BS EN 15507:2017

BSI Standards Publication

# Packaging – Transport packaging for dangerous goods – Comparative material testing of polyethylene grades

# National foreword

This British Standard is the UK implementation of EN 15507:2017. It supersedes BS EN 15507:2008, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PKW/0/4, Packaging - Dangerous Goods.

A list of organizations represented on this committee can be obtained on request to its secretary.

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# EN 15507

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English Version

# Packaging - Transport packaging for dangerous goods - Comparative material testing of polyethylene grades

Emballages - Emballages pour le transport des marchandises dangereuses - Essais comparatifs de divers grades de polyéthylène

Verpackung - Verpackungen zur Beförderung gefährlicher Güter - Vergleichende Werkstoffprüfung von Polyethylensorten

This European Standard was approved by CEN on 11 September 2017.

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## European foreword

This document (EN 15507:2017) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15507:2008.

The main changes with respect to the previous edition are listed below:

a) The introductory texts for "Normative references" and “Terms and definitions” have been modified.

b) Clause 2 “Normative references” has been revised.

c) The references to withdrawn standards EN ISO 16101, EN ISO 16104, EN ISO 16467 and EN ISO 23667 have been replaced by current standards EN ISO 16495 and EN ISO 13274.

d) Editorial changes were made.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# Introduction

This European Standard was developed to provide requirements and test procedures for comparative testing of polyethylene grades of high and medium molecular weight high density polyethylene, used for the manufacture of packaging and IBCs for the transport of dangerous goods. These specific material parameters relate to the test procedures described in the standards:

EN ISO 13274:2013, *Packaging — Transport packaging for dangerous goods — Plastics compatibility testing for packaging and IBCs* (ISO 13274:2013 + Cor. 1:2014)

EN ISO 16495:2013, *Packaging — Transport packaging for dangerous goods — Test methods* (ISO 16495:2013)

The aim of the test methods described in this European Standard is to provide information for consideration as part of a selective test procedure. Selective testing procedures, are described in Clause 8 in the standards above and can eliminate or reduce the requirement to carry out the full test procedures described each time a new grade of high density polyethylene is used for the manufacture of the same design type.

The test requirements and procedures in the standards above for plastics packaging and IBCs meet the provisions set out in the multimodal United Nations Recommendations on the transport of Dangerous Goods [1]. These UN Recommendations are given legal entity by the provisions of a series of modal agreements and regulations for the international transport of dangerous goods, details of which can be found in the Bibliography.

These international agreements include:

— the European Agreement concerning the International Carriage of Dangerous goods by Road (ADR), (covering most of Europe as well as parts of Asia and Northern Africa) [2];

— the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TIs), (world-wide) [3];

— the International Maritime Dangerous Goods Code (IMDG Code), (world-wide) [4];

— regulations concerning the International Carriage of dangerous Goods by Rail (RID), (covering most of Europe, parts of North Africa and the Middle East) [5].

The application of this standard will need to take account of the requirements of these international agreements and the relevant national regulations [6], [7] for domestic transport of dangerous goods.

It is important to note that there will be certain modal differences from the UN Recommendations and that the schedule for revision of the UN Recommendations and modal provisions may lead to temporary inconsistencies with this European Standard, which is regularly updated to reflect the latest version of the UN Recommendations.

This European Standard has been submitted for reference into the RID and/or the technical annexes of the ADR.

# 1 Scope

This European Standard specifies material parameters, test requirements and procedures for the comparative testing of polyethylene grades of high molecular weight high density polyethylene (PE-HD-HMW) and medium molecular weight high density polyethylene (PE-HD-MMW), used for the manufacture of packaging and IBCs for the transport of dangerous goods. It is intended to be used in conjunction with selective testing for packaging for liquids. The standard is not intended to be used for comparative testing of recycled plastics material.

NOTE This European Standard is intended to be used in conjunction with one or more of the international regulations set out in the Bibliography.

# 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 179-1:2010, *Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test (ISO 179-1:2010)*

EN ISO 1133-1, *Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics - Part 1: Standard method (ISO 1133-1)*

EN ISO 1183-1, *Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pyknometer method and titration method (ISO 1183-1)*

EN ISO 13274:2013, *Packaging - Transport packaging for dangerous goods - Plastics compatibility testing for packaging and IBCs (ISO 13274:2013)*

EN ISO 16495:2013, *Packaging - Transport packaging for dangerous goods - Test methods (ISO 16495:2013)*

EN ISO 17855-2:2016, *Plastics - Polyethylene (PE) moulding and extrusion materials - Part 2: Preparation of test specimens and determination of properties (ISO 17855-2:2016)*

ISO 16770:2004, *Plastics — Determination of environmental stress cracking (ESC) of polyethylene — Full-notch creep test (FNCT)*

# 3 Terms and definitions

For the purposes of this document the following apply.

**3.1**
**high molecular weight high density polyethylene**
**PE-HD-HMW**

natural Polyethylene with a density of > 940 kg/m$^3$, when measured at 23 °C after annealing at 100 °C for 30 min, and a melt mass-flow rate at 190 °C/21,6 kg load of < 12 g/600 s when measured according to EN ISO 1133-1