



Specification for the Application of Thermal Spray Coatings to Machine Elements for OEM and Repair



American Welding Society®



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Specification for the Application of Thermal Spray Coatings to Machine Elements for OEM and Repair

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Prepared by the
American Welding Society (AWS) C2 Committee on Thermal Spray

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

This standard defines requirements for thermal spray coating systems for OEM and repair applications. Included are HVOF (High Velocity Oxygen Fuel) coatings that can be used as an alternative to hard chrome plating. The essential equipment, procedures for surface preparation, and the application of specific thermal spray coatings and sealers are detailed with in-process quality control checkpoints. This standard also presents management requirements and procedures for qualification, procedure approval, and documentation. Also covered are approved applications for thermal spray processes used for OEM and repair of machinery components along with minimum training requirements for thermal spray operators and inspectors. This specification has several annexes including annexes on safety, protocols for the U.S. Navy shipboard machinery, bend testing, and bond testing.



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1. General Requirements

1.1 Scope. This specification covers thermal spray processes for original equipment manufacturers (OEMs) and the repair of machinery components. The scope includes (1) recommended applications, (2) management and engineering requirements, (3) equipment and facility requirements, (4) feedstock materials, and (5) application processes for thermal spray coatings.

The thermal spray processes covered by this standard are combustion and high velocity oxygen fuel powder, electric arc, and plasma processes that use either powder or wire as feedstock.

Development of this standard was initiated at the request of the U.S. Navy to replace MIL-STD-1687A (SH), Thermal Spray Processes for Naval Ship Machinery Applications. It contains Annex B that the Navy may still use as their guide for surface ship applications. Annex B also lists Navy applications that are permitted and those that are prohibited, including the certification, approval requirements and protocols for handling U.S. Navy components.

Others may use this standard and annexes as a guide to establishing contract document requirements between equipment owners (purchaser) and thermal spray coating contractors where they may choose to invoke all or only a portion of this specification's requirements as fits the needs of their work.

1.2 Units of Measure. This standard makes use of both U.S. Customary Units and the International System of Units (SI). The latter are shown within brackets ([]) or in appropriate columns in tables and figures. The measurements may not be exact equivalents; therefore, each system must be used independently.

1.3 Safety. Safety and health issues and concerns are beyond the scope of this standard; some safety and health information such as Personal Protective Equipment is provided in clause 6, but such issues are not fully addressed herein. Annex A provides more comprehensive safety and health information specific to thermal spray.

Safety and health information is available from the following sources:

American Welding Society:

- (1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*
- (2) AWS Safety and Health Fact Sheets
- (3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

- (1) Material Safety Data Sheets supplied by materials manufacturers
- (2) Operating Manuals supplied by equipment manufacturers