

Method for

Removal of corrosion products from corrosion test specimens of metals and alloys

Committees responsible for this British Standard

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- Aluminium Federation
- British Gas plc
- British Steel Industry
- Department of Trade and Industry (National Physical Laboratory)
- Department of Transport (Transport and Road Research Laboratory)
- Electricity Industry in United Kingdom
- Institute of Corrosion
- Institution of Structural Engineers
- Society of Chemical Industry
- United Kingdom Atomic Energy Authority
- Welding Institute

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National foreword

This British Standard has been prepared under the direction of the Iron and Steel and Non-ferrous Metals Standards Policy Committees. It is identical with ISO 8407:1991 “*Corrosion of metals and alloys — Removal of corrosion products from corrosion test specimens*” published by the International Organization for Standardization (ISO).

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

1.1 This International Standard specifies procedures for the removal of corrosion products formed on metal and alloy corrosion test specimens during their exposure in corrosive environments. For the purpose of this International Standard, the term “metals” refers to metals and alloys.

1.2 The procedures specified are designed to remove all corrosion products without significant removal of base metal. This allows an accurate determination of the mass loss of the metal which occurred during exposure to the corrosive environment.

1.3 These procedures may, in some cases, also be applied to metal coatings. However, possible effects from the substrate must be considered.

2 Procedures

2.1 General

2.1.1 A light mechanical cleaning treatment by brushing with a soft bristle brush under running water should first be applied to remove lightly adherent or bulky corrosion products. In some cases, this treatment will be sufficient to remove all corrosion products and no further treatment will be necessary.

2.1.2 If the treatment described in **2.1.1** does not remove all corrosion products it will be necessary to use other procedures. These are of three types:

- a) chemical;
- b) electrolytic;
- c) more vigorous mechanical treatments.

Whichever method is used, it may be necessary to repeat the cleaning treatment to ensure complete removal of corrosion products. Removal shall be confirmed by visual examination. The use of a low-power microscope (i.e. $\times 7$ to $\times 30$) is particularly helpful with a pitted surface when corrosion products may accumulate in pits.

2.1.3 An ideal procedure should remove only corrosion products and not result in removal of any base metal. Two procedures can be used to confirm this point. One procedure uses a control specimen (**2.1.3.1**) and the other requires a certain number of cleaning cycles on the corroded specimen (**2.1.3.2**).

2.1.3.1 Uncorroded control specimens which should be similar chemically, metallurgically, and geometrically to the test specimens, should be cleaned by the same procedure as used for the test specimen. By weighing the control specimen before and after cleaning (weighing to the fifth significant figure is suggested, e.g. a 70 g specimen should be weighed to three decimal places), the metal loss resulting from the cleaning may be determined. The mass loss of the control specimen will reflect the mass loss of test specimens resulting from the cleaning procedure.

2.1.3.2 The cleaning procedure should be repeated several times with the corroded test specimen after removal of corrosion products is completed. The mass can be shown on a graph as a function of the number of equal cleaning cycles (see Figure 1). In many cases the masses obtained in these cleaning cycles will have a linear relation with cleaning cycles. Two lines, AB and BC, will be obtained. Line AB characterizes the removal of corrosion products and may not always be visible. Line BC characterizes the removal of substrate after the corrosion products are gone. By extrapolation of line BC to the ordinate axis, we obtain point D which characterizes the mass at zero number of cleaning cycles. In other cases the relation may not be linear and the most appropriate extrapolation shall then be made.

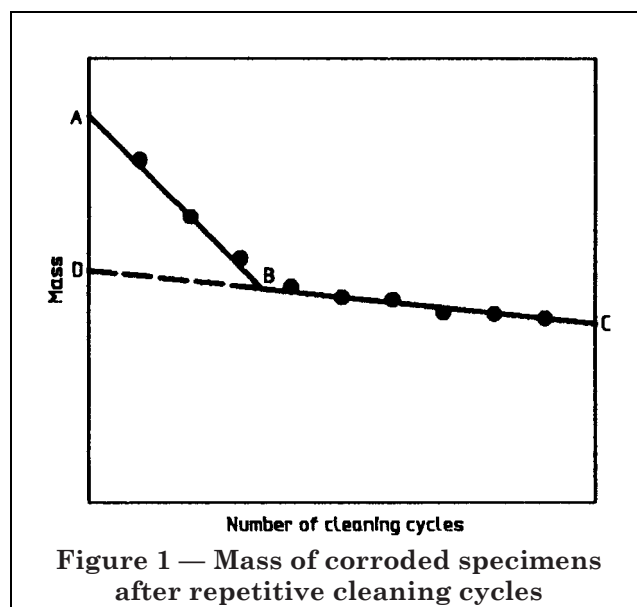


Figure 1 — Mass of corroded specimens after repetitive cleaning cycles

2.1.3.3 The true mass of the specimen after removal of the corrosion products will be between points B and D, depending on the degree of protection furnished by the corrosion products during the cleaning procedure.