

SLOVENSKI STANDARD oSIST prEN IEC 61340-4-11:2024

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Elektrostatika - 4-11. del: Standardne preskusne metode za posebno uporabo - Preskušanje elektrostatičnih lastnosti kompozitnih IBC

Electrostatics - Part 4-11: Standard test methods for specific applications - Testing of electrostatic properties of composite IBC

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101/698/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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IEC TC 101 : ELECTRO	DSTATICS				
SECRETARIAT:		SECRETARY:			
Germany		Mr Hartmut Berndt			
OF INTEREST TO THE FOLLOWING COMMITTEES:		PROPOSED HORIZONTAL STANDARD:			
		Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.			
FUNCTIONS CONCERNE	ED:				
EMC		QUALITY ASSURANCE SAFETY			
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TITLE:

Electrostatics - Part 4-11: Standard test methods for specific applications - Testing of electrostatic properties of composite IBC

PROPOSED STABILITY DATE: 2028

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66	FOREWORD								
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99	Th	e text of this International	Standard is ba	sed on t	he following docu	ments	:		
			FDIS		Report on voting	g			
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Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

103 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- 108 withdrawn,
- 109 replaced by a revised edition, or
- 110 amended.
- 111

112	The National Committees are requested to note that for this document the stability date is 20XX
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- 115

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INTRODUCTION

117 Rigid Intermediate Bulk Containers (RIBC), including composite IBC, are widely used for storage, 118 transportation and handling of liquids.

Only composite IBC are considered in this part of IEC 61340. The detailed definition of composite IBC is specified in clause 6.5.1.3.4 of the Reference [1]¹. Composite IBC with plastic inner receptacles comprise a rigid outer casing surrounding a plastic inner receptacle, together with appropriate service and structural equipment. The assembled outer casing and inner receptacle form an integral unit for filling, storage, transportation and emptying.

The inner receptacle is not intended to perform a containment function without its outer casing. A "rigid" inner receptacle is a receptacle which retains its general shape when empty without closures in place and without benefit of the outer casing. Any inner receptacle that is not "rigid" is considered to be "flexible" (see paragraph 6.5.5.4.2 of Reference[1]).

Usually such a receptacle is made of HDPE (High Density Poly Ethylene) which shows a good chemical resistance to various liquids. The volume is usually between 0,5 m³ and 1,3 m³ and is typically 1 m³.

HDPE is an electrically insulating material which can become electrostatically charged. Often the liquid inserted into a composite IBC is also electrically insulating. High electrostatic charges can occur during filling and emptying processes, and remain for a long period of time. An ignition hazard can occur which is why electrostatically unprotected composite IBC are not permitted to be used in hazardous areas.

Hazardous areas require the use of electrostatic protected IBC.

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¹ Numbers in square brackets refer to the Bibliography

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Part 4-11: Standard test methods for specific applications – Testing of electrostatic properties of composite IBC

ELECTROSTATICS –

140 **Scope**

141 This part of IEC 61340 specifies the electrostatic testing, design and safe use requirements for 142 composite intermediate bulk containers (IBC) intended for use in hazardous areas.

143 Composite IBC are often filled with flammable liquids which can create an explosive atmosphere in the 144 inner receptacle. The design requirements for composite IBC intended for such use are defined in 145 7.3.4.5 of IEC TS 60079-32-1:2013.

The test procedures described in this document can be used by manufacturers, suppliers and product
 users for product qualification and compliance verification of new and reconditioned composite IBC.
 Additionally the requirements of this standard may be used for testing the electrostatic properties of
 composite IBC, independent of any inspection periods.

Precautions regarding the use of composite IBC (e.g., stirring, cleaning etc.) are defined in 7.3.4.5 of IEC TS 60079-32-1:2013.

