

High Hardness Hold Coating

NEOGUARD TOUGHNESS



NIPPON PAINT MARINE

Mechanical damage resistant coating for cargo spaces

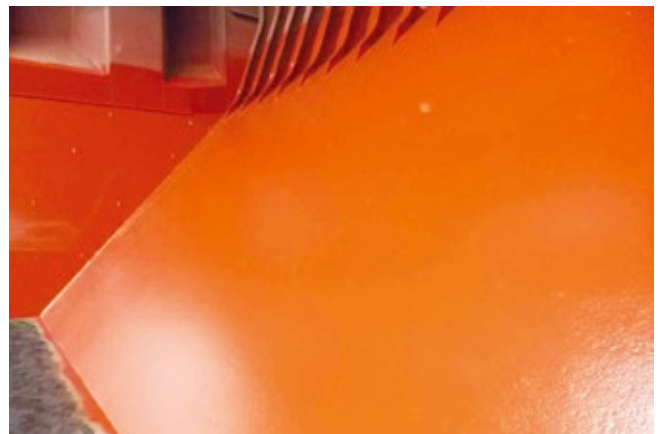
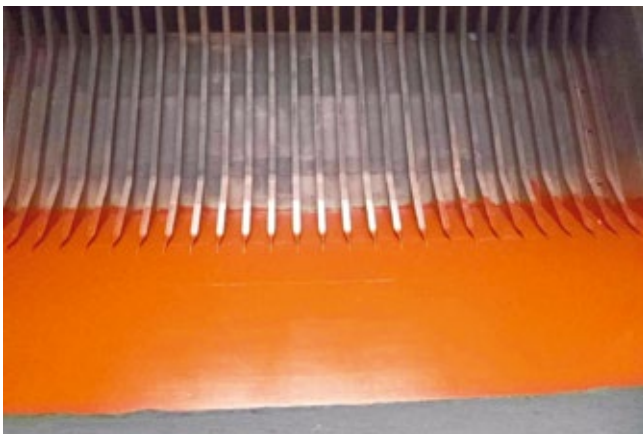
The cargos for the bulk carriers, like iron ores or coal, give severe damages to the cargo holds at the time of loading and thereby necessitate repeated repair of the cargo holds. Besides, when moving cargos from ship to land too, the cargo holds tend to be damaged due to repeated use of heavy machineries, which will result in very severe damage.

NEOGUARD TOUGHNESS is a tough coating film for long-term corrosion protection and damage reduction of the cargo holds. It will contribute to reduce the total maintenance cost by protecting the cargo holds from damages.

Toughness built in

NEOGUARD TOUGHNESS

- ✓ Tough and solid film
- ✓ Long-term corrosion protection



Neoguard Toughness painted to Hopper : Cargo holds of 207,684 DWT BC

NEOGUARD TOUGHNESS

Neoguard Toughness supports M & R in providing with its heavy-duty epoxy coating, which leads long-term protection and abrasion resistance, and contributes to total maintenance reduction.



- Heavy-duty epoxy coating** : Resistance to mechanical damages
– Excellent corrosion protection
- Good workability** : Airless spray available
High build to 250 μm per coat
Easy application to NB and M&R
- High solids** : Reduction of air pollution ,
Consideration toward Safety & Health

Proven Protection



High durability

Hardness is figured as 4H to 5H.

Neoguard Toughness	our current GF epoxy paint
 4 H ~ 5 H	2 H

*Test procedure

Scratch hardness (Pencil method) JIS K 5600-5-4

① Pencils with each hardness is to be inserted to the apparatus and it is moved slowly on the test piece.

② Erase the trail on the test piece.

③ Check the hardest pencil hardness which doesn't yield any scratch on the paint film.



Resistance to abrasion

Compared with our glass flake epoxy coating, NEOGUARD TOUGHNESS is about half in volume with the TEBAR TEST.

