

Testing corrosion inhibiting, engine coolant concentrate ("antifreeze") —

Part 0: General introduction

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Chemicals Standards Policy Committee (CIC/-) to Technical Committee CIC/7, upon which the following bodies were represented:

- British Chemical Distributors' and Traders' Association Limited
- British Railways Board
- Chemical Industries' Association
- Consumer Policy Committee of BSI
- Department of Trade and Industry (National Physical Laboratory)
- Ministry of Defence
- Society of Motor Manufacturers and Traders Limited

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Foreword

This Part of BS 5117 has been prepared under the direction of the Chemicals Standards Policy Committee and is a new edition of BS 5117-0:1985, which is withdrawn. This edition introduces technical changes but it does not reflect a full review or revision of the standard, which will be undertaken in due course. The changes take account of the publication in 1992 of two new Sections of BS 5117; BS 5117-1.5 describes a coolant hard water stability test, whilst BS 5117-2.6 describes a test for corrosion of cast aluminium alloys under heat-transfer conditions.

The related British Standard BS 6580:1985 has likewise been superseded by BS 6580:1992, which specifies requirements for corrosion inhibiting, engine coolant concentrate (“antifreeze”), based on the tests described in Sections of BS 5117, including the new Sections 1.5 and 2.6.

The overall title of BS 5117 includes the term “engine coolant concentrate” (see 4.1). Traditionally the term “antifreeze” has been used to describe the concentrate which is added to the water in the cooling system of an internal combustion engine. However, the term “antifreeze” takes into account only the frost-protective role of the product, so implying that its use is a seasonal requirement, and ignores its function as a heat exchange medium which is designed to protect the cooling system of the engine from corrosion and damage under all operating conditions. The term “engine coolant concentrate” embraces all these requirements and is preferred. For the purposes of this standard, the engine coolant concentrate is generally referred to as “the product”.

Annex A of this Part of BS 5117 gives guidance on the significance of test results obtained by the methods described in BS 5117-1 and, where possible, indicates typical values which might be expected for an acceptable product. It is, however, intended solely as a guide.

The test methods described in BS 5117-1 relate solely to simple physical and chemical properties and need no explanation. BS 5117-2 describes laboratory tests (which attempt to simulate service conditions) and engine tests for the evaluation of corrosion inhibition performance. Such tests (particularly the recirculating rig test) are under continuous development. Annex B of this Part of BS 5117 has therefore been included to indicate the basis on which the test conditions were selected and to indicate how the standard conditions, specified in the recirculating rig test, could be varied so as to align the conditions with those associated with current developments in engine design.

At the time of publication of this British Standard no corresponding International Standard exists.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

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

This Part of BS 5117 describes the structure of the other Parts and Sections of BS 5117 and defines terms used. Guidance on the significance of test results is given in Annex A and comments on the choice of test conditions in corrosion inhibition testing are given in Annex B.

2 Informative references

This Part of BS 5117 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Structure of BS 5117

The structure of the various Parts and Sections of BS 5117 is given in Table 1.

NOTE Each Section of Parts 1 and 2 is published separately.

4 Definitions

For the purposes of this Part of BS 5117 the following definitions apply.

4.1

engine coolant concentrate

a liquid consisting of diols, such as ethanediol (ethylene glycol) and/or propane-1, 2-diol (propylene glycol), together with corrosion inhibitors and possibly additives used for purposes other than freezing point depression

4.2

coolant

the liquid which is caused to circulate through the cooling system of an internal combustion engine and which consists of an aqueous solution of an engine coolant concentrate

4.3

test solution

an aqueous solution of an engine coolant concentrate, prepared at a specified concentration for test purposes

4.4

test portion

a measured amount of an engine coolant concentrate, coolant or test solution used for a particular test

Table 1 — Structure of BS 5117

Part and Section No.	Contents
Part 0	General introduction including: guidance on the significance of test results comments on choice of test conditions in corrosion inhibition testing
Part 1	Methods of test for determination of physical and chemical properties
Section 1.1	Ancillary procedures including: determination of concentration of diluted product determination of pH determination of reserve alkalinity
Section 1.2	Determination of boiling point
Section 1.3	Determination of freezing point
Section 1.4	Determination of foaming characteristics
Section 1.5	Coolant hard water stability test
Part 2	Methods of test for corrosion inhibition performance
Section 2.1	General procedures including: sampling of the product preparation and assembly of metal test specimens additional cleaning procedures for metal test specimens carrying adherent corrosion products special procedure for cleaning heavily corroded metal test specimens and determination of mass loss preparation of standard water used for test solutions in the glassware, recirculating rig and static engine tests determination of volume of suspended solids
Section 2.2	Glassware tests
Section 2.3	Recirculating rig test
Section 2.4	Static engine test
Section 2.5	Field test
Section 2.6	Test for corrosion of cast aluminium alloys under heat-transfer conditions