

Packaging code —

**Section 6: Protection of metal surfaces
against corrosion during transport and
storage —**

**Subsection 6.2 Temporary protectives
and their application**

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Packaging and Freight Containers Standards Policy Committee (PKM/-) to Technical Committee PKM/583, upon which the following bodies were represented:

- BCIRA
- British Lubricants Federation Limited
- British Non-ferrous Metals Federation
- British Rubber Manufacturers' Association
- Engineering Equipment and Materials Users' Association
- Institute of Marine Engineers
- Institute of Packaging
- Institute of Petroleum
- Institute of Refrigeration
- Institution of Mechanical Engineers
- Ministry of Defence
- Oil and Colour Chemists' Association
- Timber Packaging and Pallet Confederation

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Foreword

This Subsection of BS 1133 was prepared under the direction of the Packaging and Freight Containers Standards Policy Committee. It constitutes a revision of sections C and D of the 1966 version of BS 1133-6 and brings information on temporary protectives and their application up-to-date.

Information regarding the cleaning and drying of metal surfaces in preparation for the application of a temporary protective is published as Subsection 6.1 and constitutes a revision of sections A and B of the 1966 version of BS 1133-6. It is envisaged that performance standards for temporary protectives contained in section E of the 1966 version of BS 1133-6 will be revised and published as a separate British Standard specification for temporary protectives; with its publication, BS 1133-6:1966 will be superseded and therefore withdrawn.

BS 7195 gives information regarding a source of corrosion not covered by BS 1133-6.

The information given in this Subsection is intended as a general guide and does not cover specific requirements for which specialist advice should be sought.

BS 1133 now consists of the following sections all of which are published separately, with the exception of Sections 1 to 3, which are published in one volume.

- *Sections 1 to 3: Introduction to packaging;*
- *Section 4: Mechanical aids in package handling;*
- *Section 5: Protection against spoilage of packages and their contents by micro-organisms, insects, mites and rodents;*
- *Section 6: Protection of metal surfaces against corrosion during transport and storage;*
- *Subsection 6.1: Cleaning and drying of metal surfaces;*
- *Subsection 6.2: Temporary protectives and their application;*
- *Section 7: Paper and board wrappers, bags and containers;*
- *Subsection 7.1: Wrapping papers;*
- *Subsection 7.2: Bags and envelopes;*
- *Subsection 7.3: Cartons and boxes;*
- *Subsection 7.4: Fibreboard drums;*
- *Subsection 7.5: Fibreboard cases;*
- *Subsection 7.6: Moulded pulp packaging;*
- *Subsection 7.7: Composite containers;*
- *Section 8: Wooden containers;*
- *Section 10: Metal containers;*
- *Section 12: Methods of protection against shock (excluding cushioning devices);*
- *Section 13: Twines and cords for packaging;*
- *Section 14: Adhesive closing and sealing tapes;*
- *Section 15: Tensional strapping;*
- *Section 16: Adhesives for packaging;*
- *Section 18: Glass containers and closures;*
- *Subsection 18.1: Terminology;*
- *Section 19: Use of desiccants in packaging;*

— *Section 21: Regenerated cellulose film, plastics films, aluminium foil and flexible laminates;*

— *Section 22: Packaging in plastics containers;*

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 to iv, pages 1 to 16, 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.

0 Introduction

Many metal articles have to be transported and stored, sometimes for long periods, and are then used with their working surfaces in the bare state. Unless these surfaces are protected between manufacture and use, most of them will rust and corrode owing to the effect of humidity or polluted atmospheres. The materials used for such protection are called temporary protectives as they provide protection primarily for the transportation and storage period; the significance of the term “temporary” lies not in the duration of the efficacy of the protective but in the fact that it can easily be removed so that the protected surfaces can if necessary be restored to their original state. Desiccants, which provide protection which is temporary in this sense and is also of limited duration, are dealt with in BS 1133-19. Non-working surfaces that might corrode and need to be safeguarded against corrosion during use, should be covered with more durable materials like paints and varnishes. This Subsection of BS 1133 deals only with temporary protection against corrosion.

NOTE Coatings should be applied only to clean and moisture-free surfaces, otherwise their effectiveness may be reduced or even nullified. Information on cleaning is given in BS 1133-6.1 and CP 3012.

Corrosion prevention and subsequent packaging should be considered together. The policy advocated in this guide is to choose the protective to suit the article and provide an adequate standard of protection. Sometimes by the nature of the article the required standard of protection cannot be obtained with any of the listed materials and the subsequent packaging should then be specially chosen to supplement the protective. Apart from these instances, however, the purpose of a package is to prevent mechanical disturbance of the protective coating and to exclude abnormal influences (such as free water and salt spray) in addition to the general functions of preventing mechanical damage, facilitating handling, etc. It is bad practice to choose a package and then use temporary protectives to correct its deficiencies.

If severe conditions are expected, in transport or in storage, either at home or overseas, it may be necessary to use coatings of increased thickness and to provide extra packaging.

New and improved temporary protectives are continually being developed and it has been necessary to restrict the descriptions herein to established and proved methods and materials.

1 Scope

This Subsection of BS 1133 gives guidance on the selection, application and removal of a range of temporary protectives which may be used to protect metal surfaces against corrosion during transport and storage.