Neoguard Toughness	our current GF epoxy paint
 51 mg	95 ~ 100 mg

*Test procedure

The Tebar test (ASTM D1044)

① Measure a test plate's weight. (W_0)

② Under the following condition, run the tebar test.

【Load】 1,000 g/one side

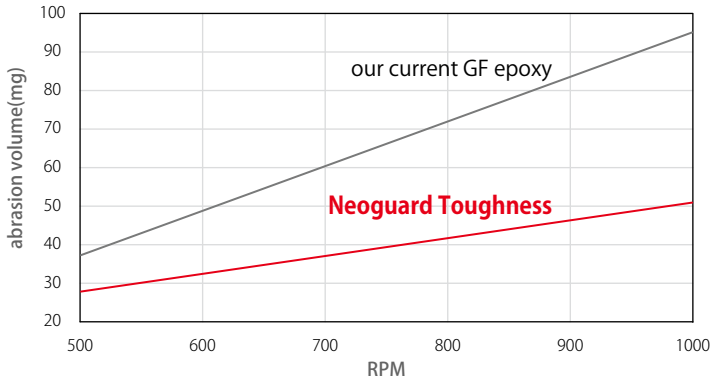
【Taber Wheel】 CS-10

【Rotation Number】 1,000 times

③ Measure the test plate's weight again after the test. (W_{1000})

④ Calculate abrasion weight. ($E = W_0 - W_{1000}$)

*Repeat this test three times and its abrasion weight should be evaluation value.

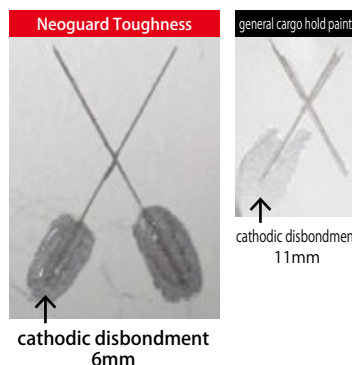


Corrosion protection

NEOGUARD TOUGHNESS's cathodic disbondment from scribe is about half of that of general cargo hold epoxy coating.

Neoguard Toughness
6 mm
general cargo hold paint
11 mm

(condition after 1 month)



*Test procedure

The Corrosion Protection test (company research)

① After connected to Zinc pieces, test plates should be cross-cut and soaked into salt water. (for 1 month · DFT 200 μ m)

② Measure the width of exfoliating film from the cross-cut.



Into salt water (40°C c 3%)

Product Information

Product Name	NEOGUARD TOUGHNESS
Suitable Use	Mechanical damage resistant coating for cargo spaces
Colour	Gray, Red oxide
Volume Solids	80 ± 2%
Typical DFT	DFT : 100 ~ 250 μm / WFT : 125 ~ 313 μm
Theoretical Coverage	0.285 kg/m ² , 5.33 m ² /L (150 μm)
Drying Time (20°C)	Surface dry : 1 hour / Dry hard : 7 hours / Full cure : 6 days
Secondary Surface Preparation	Blast-cleaned to ISO-Sa 2½* and up or power-tool-cleaned to ISO-St 3*
Application Apparatus	Airless spray, Brush • Roller (For touching up only small areas)

* ISO 8501-1 : 2007

Standard Specification

Process	Product	Thickness (μm)	Overcoating interval (20°C)	
			Min.	Max.
Surface Preparation	Blast-cleaned to ISO-Sa 2½*			
Shop Primer	NIPPON CERAMO	15	—	—
Secondary Surface Preparation	Blast-cleaned to ISO-Sa 2½* and up or power-tool-cleaned to ISO-St 3*			
Holding Primer	NIPPON CERAMO T/U	20	16 hours	—
First Coat	NEOGUARD TOUGHNESS Red oxide	150	7 hours	7 days
Second Coat	NEOGUARD TOUGHNESS Gray	150	7 hours	7 days
Total thickness		300		

* ISO 8501-1 : 2007



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