



Standard Specification for Design and Fabrication of Flue Gas Desulfurization System Components for Protective Lining Application¹

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^{ε1} NOTE—Editorial changes were made throughout in October 2010.

1. Scope

1.1 This specification covers the design and fabrication of metal components for flue gas desulfurization (FGD) equipment, including absorbers, tanks, chimney liners, ductwork and associated equipment that are to be lined for corrosion or abrasion resistance, or both.

1.2 Limitations:

1.2.1 This specification is intended only to define the design considerations for successful application and performance of protective linings for FGD system components.

1.2.2 It does not cover structural performance of FGD components.

1.2.3 It does not cover use of metallic linings.

1.3 This specification represents the minimum requirements for lining work. In cases in which the manufacturer's instructions and recommendations differ from this specification, these differences shall be resolved before fabrication is started.

1.4 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Design/Engineering Requirements

2.1 Rigidity:

2.1.1 The components shall be designed so that the interior metal surfaces are sufficiently rigid for the intended lining

materials. Manufacturer's recommendations for maximum strains or deflection limits for the lining material shall be followed.

2.1.2 The weight of the lining system shall be considered in the structural design of the component.

2.1.3 The design shall consider the effects of pressure, wind, seismic and other design loads.

2.1.4 Vibration may cause flexing or high surface strains on the lining. This is of particular concern to rigid lining materials and shall be minimized.

2.1.5 Special consideration shall be given to all conditions of potentially excessive strain such as unsupported bottom areas, oil-canning, out of roundness, sidewall-to-bottom joints, and so forth.

2.1.5.1 Where a component is on a concrete foundation, grouting shall be done if necessary to correct unsupported bottom areas.

2.1.5.2 Sand fill shall not be used for bottom support unless provisions are made to ensure that the sand cannot be lost as a result of erosion.

2.2 Accessibility:

2.2.1 All interior surfaces of the components shall be designed to be readily accessible for welding, grinding, surface preparation, and lining application.

2.2.2 The minimum manway size for a working entrance during lining application shall be 36 in. (900 mm) in diameter or 24 in. (600 mm) width by 36 in. (900 mm) height.

2.2.2.1 Closed components shall have a minimum of two manways, one near the top and one near the bottom, preferably located 180° apart to facilitate adequate ventilation for workers.

2.2.2.2 Additional or larger openings may be required to facilitate ventilation and material handling. The lining material applicator should be consulted for specific requirements.

2.3 Shell Penetrations:

2.3.1 Openings such as, inlets, manholes, and outlet nozzles shall be flush with the interior wall.

2.3.1.1 Inlet nozzles may extend into vessels if incoming fluids will be detrimental to lining materials.

¹ This specification is under the jurisdiction of ASTM Committee D33 on Protective Coating and Lining Work for Power Generation Facilities and is the direct responsibility of Subcommittee D33.09 on Protective Lining for Air Quality Control Systems.

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