

**SLOVENSKI STANDARD**  
**oSIST prEN 61010-2-051:2018**  
**01-februar-2018**

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**Varnostne zahteve za električno opremo za meritve, nadzor in laboratorijsko uporabo - 2-051. del: Posebne zahteve za laboratorijsko opremo za mešanje in premešavanje**

Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-051: Particular requirements for laboratory equipment for mixing and stirring

Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte - Teil 2-051: Besondere Anforderungen an Laborgeräte zum Mischen und Rühren  
(standards.iteh.ai)

Règles de sécurité pour appareils électriques de mesurage, de régulation et de laboratoire - Partie 2-051: Exigences particulières pour appareils de laboratoire utilisés pour mixer et agiter  
<https://standards.iteh.ai/catalog/standards/sist/0a511b7c-1466-4504-b711-82d0b10ef72d/osist-pren-61010-2-051-2018>

**Ta slovenski standard je istoveten z: prEN 61010-2-051:2017**

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**ICS:**

19.080	Električno in elektronsko preskušanje	Electrical and electronic testing
71.040.20	Laboratorijska posoda in aparati	Laboratory ware and related apparatus

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**en,fr,de**

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66/642/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: <b>IEC 61010-2-051 ED4</b>	
DATE OF CIRCULATION: <b>2017-12-01</b>	CLOSING DATE FOR VOTING: <b>2018-02-23</b>
SUPERSEDES DOCUMENTS: <b>66/627A/RR</b>	

IEC TC 66 : SAFETY OF MEASURING, CONTROL AND LABORATORY EQUIPMENT	
SECRETARIAT: United Kingdom	SECRETARY: Mr David Hyde
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING
<p><b>Attention IEC-CENELEC parallel voting</b> <a href="https://standards.iteh.ai/catalog/standards/sist/6a31fb4e-46bc-4304-87f1-3cd81467522a/iec-61010-2-051-2018">https://standards.iteh.ai/catalog/standards/sist/6a31fb4e-46bc-4304-87f1-3cd81467522a/iec-61010-2-051-2018</a></p> <p>The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.</p> <p>The CENELEC members are invited to vote through the CENELEC online voting system.</p>	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

**Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-051: Particular requirements for laboratory equipment for mixing and stirring**

NOTE FROM TC/SC OFFICERS:

This CDV is intended only to align IEC 61010-2-051:2015 with IEC 61010-1:2010 and its amendment 1:2016. A revision this soon is justified by the large number of significant changes introduced by this amendment 1. With this revision IEC 61010-2-051 will be in line with the latest requirements of IEC 61010-1 + A1.

This document contains no technical changes to already accepted base documents (IEC 61010-1:2010 and its amendment 1:2016 and IEC 61010-2-051:2015) but one; Clause 6.8.3.1 is modified because otherwise it would need a specific European deviation in order to be harmonised to the LVD 2014/35/EU (ref. NAC assessment of

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IEC 61010-1/A1). Further technical development is reserved for a new amendment or edition to be initiated separately as necessary.

This alignment is realised as a new 4th edition of IEC 61010-2-051 simply because of document control; the previous edition 3.0 is based on the third edition of IEC 61010-1:2010 (without the Amendment 1:2016) and amending it to incorporate the contents of IEC 61010-1 Amendment 1 would need an unnecessary repeating of the requirements in that amendment 1 that are not particular for the equipment in the scope of IEC 61010-2-051. Furthermore, technically, one would need to follow 4 documents in parallel to get the full text of this part 2 (61010-1:2010, 61010-1 A1:2016, 61010-2-051:2015, and 61010-2-051 A1). With this approach, and when the consolidated version of IEC 61010-1:2010/A1:2016 conveniently is published, only two documents are needed.

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT  
FOR MEASUREMENT, CONTROL, AND LABORATORY USE –**
**Part 2-051: Particular requirements for laboratory  
equipment for mixing and stirring**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61010-2-051 has been prepared by IEC technical committee 66: Safety of measuring, control and laboratory equipment.

It has the status of a group safety publication in accordance with IEC Guide 104.

This ~~third~~ fourth edition cancels and replaces the ~~second~~ third edition published in 2015~~03~~. It constitutes a technical revision and includes the following changes from the ~~second~~ third edition:

- [adaptation of changes introduced by Amendment 1 of IEC 61010-1;](#)
- [added tolerance for stability of a.c. voltage test equipment to Clause 6;](#)
- [added required risk assessment for equipment intended to be used with flammable, hazardous, or toxic fluids to Clause 17;](#)
- [editorial changes.](#)

The text of this standard is based on the following documents:

FDIS	Report on voting
66/xxx/FDIS	66/xxx/RVD

81  
82 Full information on the voting for the approval of this standard can be found in the report on  
83 voting indicated in the above table.

