

CLEANING OF FABRICATED PIPING

Prepared by
Pipe Fabrication Institute Engineering Committee



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1. Scope

This standard describes methods normally used to clean fabricated pipe assemblies, the limitations of the methods and results to be expected. This standard defines two levels of cleaning. Unless stated otherwise, the standard level of cleaning will be provided.

2. Selection of Cleaning Method

2.1 General

The need for and degree of cleanliness on fabricated piping assemblies are dictated by the system requirements, the degree to which the system can be cleaned after installation and the need for removal of contaminants picked up during fabrication. Acceptance Criteria for various levels of cleanliness shall be a matter of prior agreement between the fabricator and purchaser.

2.2 Size and Configuration of Assembly

In selecting a method of cleaning, the size and configuration of the part or assembly must be considered to permit visual examination of the interior and to allow complete drainage or removal of the cleaning materials.

3. Standard Cleaning

Unless otherwise specified by the customer, cleaning will consist of removing all non-adhering material such as loose scale, sand, weld spatter particles, rust, cutting chips, etc., from the inside of the piping assembly by any suitable means. This level of cleaning will allow the presence of mill scale, surface rust, and tightly adhered weld spatter.

4. Special Cleaning

4.1 General

When a greater degree of cleanliness is required, either the cleaning process or the acceptance criteria should be outlined in the purchaser's design specifications.

In all cases, the method of cleaning and the acceptance standard will be a matter of agreement between the purchaser and fabricator.

4.2 Special Methods – Ferritic Materials

4.2.1 Rotary Tools

Rotary type (turbining) tools will substantially remove most loosely adhering mill scale and a significant portion of very heavy rust. They will not remove tight mill scale, heat treatment scale, medium to fine rust or any pitting. This type of cleaning is limited to internal surfaces only.

4.2.2 Wire Brushing

Steel wire brushing will remove medium to light rust, but will not remove tight mill or heat treatment scale. It is limited to readily accessible surfaces only.

4.2.3 Grinding

Grinding will remove rust, tight scale, pits, etc. from readily accessible surfaces only. Appropriate care must be taken to avoid grinding below the minimum allowable wall thickness.

4.2.4 Blasting

The most common method for removal of tight mill or heat treatment scale is blasting with sand, steel shot, or grit. This is most effective in producing a bare metal surface. Both internal and external surfaces may be cleaned by this method, but proper cleaning of piping internals is limited by accessibility to blasting equipment. Care should be taken in establishing configuration of fabricated piping assemblies, which require internal blasting after fabrication so that all internal surfaces will be accessible to blasting equipment. See PFI Standard ES-29 for a more thorough explanation of this cleaning method.

4.2.5 Pickling

For pipe requiring internal cleanliness substantially equal to bare metal, pickling is an effective overall method of removing scale, rust, etc. However this method limits the configuration of fabricated piping