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BS ISO 18086:2015



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Corrosion of metals and alloys — Determination of AC corrosion — Protection criteria

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Corrosion of metals and alloys — Determination of AC corrosion — Protection criteria

Corrosion des métaux et alliages — Détermination de la corrosion occasionnée par les courants alternatifs — Critères de protection



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 156, *Corrosion of metal and alloys*.

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Introduction

This International Standard has incorporated criteria and thresholds together with experience gained from the most recent data. Various countries have a very different approach to the prevention of AC corrosion depending primarily on the DC interference situation. These different approaches are taken into account in two different ways

- either in presence of “low” on-potentials, which allows a certain level of AC voltage (up to 15 V), or
- in presence of “high” on-potentials (with DC stray current interference on the pipeline for instance) which requires the reduction of the AC voltage towards the lowest possible levels.

This International Standard also gives some parameters to consider when evaluating the AC corrosion likelihood, as well as detailed measurement techniques, mitigation measures, and measurements to carry out for commissioning of any AC corrosion mitigation system. Note that [Annex E](#) proposes other parameters and thresholds that require further validation based on practical experiences.

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Corrosion of metals and alloys — Determination of AC corrosion — Protection criteria

1 Scope

This International Standard is applicable to buried cathodically-protected pipeline that is influenced by AC traction systems and/or AC power lines.

In the presence of AC interference, the protection criteria given in ISO 15589-1 are not sufficient to demonstrate that the steel is being protected against corrosion.

This International Standard provides limits, measurement procedures, mitigation measures, and information to deal with long term AC interference for AC voltages at frequencies between 16,7 and 60 Hz and the evaluation of AC corrosion likelihood.

This International Standard deals with the possibility of AC corrosion of metallic pipelines due to AC interferences caused by inductive, conductive or capacitive coupling with AC power systems and the maximum tolerable limits of these interference effects. It takes into account the fact that this is a long-term effect, which occurs during normal operating conditions of the AC power system.

This International Standard does not cover the safety issues associated with AC voltages on pipelines. These are covered in national standards and regulations (see e.g. EN 50443).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15589-1, *Petroleum, petrochemical and natural gas industries — Cathodic protection of pipeline systems — Part 1: On-land pipelines*

ISO 8044, *Corrosion of metals and alloys — Basic terms and definitions*

IEC 61010-1, *Safety requirements for electrical equipment for measurements, control, and laboratory use — Part 1: General requirements*

EN 13509, *Cathodic protection measurement techniques*

EN 15257, *Cathodic protection — Competence levels and certification of cathodic protection personnel*

EN 50443, *Effects of electromagnetic interference on pipelines caused by high voltage AC electric traction systems and/or high voltage AC power supply systems*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following apply.

3.1

AC electric traction system

AC railway electrical distribution network used to provide energy for rolling stock

Note 1 to entry: The system can comprise the following:

— contact line systems;