

Specification for

Corrosion inhibiting, engine coolant concentrate ("antifreeze")

Committees responsible for this British Standard

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- 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 revision of BS 6580, prepared under the direction of the Chemicals Standards Policy Committee, comprises a performance specification for corrosion inhibiting, coolant concentrates based on diols (see clause 4) for use in the cooling systems of all types of liquid-cooled internal combustion engine. It is intended to apply to products based on ethanediol (ethylene glycol) and propane-1,2-diol (propylene glycol) but products containing other diols such as digol (2,2'-oxydiethanol) are not excluded. It supersedes BS 6580:1985, which is withdrawn.

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, this term 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".

Most of the data on which this specification is based was first published in 1977 as a Draft for Development, DD 53, which specified minimum performance requirements in terms of:

- a) the boiling point of the undiluted product;
- b) the freezing point of an aqueous solution of the product;
- c) the foaming tendency of an aqueous solution of the product;
- d) the corrosion inhibition performance of an aqueous solution of the product, assessed by metal mass losses obtained in the glassware (cold immersion) test (4.2 of BS 5117:1974¹⁾) and the recirculating rig test (clause 5 of BS 5117:1974²⁾).

A review of DD 53 was concluded in 1982 and, although it was found to be otherwise acceptable, the recirculating rig test was considered to be unsatisfactory, because of inconsistencies in the results obtained.

DD 53 was therefore withdrawn while work on corrosion testing continued, with a view to producing a generally acceptable performance specification. In 1983 the formulation specifications BS 3150, BS 3151 and BS 3152 were also withdrawn, because they were obsolete.

DD 53 was replaced by BS 6580:1985 in which, as a result of the long term nature of the corrosion work, the hot immersion glassware test (described in BS 5117-2.2:1985) replaced the recirculating rig test as one of the means of assessing corrosion inhibition. BS 6580:1985 also included marking requirements and labelling recommendations.

Following the later preparation of further Sections of BS 5117 describing a coolant hard water stability test (BS 5117-1.5:1992) and a test for corrosion of cast aluminium alloys under heat-transfer conditions (BS 5117-2.6:1992) it became desirable for BS 6580:1985 to be revised to include clauses referring to these tests. This revision implements these changes. BS 5117-0:1992, a new edition, has been prepared at the same time.

Although not comprehensive, this specification should help to prevent the marketing of those products which are likely to cause significant damage to the cooling system, either from lack of frost protection or by corrosion. However, although a product may comply with the requirements of this specification, it is also most important, for a particular engine, that careful note be taken of any special requirements indicated by the engine manufacturer.

¹⁾ Now superseded by BS 5117-2.2:1985.

²⁾ Now superseded by BS 5117-2.3:1985.