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Method of specifying

General purpose polypropylene and propylene copolymer materials for moulding and extrusion

Committees responsible for this British Standard

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- British Cable Makers Confederation
- British Plastics Federation
- British Telecommunications plc
- Ministry of Defence
- Packaging and Industrial Films Association
- Standards Association of Australia
- Telecommunications Cables Group of BCMC

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Foreword

This British Standard has been prepared under the direction of the Plastics Standards Policy Committee. It is a revision of BS 5139:1974 which is withdrawn. It is related to ISO 1873 “*Plastics — Polypropylene (PP) and propylene — copolymer thermoplastics*” published by the International Organization for Standardization (ISO) which has now been issued in two parts, Part 1 “*Designation*” and Part 2 “*Preparation of test specimens and determination of properties*”. The ISO designation system in Part 1 only affords a coarse classification.

In view of the large number and types of general purpose polypropylene grades now available and their many and varied applications in the UK, the BSI committee concluded that it is no longer practicable to devise a single document that can serve as a purchasing specification for every available grade for every intended application. This revision has therefore transformed BS 5139 from a classification into a method of specifying general purpose polypropylene.

A designation system based on the melt flow rate has been included to differentiate polypropylene thermoplastics from each other, based on main polymer types, basic polymer parameters, relevant modifications and recommended end uses. It is not implied that materials having the same designation give the same performance neither does this standard provide engineering data or performance data which may be required to specify materials for particular end-use applications or uses.

Methods of test, including methods for the preparation of test specimens, are also given. It is intended that all the methods of test will be published as BS 2782 methods identical with the corresponding ISO standards. However, at the present time, although method numbers have already been allocated, some BS 2782 methods have not yet been published and, until they have, the corresponding ISO standards should be used.

The properties of a polypropylene material may be changed by the incorporation of additives such as pigments and antistatic agents and therefore it is essential that the values quoted for selected properties are related to the material in the form in which it is supplied.

The thermal history and the internal stresses of the test specimens may strongly influence the thermal and mechanical properties but exert less effect on the electrical properties which mainly depend on the chemical composition of the moulding compound.

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 British Standard describes a method of specifying requirements for all propylene homopolymers, co-polymers of propylene containing at least 50 % (mol/mol) of propylene and compositions thereof, in the form of powder, granules or pellets including compositions modified by colourants, additives and fillers.

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

2 Designation

2.1 When required, the designation system given in 2.2 in which the general purpose polypropylene is classified according to its basic type, method of processing, additives, designatory property, i.e. melt flow rate, and certain other supplementary information shall be used.

The designation system is intended only to indicate a broad classification and in most circumstances specific values for the designatory properties and other characteristics will be required (see clause 3 and Table 1, Table 2 and Table 3).

Table 1 — Codes for the intended application and method of processing

Code	Intended application and method of processing
A	adhesives
B	blow moulding
B1	extrusion blow moulding
B2	injection blow moulding
C	calendering
E	extrusion
E1	extrusion of pipes
E2	extrusion of profiles
E3	extrusion of sheets
E4	extrusion of tubings
E5	coextrusion
F	extrusion of films
G	general use
H	coating
H1	powder coating
H2	dip coating
K	cable and wire coating
L	monofilament extrusion
M	injection moulding
Q	compression moulding
R	rotational moulding
S	sintering
T	tape manufacture
V	thermoforming
X	no indication
Y	textile yarns, spinning

2.2 The designation shall consist of the following information given in the order presented:

- a) the number and date of this British Standard, i.e. BS 5139:1991;
- b) identification of the plastics materials, i.e. either PP-H, PP-C, PP-R and PP-Q, as follows.
 - 1) *Type H*: all propylene homopolymers
 - 2) *Type C*: all thermoplastic propylene block copolymers having not more than 50 % (mol/mol) of another monomer or monomers co-polymerized with propylene, and their blends with elastomeric and/or other 1-olefinic polymers in which the total polymer fraction consists of at least 50 % (mol/mol) of propylene.
 - 3) *Type R*: all thermoplastic propylene random co-polymers having not more than 50 % (mol/mol) of another monomer or monomers co-polymerized with propylene, and their blends with elastomeric and/or other 1-olefinic polymers in which the total polymer fraction consists of at least 50 % (mol/mol) of propylene.
 - 4) *Type Q*: blends of polymers with at least 50 % (mol/mol) of propylene homopolymer type H, block copolymer and/or random copolymer type R.

Table 2 — Codes for additives and other supplementary information

Code	Additives and other supplementary information
A	processing stabilized
B	antiblocking
C	coloured
D	powder
E	expandable
F	special burning characteristics
G	granules
H	high heat stabilized
H1	stabilized against radiation
H2	extraction resistant
K	metal deactivated
L	light and weather stabilized
M	nucleated
N	natural (no colour added)
P	impact modified
Q1	plateable
Q2	laser printable
S	lubricated
T	transparent
X	crosslinkable
Y	increased electrical conductivity
Z	antistatic