

### **Standard Practice**

## Galvanic Anode Cathodic Protection of Internal Submerged Surfaces of Steel Water Storage Tanks

This NACE International standard represents a consensus of those individual members who have reviewed this document, its scope, and provisions. Its acceptance does not in any respect preclude anyone, whether he or she has adopted the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not in conformance with this standard. Nothing contained in this NACE International standard is to be construed as granting any right, by implication or otherwise, to manufacture, sell, or use in connection with any method, apparatus, or product covered by Letters Patent, or as indemnifying or protecting anyone against liability for infringement of Letters Patent. This standard represents minimum requirements and should in no way be interpreted as a restriction on the use of better procedures or materials. Neither is this standard intended to apply in all cases relating to the subject. Unpredictable circumstances may negate the usefulness of this standard in specific instances. NACE International assumes no responsibility for the interpretation or use of this standard by other parties and accepts responsibility for only those official NACE International interpretations issued by NACE International in accordance with its governing procedures and policies which preclude the issuance of interpretations by individual volunteers.

Users of this NACE International standard are responsible for reviewing appropriate health, safety, environmental, and regulatory documents and for determining their applicability in relation to this standard prior to its use. This NACE International standard may not necessarily address all potential health and safety problems or environmental hazards associated with the use of materials, equipment, and/or operations detailed or referred to within this standard. Users of this NACE International standard are also responsible for establishing appropriate health, safety, and environmental protection practices, in consultation with appropriate regulatory authorities if necessary, to achieve compliance with any existing applicable regulatory requirements prior to the use of this standard.

CAUTIONARY NOTICE: NACE International standards are subject to periodic review, and may be revised or withdrawn at any time in accordance with NACE technical committee procedures. NACE International requires that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the date of initial publication. The user is cautioned to obtain the latest edition. Purchasers of NACE International standards may receive current information on all standards and other NACE International publications by contacting the NACE International *First*Service Department, 1440 South Creek Drive, Houston, Texas 77084-4906 (telephone +1 281-228-6200).

NACE International 1440 South Creek Dr. Houston, Texas 77084-4906 +1 281-228-6200

ISBN 1-5790-189-7 © 2011, NACE International

#### Foreword

The purpose of this standard is to present the standard practices used in providing galvanic anode cathodic protection (CP) to the normally submerged steel surfaces inside steel water storage tanks. This standard provides owners, engineers, and contractors with guidelines for the application of CP to the submerged surfaces of steel water storage tanks; for determining the effectiveness of these CP systems; and for the operation and maintenance of these CP systems.

This standard is applicable to steel water storage tanks of various sizes used in municipal water supply and fire protection, including elevated tanks and flat-bottom tanks at ground level. Although the practices presented in this standard generally are applicable to all such tanks, the galvanic anode CP system described in this standard may not be practical for relatively large tanks.

This standard was originally prepared in 1996 by NACE Task Group (TG) T-7L-1, a component of Unit Committee T-7L, "Cathodic Protection." It was revised in 2004 and 2011 by TG 284, "Cathodic Protection, Galvanic Anode for Internal Submerged Surfaces of Steel Water Storage Tanks—Review of NACE Standard RP0196. TG 284 is administered by Specific Technology Group (STG) 05, "Cathodic/Anodic Protection." It is sponsored by STG 11, "Water Treatment," and STG 35, "Pipelines, Tanks, and Well Casings." This standard is issued by NACE under the auspices of STG 05.

In NACE standards, the terms *shall, must, should,* and *may* are used in accordance with the definitions of these terms in the *NACE Publications Style Manual.* The terms *shall* and *must* are used to state a requirement, and are considered mandatory. The term *should* is used to state something good and is recommended, but is not considered mandatory. The term *may* is used to state something considered optional.

# NACE International Standard Practice

### Galvanic Anode Cathodic Protection of Internal Submerged Surfaces of Steel Water Storage Tanks

### Contents

1.	General	1
2.	Definitions	1
3.	Determination of Need for Cathodic Protection	3
4.	Design of Galvanic Anode Cathodic Protection Systems	4
5.	Installation of Galvanic Anode Cathodic Protection Systems	7
6.	Criteria for Cathodic Protection	8
7.	Operation and Maintenance	10
References		12
ΤA	BLES	
Tal	ble 1: Typical Galvanic Anode Materials and Characteristics	6