C (For Copper & Copper Alloy)	◎~○	○	○~△

◎: Not Discoloration ○: Very Slight Discoloration △: Slight Discoloration
 ×: Discoloration ××: Badly Discoloration

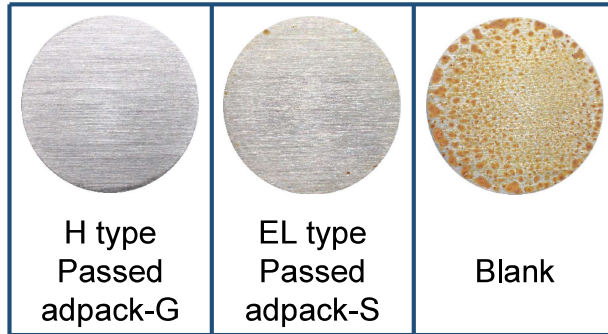
- Contact test
- PE laminated type VCI Paper
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Performance of adpack® << VIA test >>

JIS Z 1535:2014 Corrosion inhibitor treated papers for iron and steel
 “ 6.2 Test method of vapour inhibitor ability ”



	Dew condensation	Judgment
S type [Standard]	after 20 h from start	Not Rust
H type [High]	after 1 h from start	Not Rust
EL type [Extremely Low]	after 20 h from start	Anti-corrosion rate: more than 50%



VIA: Vapor Inhibitor Ability

Performance of adpack® << Size >>

Recommended Size

more than 30 cm×30 cm [In the case of one side = 30 cm]

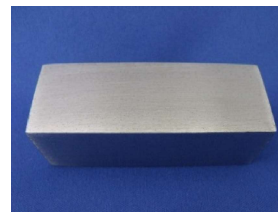
Temp.: 25°C / 5°C
 Humid.: 100%RH
 Period: 1 day



S45C (Carbon steel) Pure Water

Acrylic case [One side is 30 cm]

adpack-G [for Iron & Steel]



Pass [Not Rust]
 Size: 75 mm×75 mm



Failure [Rust]
 Size: 50 mm×50 mm

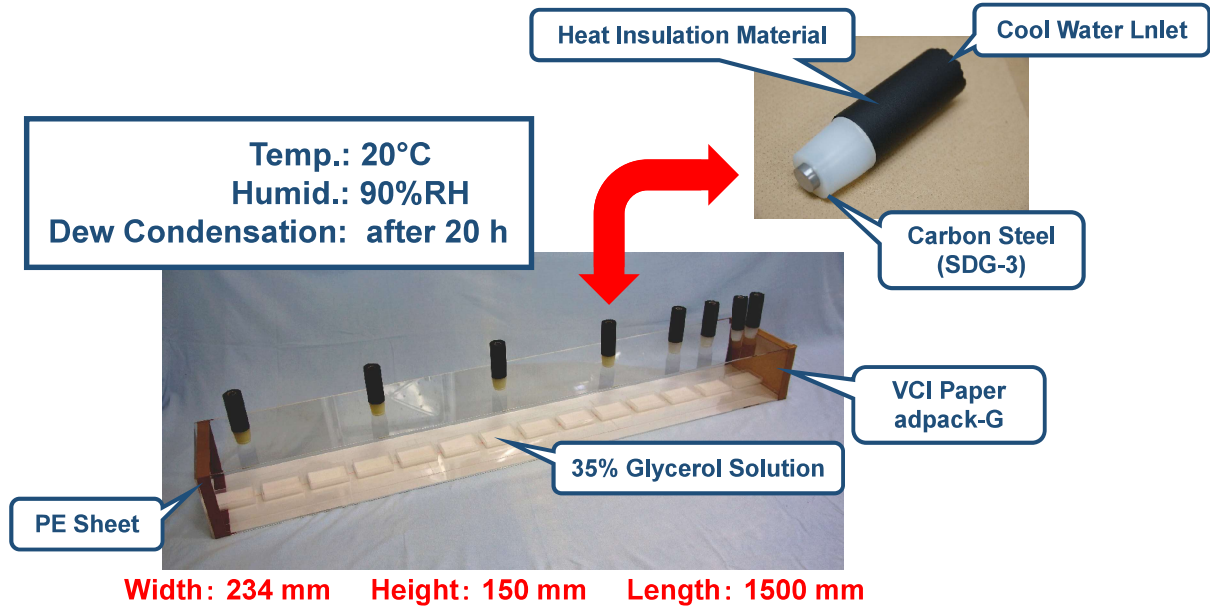


Blank

Performance of adpack® << Length >> I

Recommended Length

less than 30 cm [between VCI Paper and metal]



Performance of adpack® << Length >> II



Width: 234 mm Height: 150 mm Length: 1500 mm

- A: No rust
- B: Extremely small rust (a loupe needs)
- C: Small rust
- D: A little better than Blank
- F: Same as Blank

Blank	5 cm Grade B	20 cm Grade B	30 cm Grade B	50 cm Grade B	80 cm Grade B	110 cm Grade C	140 cm Grade C

Grade		OK		NG			
A	B	C	D	E	F		
BEST			WORST				

Acknowledgments

Thank you for your kind attention.

***Eliminate Rust with adpack!
ADCOAT CO., LTD.***