

Marine Paint Manual

Issue Date: April 2010

Safety Precautions

- Fire and Explosion

1. - Provide local extract ventilation in an area where paint and thinner are used.
 - Ventilate well: Especially in enclosed environment such as a tank.
 - Check the ventilation measuring the gas concentration with a gas test tube, where necessary.
2. The ignition sources that can cause fire or explosion must be under strict control.
 - Put a sign of "Caution: Flammable" in an area where paint and thinner are used.
 - No works that generate spark and heat (ex. welding, cutting, and distortion elimination) should be allowed near where paint is applied or stored.
 - To prevent fire caused by static electricity, earth the painting equipment (ex. airless spray) and avoid wearing any work clothing made of chemical fibers.
 - Use electrical appliances of an explosion proof type, if required.

- Handling and Storage

1. Application must be conducted in an area equipped with local extract ventilation and free from flame.
2. While painting and drying, ventilate thoroughly and avoid inhaling the fumes or gases.
3. When handling, protect your skin wearing, for example, organic gas protection mask, air-supplied respirator, hood, safety glasses, long-sleeved work clothing, towels, gloves, aprons, and so on.
4. After the application, rinse mouth and wash hands thoroughly so that the paint and so on are removed.
5. Store the paint and thinner in the place provided by the Fire Service Law according to the hazardous materials classification. Keep the container closed and store at temperatures below 40°C.

When the products have to be temporarily stored in the other place than the specified one due to the preparation for painting, provide an awning by sheet etc. to keep out rainwater, which makes the container rusty and mixes in the paint, and to avoid the change in quality (gelation, skinning and deterioration in anti-sagging property) caused by exposure to the sun.
6. Soak the paint dust and slag in water until they are disposed.
7. Store any product in the place out of children's reach.
8. Do not use the products for improper purposes.

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- Emergency Procedure

1. If a fire involving paint does occur, fight fire with foam, powder, CO2 foam.
2. If the paint and so on get in eyes, wash off with water and take medical advise from a doctor immediately.
3. If the paint splashes on skin, wash off with soap and water. When you feel pain or find any change in the appearance of the skin, consult a doctor immediately.
4. If you feel sick after inhalation of fumes, gases etc., lie quietly and, when necessary, consult a doctor immediately.
5. If you swallow the paints by mistake, consult a doctor immediately.
6. When you put the content in or out of the container, take care not to spill it. If it is spilled, cover it with sand and take appropriate measures: otherwise, soak it in water.

- Disposal

Treat the waste materials as industrial wastes complying with the Waste Disposal and Public Cleaning Law, or leave them to industrial waste processor.

- Other

The Product Service Data Sheets (TSDS), the Material Safety Data Sheet (MSDS) and package labeling together form an integral information system about each product. Please consult us beforehand when you are going to export them.

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Surface Preparation

1. Primary Surface Preparation

In the surface preparation for ship steel, a primary surface preparation is conducted to remove mill scales on the steel.

After that, shop primer is applied to the steel for the primary rust preventive.

The internationally used standards of rust preventive are as follows:

- (1) International Standard ISO 8501-1
- (2) Swedish Standard SIS 05 5900
- (3) Steel Structures Painting Council (SSPC) Standard

2. Secondary Surface Preparation

The standards including ISO, SIS and SSPC mentioned above provide the degree of rust removal for the steel that is applied with no shop primer.

In shipbuilding yards, shop-primed steel is used as primer steel. After the machining, before the painting, the shop-primed steel is provided with the secondary surface preparation to remove the rusted/damaged parts and the contaminants on the welds. Regarding this secondary surface preparation for the shop-primed steel, the Shipbuilding Research Association of Japan stipulated the "Standard of Steel Surface Preparation" (JSRA-SPSS).

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3. Comparison between Surface Preparation Grades (specified by ISO 8501-1 and SSPC)

(1) Surface Preparation with Hand Tools and Power Tools

Condition of Steel Surface	A		B		C		D		JSRA-SPSS Grades (For reference)
	Asa0	BSt0 Bsa0	CSt0 Csa0	DSt0 Dsa0					
Treatment Method & Condition after Treatment	Most of the surface is covered with mill scales and there is few, if any, rust.	The surface is getting rusty and mill scales start to come off.	Some mill scales have turned to rust, and the rest can be scraped off. A few rust pits are observed.	Mill scales have turned to rust and quite a lot of rust pits are observed.					
On the surface, there shall be no oil, grease, mud: and mill scale, rust, film and foreign material that are easily removed observable without a magnifying glass.	(Sufficient finish with hand tools and power tools)								Pt1
		BSt2	CSt2	DSt2					
It differs from ST2 in the necessity of more sufficient treatment until the metallic luster is given to the base.	(More sufficient finish with hand tools and power tools)								Pt2 Pt3
		BSt3	CSt3	DSt3					
On the surface, there shall be no oil, grease, mud: and mill scale, rust, film and foreign material that are easily removed observable without a magnifying glass.	(Light blasting SSPC-SP7)								
		BSa1	CSa1	DSa1					

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(2) Blasting

Condition of Steel Surface	A	B	C	D	JSRA-SPSS Grades (For reference)
	Asa0	BSt0 Bsa0	CSt0 Csa0	DSt0 Dsa0	
Treatment Method & Condition after Treatment	Most of the surface is covered with mill scales and there is few, if any, rust.	The surface is getting rusty and mill scales start to come off.	Some mill scales have turned to rust, and the rest can be scraped off. A few rust pits are observed.	Mill scales have turned to rust and quite a lot of rust pits are observed.	
On the surface, there shall be no oil, grease, mud: and almost no mill scale, rust, film and foreign material observable without a magnifying glass. All remaining dirt shall be fixed on the surface.	(Sufficient blasting SSPC-SP6)				Sd2
On the surface, there shall be no oil, grease, mud, mill scale, rust, film and foreign material observable without a magnifying glass. All observable remaining dirt shall be very small spots or thin lines.	(More sufficient blasting SSPC-SP10)				Sd3
On the surface, there shall be no oil, grease, mud, mill scale, rust, film and foreign material observable without a magnifying glass. The surface shall be evenly metal coloured.	(Blasting to achieve steel visually clean SSPC-SP5)				Sd3