GUIDE FOR RESISTANCE OF JOTAGUARD 600 SERIES DRY-CARGO HOLD COATINGS

The categorization of cargos is per normal market split. There are natural variations in the physical properties of bulk cargo that also will give varying impact on the cargo hold coating. This information is intended as a guide on expected performance, but extreme physical properties will individually and in combination possibly have a more adverse effect on the coatings performance:

5 categories of cargo

1. Coal/Coke
   Discoloration
   Cargo may discolor the finish coatings on areas where the cargo has direct contact with the paint. The mechanical integrity of the film is not affected.

2. Hard cargoes (i.e. Ore/Scrap/Pig iron/sharp angle cargos)
   Mechanical impact
   Paint surface might be affected mechanically by the cargo from particle shape and specific weight

3. "Soft" cargoes (dry food, paper, sugar)
   Discoloration
   Cargo may be discolored / contaminated by the topcoat on areas where the cargo is in direct contact with the paint.

4. Aggressive cargoes (including warm cargoes)
   Water content and chemical reaction
   Water may result in chemical reactions for some cargoes, with potential harm on the coating. Other chemical reactions can also be harmful to the coating
   Temperature
   Some products may be warm or create heat by chemical reaction. This can give temperature levels above the coatings temperature resistance.

5. Ballast water
   Corrosion
   Products specifically designed for dry-cargo holds can give a more limited corrosion protection.

Performance expectation:
A - Excellent
B - Very good
C - Good
D - Fair

Note:
The following table is a guide only and resistance is not limited to cargo types mentioned in the table. For questions on specific cargo types not covered by the guide, please contact your local Jotun representative for information.

Cargo	Cargo Category	Coating systems: 1x125 microns Jotaguard 630 1x125 microns Jotaguard 630	1x125 microns Jotaguard 660 1x125 microns Jotaguard 660	1x125 microns Jotaguard 660 1x125 microns Jotaguard 690 S	1x125 microns Jotaguard 690 1x125 microns Jotaguard 690 S	2x125 microns Jotacote Universal Jotacote Universal N10
Agribulk	3	B	A	A	A	A
Bauxite / Alumina	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Ballast sea water	5	D	B	A	A	A
Cement	4	C, (2,1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Coal	1	C, (1.1, 3.1)	B, (1.1, 3.1)	A, (1.1, 3.2)	A, (1.2, 3.2)	B, (1.1, 3.1)
Coke	1	C, (1.1, 3.1)	B, (1.1, 3.1)	A, (1.1, 3.2)	A, (1.2, 3.2)	B, (1.1, 3.1)
DRI/HRI*Direct Reduced Iron/Hot Briquetted Iron.*	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Fertilizer	4	C, (1.1)	B, (1.1)	B, (1.1)	A, (1.2)	B, (1.1)
Forest products	3	C	B	B	A	B
Grain	3	A	A	A	A	A
Iron ore	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Limestone	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Manganese ore	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Oilseed	3	A	A	A	A	A
Paper pulp	3	C, (3.1)	B, (3.2)	B, (3.2)	A, (3.2)	B, (3.1)
Pig Iron	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Phosphates, *Processed Phosphates (DAP, MAP, TSP)*	4	D, (2.1)	B, (2.2)	B, (2.2)	A, (2.3)	B, (2.2)
Phosphate Rock	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Potash	4	C, (2,1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Rice	3	A	A	A	A	A
Rock salt	4	C, (2,1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Salt	3	B, (1.1)	A, (1.2)	A, (1.2)	A, (1.2)	A, (1.2)
Scrap	2	D, (2.1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Silica sand	2	C, (2.1)	B, (2.2)	B, (2.2)	A, (2.3)	B, (2.1)
Soy bean	3	A	A	A	A	A
Steel products	2	D, (2,1)	C, (2.2)	B, (2.3)	A, (2.3)	C, (2.1)
Sugar	3	A	A	A	A	A
Sulphur solid	4	C, (2,1)	C, (2.1)	B, (2.2)	A, (2.3)	C, (2.1)
Tapioca	3	A	A	A	A	A
Urea	4	B, (1.1)	A, (1.2)	A, (1.2)	A, (1.2)	A, (1.2)
Wheat coarse	3	A	A	A	A	A
Wood	3	B	B	A	A	A

Notes for the resistance list

1.0 Heat: these cargoes may be higher than ambient temperature and/or somewhat chemically aggressive.

1.1 The coating's temperature limit for dry exposure to this cargo is 120 °C / the limit for wet exposure is 60 °C

1.2 The coating's temperature limit for dry exposure to this cargo is 120 °C / the limit for wet exposure is 80 °C

2.0 Abrasion and impacts: these cargoes are more mechanically aggressive than others

2.1 Degradation of the coating can be expected on high-impact areas. Full curing of the coating is recommended before taking cargo. A more abrasion-resistant coating may be preferred for this cargo.

2.2 Gradual degradation of the coating can be expected on high-impact areas. Full curing is of the coating is recommended before taking cargo. The coating is well suited for taking this cargo.

2.3 Eventual degradation of the coating can be expected on high-impact areas. Full curing is of the coating is recommended before taking cargo. The coating is extremely well suited for taking this cargo.

3.0 Discoloration: these cargoes discolor the surface of coatings (a cosmetic effect, not detrimental to the coatings long-term protective performance)

3.1 The surface of the coating discolor wherever prolonged direct contact occurs

3.2 The surface of the coating gradually discolor after taking multiple cargos of this type wherever prolonged direct contact occurs.