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ULC-S618-08

STANDARD FOR ANODES AND REFERENCE ELECTRODES FOR CATHODIC PROTECTION OF STEEL UNDERGROUND TANKS



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REFERENCE PUBLICATIONS

The documents shown below are referenced in the text of this Standard. Unless otherwise stated elsewhere in this Standard such reference shall be considered to indicate the edition and/or revisions of the document available at the date on which the Committee approved this ULC Standard.

Documents Published by the American Society for Testing and Materials (ASTM)
100 Barr Harbour Drive, PO Box C700, West Conshohocken, PA 19428-2959 U.S.A.
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- ASTM B418-2001, Specification for Cast and Wrought Galvanic Zinc Anodes
- ASTM B843-93 (R2003), Standard Specification for Magnesium Alloy Anodes for Cathodic Protection

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- CAN/ULC-S603.1-03, External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids

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STANDARD FOR ANODES AND REFERENCE ELECTRODES FOR CATHODIC PROTECTION OF STEEL UNDERGROUND TANKS

PREFACE

This is the Fourth Edition ULC-S618-08, Standard for Anodes and Reference Electrodes for Cathodic Protection of Steel Underground Tanks.

This Standard is a companion document to the Standard for External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids, CAN/ULC-S603.1.

This Edition has been formally approved by the ULC Committee on Stationary Steel Storage Containers for Flammable and Combustible Liquids.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

Appendix A, Anode Design Criteria, identified as informative, is for informational purposes only.

In Canada, there are two official languages, English and French. Attention is drawn to the possibility that some Canadian authorities may require markings and/or installation instructions to be in both official languages.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. Underwriters' Laboratories of Canada shall not be held responsible for identifying any or all such patent rights.

Requests for interpretation of this Standard should be sent to the Standards Department of Underwriters' Laboratories of Canada. The requests should be worded in such a manner as to permit a "yes" or "no" answer based on the literal text of the requirement concerned.

This Standard is intended to be used for conformity assessment.

1. SCOPE

1.1 This Standard sets forth minimum requirements for sacrificial magnesium and zinc anodes and zinc reference electrodes which are intended for use in the cathodic protection of steel underground tanks which have been coated and installed in accordance with the requirements contained in CAN/ULC-S603.1, Standard for External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids.

1.2 Requirements contained in this Standard apply to cored anodes of the following types:

A High and standard potential magnesium anodes;

B Zinc anodes;

C Zinc reference electrodes; and

D Copper/copper sulphate reference electrodes.

NOTE: High potential magnesium anodes are intended for retrofit applications only and shall be sized according to the specifications of the corrosion specialist in charge of the retrofit application.

2. CONSTRUCTION OF CORED ANODES

2.1 MATERIALS

2.1.1 Steel cored magnesium anodes shall be cast or extruded from high or H1, Grade A or Grade B, standard potential magnesium alloys of the type specified in Table 1.

2.1.2 Steel cored zinc anodes or zinc reference electrodes shall be cast or extruded from a zinc alloy of the type specified in Table 2.

NOTE: For the electrochemical properties of zinc and magnesium anodes refer to Appendix A.

2.2 CORES

2.2.1 The cores of weld on zinc and H1, Grade A or Grade B, standard potential magnesium anodes, as shown in Figures 1 and 2, shall be a hot dipped galvanized mild carbon steel bar with a minimum cross-sectional area of 125 mm^2 and a length of 200 mm greater than the anode metal. The cores shall be cast in the centre of the anode.

2.2.2 The cores of zinc reference electrodes and high potential magnesium anodes shall consist of not less than a 3 mm diameter galvanized steel bar located axially in the