NOTE The titles of publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Subsection of BS 1133 the following definitions apply.

2.1 temporary protectives

materials used to protect metallic surfaces during transportation and storage and which are applied to the metallic surfaces or included in the package in proximity to those surfaces. They function by forming protective barriers or by some other appropriate action at the surface. They are readily removable by simple means such as wiping or stripping

NOTE 1 The significance of the term “temporary” lies in the ready removability of the protective and not in the duration of its efficacy. There is an important distinction between temporary protectives and the more permanent protectives such as paint, metallic coatings, etc. The latter are intended to remain on surfaces and to continue their function while the article is in use, whilst the former are intended for use during storage and transportation or during periods of inactivity. It is essential that temporary protective films should be readily removable from metal surfaces by the cold application of common solvents unless other simple methods can be used such as wiping (for grease) or stripping (for strippable coatings). Most of them can equally well be removed by the processes described in BS 1133-6.1.

NOTE 2 Certain protectives of the solvent-deposited types are so designed that they are not easily removable by common solvents. These materials are so formulated that the protective coatings which they deposit will be compatible with paint coatings subsequently applied, or may be removed by special solvents if necessary. Such protective materials will not strictly comply with the requirements for TP 1 or TP 2 and it is, therefore, important that when such materials are offered their characteristics are clearly stated, the manner in which they differ from bona fide temporary protectives is understood and the process for removal is explained.

NOTE 3 Desiccants (drying agents) are often used as a temporary corrosion-preventive device, but they are not included in these definitions. Their properties and uses are described in BS 1133-19.

2.2 film-forming temporary protectives

the protection that film-forming temporary protectives provide depends on the effectiveness of the corrosion inhibitor system present and the water resistance of the deposited film. Protection may be augmented by the provision of a suitable primary wrap

2.3

vapour phase corrosion inhibitors for atmospheric environments

materials placed on, against, or in suitably close proximity to metallic surfaces, so that by chemical processes they prevent or substantially reduce the rate of corrosion caused by access of moisture to the metallic surface. Their performance is strongly dependent on the ways and conditions in which they are used

WARNING. Specialist advice should be sought regarding the suitability of using vapour phase corrosion inhibitors for the protection of non-ferrous metals or materials of composite construction.

3 Classification of temporary protectives

3.1 General

Temporary protectives can be classified into the well-defined types summarized below. Further information on these types is given in Appendix A to Appendix L.

3.2 Type TP 1

Hard film, solvent-deposited, consisting of solutions of protectives, such as suitably plasticized resins, in volatile solvent and generally applied by dipping or spraying. On evaporation of the solvent a thin hard film of protective remains. There are three grades:

- a) TP 1a quick drying;
- b) TP 1b slow-drying;
- c) TP 1c slow-drying, water-displacing.

Grade TP 1c is a variety of TP 1b having water-displacing properties. It can therefore be used to protect wet articles without previous drying by more conventional means.

3.3 Type TP 2

Soft-film, solvent-deposited, consisting of solutions of protectives such as lanolin in volatile solvent and applied by dipping or spraying. On evaporation of the solvent a thin soft film of protective remains.

There are two grades:

- a) TP 2a ordinary grade;
- b) TP 2b water-displacing grade.

Type TP 2b has water-displacing properties similar to those referred to in 3.2 c).

3.4 Type TP 3

Soft-film, hot dipping, giving a thick soft film of protective, usually based on petrolatum (sometimes called petroleum jelly or mineral jelly).

3.5 Type TP 4

Soft-film grease, normally applied by brushing or smearing to give a thick soft film. There are two grades:

- a) TP 4a mineral oil base grease;
- b) TP 4b castor or synthetic oil base grease.

Type TP 4a is a conventional type grease used as a protective while TP 4b is a grease of special composition for application to metal parts to which rubber is attached.

3.6 Type TP 5

Soft-film, semi-fluid, applied by brushing or swabbing to give films of medium thickness. They are usually based on solutions of suitable corrosion inhibitors (e.g. wool fat derivatives) in mineral oils or in mixtures of mineral oils and petrolatum.

3.7 Type TP 6

Oil film type consisting of lubricating oils containing soluble corrosion inhibitors, and generally applied by dipping, spraying or circulation and generally serving as lubricants as well as temporary protectives. There are two grades:

- a) TP 6a oil type, general purpose protective;
- b) TP 6b oil type, engine protective.

3.8 Type TP 7

Strippable hot dip coating consisting of ethyl cellulose and small amounts of mineral oil together with plasticizers, resins and stabilizers. It is applied by hot dip application to form tough impermeable films which can readily be stripped from the protected article.

3.9 Type TP 8

Strippable coating, cold applied, consisting of solutions of protectives such as vinyl copolymer resins, plasticizers and stabilizers in flammable or non-flammable solvents. They are usually applied by spraying, brushing, or dipping to form tough impermeable films which can readily be stripped from the protected article.

3.10 Type TP 9

Vapour phase corrosion inhibitors consisting of substances, the vapour of which will inhibit corrosion of ferrous metals.

3.11 Type TP 10

Contact inhibitors consisting of substances which when in contact with metallic surfaces will inhibit corrosion.