

Document Title: Procedure for Final Processing

1.0 SCOPE

This procedure outlines the process of **Final Processing** (Cutting, Shot Blasting, Beveling, Marking, Rust Preventive Application/Painting, Galvanizing, Packing, etc) of Finished Pipe Fittings and ensure that all the processes comply with stated requirements.

2.0 POLICY

Final Processing is carried out to ensure end results are consistent. This is generally done after all manufacturing operations are completed and pertain generally to finishing.

3.0 METHOD

CUTTING:

Pipes, Semi-Finished Fittings are cut using Hacksaw Machines or Plasma Cutters.

SHOT BLASTING:

After all manufacturing and Heat Treatment, materials may be Shot-Blasted (SHB 1, Belt Conveyor Type Machine OR SHB 2, Hanging Type Machine). Copper Grits are generally used for the Shot-Blasting process. This is generally carried out for Carbon-Steel and Alloy-Steel materials. Sufficient time (by Machine Operator) is to be allotted for the process to ensure removal of all surface scales (both inside and outside of fittings).

Machine to be operated strictly as per the Manufacturer's Manual.

Switch on the panel, set the required time, open the machine door and load the materials, close the door and lock the hand lock, switch ON [dust collector motor→belt conveyor motor→shot blasting rotor motor→shot carrying elevator motor], run the machine (as per setting time), switch OFF [shot carrying elevator motor→shot blasting rotor motor→belt conveyor motor→dust collector motor], ensure machine fully stops and then open door and unload material.

Visual Inspection is carried out by the QC Engineer to ensure Shot-Blasted surface profile meets the requirements. In case Heat Number is not visible, it is again stamped to ensure traceability.

For Stainless Steel materials, Shot Blasting is generally AVOIDED and items are Pickled and Passivated (refer separate procedure for details).

BEVELING:

Lathe Machines are used for beveling operations, as per stated Dimensional Standards. Newly introduced Automatic Beveling Machines (with Inside Diameter control) are also used for quicker beveling operations.

Larger Size Fittings may be beveled using hand grinders.

QC Engineer checks bevel edges using Degree Protractor.

PRODUCT MARKING:

Final Hard Stamping (preferably Low Stress) is carried out as per relevant Standard. Items are generally marked with Logo, Size, Schedule, Material Specification, Grade, Heat Number. Additionally, MSS SP 25 may be referred for marking. Other marking(s) may supersede this process based on PO or Contractual requirements.

Marking is generally carried out using Automatic Punching Machines. Newly Introduced State-of-the-art Laser Machines are now being used for Marking.

For Larger fittings, portable Marking Machines are sometimes used.



Plasma Cutting



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PAINTING:

Fittings are generally coated with a THIN layer of Rust Preventive, to prevent any rusting during dispatch and at site. This layer may be sprayed or directly applied with a cloth dipped in the solution. Care to be taken to ensure excess solution is removed.

The company has an in-house Fully Automatic Painting Plant for mass painting of fittings. This is equipped with heating coils (for drying).

For Stainless Steel materials, Painting is generally AVOIDED, since items are Pickled and Passivated.

Other Coatings / Paintings may supersede this process based on PO or Contractual requirements.

HOT DIP GALVANIZING:

This process is carried out based on PO or Contractual Requirements and is always outsourced to Approved Vendors only. Surface Visual (free from lumps, galvanizing defects, etc), Thickness of Galvanizing Zinc Coating (generally 85 microns minimum) is checked using Coat-Meter. Galvanizing Certificates are reviewed by QC Engineer for compliance to stated requirements.

Galvanized Materials are now marked using Laser Marking.

PACKING:

Fittings are generally packed as under,

- Small Sizes (upto 6" NPS or all SS) are packed in gunny bags and then in Wooden Boxes
- Large Sizes (>6" NPS) are packed loose / pallets with plastic packing (preferably Rubber End caps may be fitted to prevent damage during handling & storage)

Other packing systems may supersede this process based on PO or Contractual requirements.

MATERIAL PROCESS TRACEABILITY:

Traceability is maintained with Heat Number only (preferably Low Stress).

SAFETY:

All required safety precautions shall be ensured (Safety Shoes, Safety Gloves, Safety Helmet, Safety Goggles, etc).

4.0 PROCESS VALIDATION

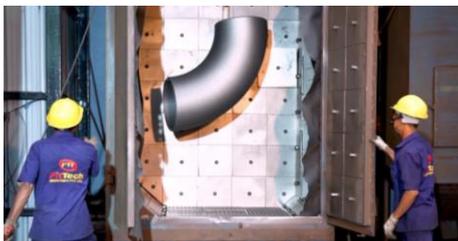
Visual and Dimensional Inspections have resulted in compliances with the Standards.

5.0 RESPONSIBILITY

This procedure is the responsibility of the Production Engineer and QC Engineer.

6.0 REFERENCES

- Machine Manufacturer's Manual(s)
- Dimensional Standards – ASME, MSS SP



Shot Blasting



Beveling



Product Marking



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