


**AWS C2.20/C2.20M:2002**  
**An American National Standard**



# **Specification for Thermal Spraying Zinc Anodes on Steel Reinforced Concrete**



**American Welding Society**



**Key Words**—Zinc, concrete, zinc anode, thermal spraying, arc spraying, process instruction, surface preparation, quality control, adhesion measurement

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AWS C2 Committee on Thermal Spraying

Under the Direction of  
AWS Technical Activities Committee

Approved by  
AWS Board of Directors

## **Abstract**

This AWS standard is a specification for thermal spraying zinc anodes on steel reinforced concrete. This standard is formatted as an industrial process instruction. The scope includes: job description, safety, pass/fail job reference standards, feedstock materials, equipment, a step-by-step process instruction for surface preparation, thermal spraying, and quality control. There are two annexes: job control record and portable adhesion testing.



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# Specification for Thermal Spraying Zinc Anodes on Steel Reinforced Concrete

## 1. Scope

This standard covers the application of zinc thermal spray coatings to concrete using arc and flame spray equipment. This standard is formatted as an industrial process instruction: job description, safety, Pass/Fail Job Reference Standard, feedstock materials, equipment, a step-by-step process instruction for surface preparation, thermal spraying, quality control (QC), and a Job Control Record.

This standard is based on the literature, equipment, process developments, and industrial practices known at the time of publication. This standard does not cover the design standards or recommended practices for cathodic protection (CP) systems.

Figure 1 is the process chart summarizing the application process and quality control checkpoints. Table 1 summarizes the inspections and test methods that shall be employed.

Annex A summarizes the safety information for thermal spraying. The basic precautions for thermal spraying are essentially the same as for welding and cutting. Consult Safety Chapter in *AWS Thermal Spraying: Practice, Theory, and Application*; ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*; and NFPA 58, *Standard for the Storage and Handling of Liquefied Petroleum Gases*. Read and follow safety precautions in the manufacturer's equipment technical instructions and manuals and the feedstock Material Safety Data Sheet (MSDS).

This specification makes use of both U.S. Customary Units and the International System of Units (SI). The measurements are not exact equivalents; therefore each system must be used independently of the other without combining in any way. The specification with the designation C2.20 uses U.S. Customary Units. The specification C2.20M uses SI Units. The latter are shown in appropriate columns in tables or within parentheses ( ) when used in the text. Suitable conversions encompassing standard sizes of both can be made, however, if appropriate tolerances are applied in each case.

For the purposes of determining conformance with this specification, an observed or calculated value shall be rounded to the nearest unit in the last right-hand place of figures used in expressing the limiting values in accordance with the rounding-off method given in ASTM E 29, *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications*.

## 2. Referenced Standards and Practices

The following standards contain provisions which, through reference in this text, constitute provisions of this AWS Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this AWS Standard are encouraged to investigate the possibility of applying the most recent editions of the documents shown below. For undated references, the latest edition of the standard referred to applies.

(1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*.<sup>1</sup>

(2) *AWS Thermal Spraying: Practice, Theory, and Application*.<sup>1</sup>

(3) AWS C2.16/C2.16M:2002, *Guide for Thermal-Spray Operator Qualification*.

(4) AWS C2.18, SSPC 2300, and NACE TPC, *Guide for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel*, in preparation.

(5) AWS C2.21, *Specification for Thermal Spray Equipment Acceptance Inspection*, in preparation.

1. AWS and ANSI standards can be obtained from Global Engineering, 15 Inverness Way East, Englewood, CO 80112-5776. Telephones: (800) 854-7179, (303) 397-2740; fax (303) 397-2740; Internet: [www.global.ihs.com](http://www.global.ihs.com).