152 Compliance with the requirements of this document does not mitigate the need for full risk assessment.

153 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

157 IEC TS 60079-32-1:2013 Explosive atmospheres - Part 32-1: Electrostatic hazards, guidance 158 +AMD1:2017

159 IEC 60079-32-2:2015 Explosive atmospheres - Part 32-2: Electrostatic hazard – Tests

https://standards.iteh.ai/catalog/standards/sist/3961659f-643b-44fd-aaa1-ac52fd6ca6a9/osist-pren-iec-61340-4 160 IEC 61010-1, Safety requirements for electrical equipment for measurement, control, and laboratory use

- 161 Part 1: General requirements
- 162 IEC 61010-2-030, Safety requirements for electrical equipment for measurement, control, and laboratory 163 use – Part 2-030: Particular requirements for equipment having testing or measuring circuits

ISO 48-4:2018, Rubber, vulcanized or thermoplastic - Determination of hardness - Part 4: Indentation
 hardness by durometer method (Shore hardness)

166

167 **Terms and definitions**

- For the purposes of this document, the terms and definitions of IEC/TS 60079-32-1:2013 and the following apply.
- 170 ISO and IEC maintain terminological databases for use in standardization at the following addresses:
- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at <u>http://www.iso.org/obp</u>

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174 **3.1**

175 reconditioning

refurbishment of a composite IBC using various processes to make it ready for re-use without any additional restrictions regarding its intended use

- 178 Note to entry:
- 179 Reconditioning refers to the Routine maintenance of rigid IBCs (e.g. cleaning of IBC), Remanufactured IBC or Repaired IBC 180 as defined in clause 1.2.1 of Reference [2]
- 181

182 **3.2**

183 rebottling

- replacement of the inner receptacle of a used composite IBC by a new one
- Note 1 to entry: Inner receptacle is also known as bottle.
 Note 2 to entry: Rebottling can be done under the regime of Repaired IBC as defined in clause 1.2.1 of Reference [2]

187 Electrical resistance measurements

188 **4.1** Atmosphere for conditioning and testing

Unless otherwise agreed, the atmosphere for conditioning and testing for laboratory evaluation and acceptance testing shall be (23 ± 2) °C and (25 ± 5) % relative humidity, and the conditioning time prior to testing shall be at least 24 h.

192 Compliance verification testing is commonly performed under prevailing operational conditions of 193 temperature and relative humidity. If compliance verification testing is done outside of normal operations, 194 in a separate laboratory for example, temperature and relative humidity shall either be as specified 195 above, or as typically found in normal operations. The temperature and relative humidity at the time of 196 testing, and during any conditioning period, shall be recorded with the test results.

197 **4.2 Apparatus**

198 4.2.1 Instrumentation for measuring surface resistance and resistance to earth

199 **4.2.1.1 General**

Resistance measuring apparatus may consist of either a DC power supply and ammeter, or an integrated instrument (ohmmeter).

With some instrumentation, either one of the measuring terminals can be connected to earth. However, in some cases, it is important to only connect the correctly designated terminal to earth. This is an important consideration if the earth bonding point is connected to earth when measurements are made.

WARNING – The procedures and equipment described in this document can expose personnel to hazardous electrical conditions. Users of this document are responsible for selecting equipment that complies with applicable laws and regulatory codes. Test procedures shall not be carried out in the presence of powders, liquids or gases that can form explosive atmospheres. Users of this document are encouraged to carry out proper risk assessments before undertaking any of the test procedures. Safety requirements for electrical equipment for measurements are given in IEC 61010-1 and IEC 61010-2-030.

4.2.1.2 Instrumentation for laboratory evaluation

- The open circuit voltage shall be $(10,0 \pm 0,5)$ V for measurements less than 1 × 10⁶ Ω .
- The output voltage under load shall be (500 ± 25) V for measurements greater than or equal to 1 × 10⁶ Ω .

If an ohmmeter is used, readings shall be possible at least from $1 \times 10^3 \Omega$ to $1 \times 10^{13} \Omega$, with an accuracy of ± 10%.