

A coat of priming paint should be applied as quickly as possible after drying. The main disadvantages to this method are:

- A. A wet process with effluent and fume control requirements.
- B. Unsuitable substrate for metal spray and many two pack systems.
- C. A workshop operation with work limited to size of baths. Generally, pickling is done by specialist firms.
- D. Process not suitable for structural steel or large objects.

6. Abrasive Blast Cleaning : Prior to blast cleaning any obvious surface defects in the steel such as lamination, shelling, weld spatter, etc. should be removed by chipping or grinding.

Any defects unobserved prior to blast cleaning and priming should be treated at the priming stage and touched up as necessary. Where steel has been allowed to rust extensively, longer times for blast cleaning may be required.

It is therefore advisable to blast clean prior to rusting whenever practicable.

2.6.1 : ABRASIVE BLAST CLEANING describes all methods used to project an abrasive onto the object e.g. air blasting, centrifugal blasting, or water/sand blasting. During the course of development this type of cleaning has been given several different names, e.g. sand blasting, shot blasting and grit blasting, depending upon the abrasive used. For details of sand blasting procedure refer to IS: 1477 (Part-I)-1963. To avoid any confusion it is recommended to use the term 'Blast Cleaning'.

ABRASIVE BLAST CLEANING IS THE PREFERRED METHOD OF PREPARING STEEL AS RUST, MILLSCALE AND OLD PAINT COATINGS ARE EFFECTIVELY REMOVED.

TABLE OF INTERNATIONAL STANDARDS OF ABRASIVE BLAST CLEANING

Description	White Metal	Near -White Metal	Commercial Blast	Brush-off Blast
Swedish Standard SIS 05-5900:1967	Sa3	Sa 2½	Sa2	Sa 1
British Standard BS 4232: 1967	First Quality	Second Quality	Third Quality	--
Steel Structures Painting Council (USA)	SSPC-SP 5-63	SSPC-SP 10-63T	SSPC-SP 6-63	SSPC-SP 7-63
National Association of Corrosion Engineers (USA)	NACE No. 1	NACE No.2	NACE No. 3	NACE No. 4
Shipbuilding Research Association of Japan SPSS	JASh3 JASd3	JASh2 JASd2	JASh 1 JASd 1	-
Canadian Government CGSB	31 GP404 Type 1	-	31 GP404 Type 2	31 GP404 Type 3

The Swedish Standard, as it was usually called, was first to employ pictorial representation as of the specified cleaning degrees.

It is now superseded by INTERNATIONAL STANDARD ISO 8501 - 1 : 1988. Yet with the same photos as used by the SIS standards plus additionally four photos (flame cleaning) from the German Standard DIN 55928, part 4, Supplement 4.

The British Standard uses drawings to indicate the (Second and Third quality) finishers, whereas the American and the German Standards use the same photos as ISO 8501 - 1 -: 1988. Yet, DIN 55928 includes photos of secondary surface preparation too.



SURFACE PREPARATION

Except for BS 4232 they all take into account the state of the raw steel surface before cleaning and grades the result accordingly.

- A. Steel surface largely covered with adherent millscale but little, if any, rust.
- B. Steel surface which has begun to rust and from which the millscale has begun to flake.
- C. Steel surface on which the millscale has rusted away or from which it can be scraped, but with slight pitting visible under normal vision.
- D. Steel surface on which the millscale has rusted away and on which general pitting is visible under normal vision.

The blast cleaning provides a roughened surface with the surface amplitude or profile {peak to trough} being reasonably controlled by the amount of air pressure and the type and size of abrasive used. It is important that the surface profile be considered in relation to the dry film thickness (dft) and type of primer involved especially if the primed steel is to be subjected to exterior locations. The following table gives a brief guide to typical roughness profiles obtained using various types of abrasive.

Type of Abrasive	Mesh size	Max. Height of Profile
Very fine sand	80	37 microns (1.5 mils)
Coarse Sand	12	70 microns {2.8 mils}
Iron Shot	14	90 microns (3.6 mils)
Typical non metallic "Copper-slag" 1.5.-0.2mm grain size	-	75/100 microns (3-4 mils)
Iron grit No. G16	12	200 microns {8.0 mils}

2.6.2 : VACUUM BLASTING :

Ideal for small repair areas, welds, etc. The abrasive is collected for re-use by shrouding the blasting nozzle with a vacuum hood.

The mixed abrasive and debris pass through a separating device before the filtered abrasive is returned to the blasting circuit.

2.6.3 : WET ABRASIVE BLASTING :

The abrasive is carried to the work surface in a stream of water. It is necessary to use non-metallic abrasives.

Corrosion inhibitors may be added to the water to delay re-rusting of the steel. The amount and type of inhibitor additions must be strictly monitored to ensure that the adhesive properties of the paint coating are not impaired. Too much inhibitor may have the same effect as leaving corrosion products on the surface thus reducing the adhesion of the paint system to the surface.

The prime advantages of this method are :

- a. The hazards of dust and associated health problems are largely overcome.
- b. The changes of fire hazards are eliminated; enabling its use inside working installations.

Fresh water hosing/cleaning (FWH/FWC)	: Up to 60-bar/860 psi
High pressure fresh water hosing (HPFWH)	: 60-200 bar/860-2900 psi
High pressure fresh water cleaning (HPFWC)	: 200-350 bar/2900-5000 psi
High pressure fresh water blasting (HPFWB)	: 350-1000 bar/5000-14500 psi
Hydro blast (HB)/fresh water jetting (FWJ)	: Above 1000 bar/14500 psi



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