



BSI Standards Publication

Corrosion of metals and alloys — Measurement of critical crevice temperature for cylindrical crevice geometries in ferric chloride solution

National foreword

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**Corrosion of metals and alloys —
Measurement of critical crevice
temperature for cylindrical crevice
geometries in ferric chloride solution**

*Corrosion des métaux et alliages — Mesure de la température critique
de corrosion caverneuse de crevasses de géométries cylindriques dans
une solution de chlorure ferrique*





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Foreword

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This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

Introduction

Various dimensions of pipes and tubes are used in industries such as nuclear power plants, thermal power plants, desalination plants, oil refining facilities and chemical plants, etc. Materials evaluation for these pipes, tubes and fittings makes all the difference to safety and life cycles in these industrial facilities.

There are numerous standards that specify test methods and corrosion resistance for pitting and crevice corrosion. Many of them address the corrosion rate or critical pitting temperature (CPT) or critical crevice temperature (CCT) of plate type specimens, but they are not concerned with other geometries and relations of corrosion resistance between geometries.

It is important that the initiation temperature of crevice corrosion be measured in cylindrical crevice geometries for high corrosion resistant alloys, including from traditional stainless steels (300 series) to super stainless steels (higher alloyed stainless steels).

This document provides the test method that measures crevice corrosion resistance in crevice geometries such as tube/tube sheet of heat exchangers and pipes/pipe supports, flange/couplings, bolts/nuts, etc. in industrial facilities. It can be used as a guideline which offers the criterion for materials selection of such components.

Most crevice corrosion tests are performed conforming to some standards, but these test methods use a flat geometry of an artificial crevice which shows different critical crevice temperatures to those of cylindrical crevice geometry. Therefore, results of these tests have created controversies in related industries. It has been found that the identical CCT between plate type and cylindrical type specimens could be achieved with an appropriate torque applied to the cylindrical specimen.