

Coated fabrics for use in the manufacture of water penetration resistant clothing —

Part 5: Specification for coated fabrics for immersion suits

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PRI/78, Coated fabrics, upon which the following bodies were represented:

- British Apparel and Textile Confederation
- British Plastics Federation
- British Railways Board
- British Rubber Manufacturers' Association Ltd.
- British Textile Technology Group
- Department of Health
- Department of the Environment (Building Research Establishment)
- Furniture Industry Research Association
- Home Office
- Industrial Safety (Protective Equipment) Manufacturers' Association
- Made-Up Textiles Association
- RAPRA Technology Ltd.
- SATRA Footwear Technology Centre
- Society of Motor Manufacturers and Traders Limited

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Clothing Industry Association
- Ministry of Defence
- Society of British Aerospace Companies Limited
- Textile Institute

This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Board and comes into effect on 15 December 1995

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Foreword

This Part of BS 3546 has been prepared by Technical Committee PRI/78.

In preparing this Part of BS 3546 the Committee has taken into account the work of CEN/TC 162 in specifying requirements for made-up immersion suits and the technical requirements of the Department of Transport (Marine Division) regarding immersion suits for civil use. However, there are one or two deviations to which attention is drawn.

Firstly, in view of the dangers inherent in extrapolating the results of flammability tests on components to flammability performance of made-up products, no flammability test of requirement is included in this specification. The assessment of flammability performance should be conducted on the made-up garment in accordance with its relevant specification.

Secondly, the committee is of the view that flexing performance after soaking, using the crumple flex apparatus specified in BS 3424-9, cannot be conducted in the frozen state at the required speed and that the specimen temperature rises rapidly within a short time of commencing the test. In addition, certifying the actual temperature of the test specimen during the test is impractical. Consequently the test is conducted at ambient temperature.

Thirdly, the ageing of polyurethanes for 42 days is considered totally unrealistic, both technically and economically, especially given that NR, CR and CSM coatings are aged for only 168 h. However, accepting that PU coatings are more susceptible to hydrolysis, ageing of these polymers is conducted for 336 h followed by three wash cycles to remove any residual hydrolysed residues.

This Part of BS 3546 specifies batch acceptance tests. The sampling frequency and position of the samples is not specified as this will need to vary according to the type of fabric, the machinery employed and the detailed manufacturing conditions. Therefore, for routine testing, sampling is left to the discretion of the testing authority (which is usually the manufacturer), to be decided on the basis of the manufacturing conditions and the results of process control testing. The sampling procedure to be used in the event of a dispute is given in Annex A.

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 3546 specifies requirements for coated fabrics which have properties suitable for use in the manufacture of immersion suits.

Users, specifiers and manufacturers should note that this material specification does not include requirements for oil resistance or flammability performance. However, both these criteria may be mandatory for the survival or immersion suit. Flammability performance of components gives no reliable data on the flammability performance of textile assemblies. Attention is drawn to BS 6716.

2 References

2.1 Normative references

This Part of BS 3546 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 3546 only when incorporated in it by updating or revision.

2.2 Informative references

This Part of BS 3546 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 Definitions

For the purposes of this British Standard the following definitions apply.

3.1

coated fabric

a material composed of two or more layers, at least one of which is of a textile material (woven, knitted, or non-woven) and at least one of which is a substantially continuous polymeric film, bonded closely together by means of an added adhesive or by the adhesive properties of one or more of the component layers

3.2

water penetration resistance (WPR)

the ability of a coated fabric to withstand a hydrostatic head pressure when tested in accordance with Method 29A of BS 3424-26:1990

NOTE It is recommended that the term “water penetration resistant” should not be applied to any coated fabric that does not exhibit a WPR greater than 10 kPa when tested in the “as received” condition. The term waterproof is a deprecated term which implies that its water penetration resistance is equivalent to its hydraulic bursting strength.

3.3

delamination

the partial or whole separation of two, or more component layers of a coated fabric. This can be either a fabric to polymer separation or a separation within the actual polymeric layer

NOTE See 6.3 of BS 3424-9:1990.

3.4

single face fabric

a coated fabric in which one face is composed of the coating polymer and the reverse is the textile substrate

3.5

double face coated fabric

a coated fabric in which both external faces are composed of a coating polymer (see 3.1)

3.6

double texture coated fabric

a coated fabric in which both faces of the coated fabric are of a textile nature (see 3.1)

3.7

immersion suit

a generic term encompassing, constant wear suits, abandonment suits and helicopter transfer suits

3.8

constant wear suit

a suit designed to protect the wearer whilst undertaking physical activity, from hostile climatic environments including the possibility of accidental immersion in water, where recovery from the water is likely to be imminent

3.9

abandonment suit

an immersion suit system designed to give the wearer protection from the cooling effects of immersion in water after abandoning installation, vessel, or aircraft during the emergency

3.10

helicopter transit suit

a coverall worn by helicopter passengers to reduce the effects of sudden immersion in cold water on the human physiology, in the event of a forced landing