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

85 A list of all parts of the IEC 61010 series, under the general title: *Safety requirements for*  
86 *electrical equipment for measurement, control, and laboratory use*, may be found on the IEC  
87 website.

88 This Part 2-051 is intended to be used in conjunction with IEC 61010-1. It was established on  
89 the basis of the third edition (2010) [and its Amendment 1 \(2016\)](#). This Part 2-051 supplements  
90 or modifies the corresponding clauses in IEC 61010-1 so as to convert that publication into  
91 the IEC standard: *Safety requirements for laboratory equipment for mixing and stirring*.

92 Where a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies  
93 as far as is reasonable. Where the part states "addition", "modification", "replacement" or  
94 "deletion", the relevant requirement, test specification, or note in Part 1 should be adapted  
95 accordingly.

96 In this standard:

97 1) the following print types are used:

- 98 – requirements: in roman type;  
99 – NOTES: in small roman type;  
100 – *conformity and test: in italic type*;  
101 – terms used throughout this standard which have been defined in clause 3: SMALL ROMAN  
102 CAPITALS; [https://standards.iteh.ai/catalog/standards/sist/6a31fb4e-46bc-4304-87f1-](https://standards.iteh.ai/catalog/standards/sist/6a31fb4e-46bc-4304-87f1-824019e72d/cis-pr-en-61010-2-051-2018)

103 2) subclauses, figures, tables and notes which are additional to those in Part 1 are numbered  
104 starting from 101. Additional annexes are lettered starting from AA.

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

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

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115 **SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT**  
 116 **FOR MEASUREMENT, CONTROL, AND LABORATORY USE –**

117  
 118 **Part 2-051: Particular requirements for laboratory**  
 119 **equipment for mixing and stirring**  
 120  
 121  
 122

123 **1 Scope and object**

124 This clause of Part 1 is applicable except as follows:

125 **1.1.1 Equipment included in scope**

126 *Replacement:*

127 *Replace the text with the following:*

128 This part of IEC 61010 is applicable to electrically operated laboratory equipment and its  
 129 accessories for mechanical mixing and stirring, where mechanical energy influences the  
 130 shape or size or homogeneity of materials and their accessories. Such devices may contain  
 131 heating elements.

132 NOTE If all or part of the equipment falls within the scope of one or more other Part 2 standards of IEC 61010 as  
 133 well as within the scope of this standard, consideration is to be given to those other Part 2 standards. The standard  
 134 for equipment which contains heating devices is IEC 61010-2-010.

135 ~~1.1 Scope~~

136 ~~*Replacement:*~~

137 ~~*Replace the text in 1.1 by the following paragraph:*~~

138 ~~This part of IEC 61010 is applicable to electrically operated laboratory equipment and its~~  
 139 ~~accessories for mechanical mixing and stirring, where mechanical energy influences the~~  
 140 ~~shape or size or homogeneity of materials and their accessories. Such devices may contain~~  
 141 ~~heating elements.~~

142 ~~NOTE If all or part of the equipment falls within the scope of one or more other Part 2 standards of IEC 61010 as~~  
 143 ~~well as within the scope of this standard, consideration is to be given to those other Part 2 standards. The standard~~  
 144 ~~for equipment which contain heating devices is IEC 61010-2-010.~~

145 **2 Normative references**

146 This clause of Part 1 is applicable except as follows:

147 *Addition:*

148 *Add the following references to the list:*

149 IEC 62061, *Safety of machinery – Functional safety of safety-related electrical, electronic and*  
 150 *programmable electronic control systems*

151 ISO 13849, *Safety of machinery – Safety-related parts of control systems*

152 **3 Terms and definitions**

153 This clause of Part 1 is applicable.

154 **4 Tests**

155 This clause of Part 1 is applicable.



## 156 5 Marking and documentation

157 This clause of Part 1 is applicable except as follows:

### 158 5.4.1 General

159 *Addition:*

160 *Add, after item h), the following new item:*

161 aa) if a HAZARD could be caused by operating a mixer or stirrer intended for use as HAND-  
162 HELD EQUIPMENT, there shall be a warning statement to that effect.

### 163 5.4.4 Equipment operation

164 *Additions:*

165 *Add after item j), the following new item:*

166 aa) *instructions for fixing the stirring vessel if specified and sold as part of a mixing system,*  
167 *or if otherwise applicable.*

168 *Add a new paragraph after the list of items as follows:*

169 The instructions shall warn against use of the equipment in hazardous atmospheres or with  
170 hazardous materials for which the equipment is not designed.

171 *Replacement:*

172 *Replace the paragraph before the compliance statement by the following:*

173 The user shall be made aware that the protection provided by the equipment may be impaired  
174 if the equipment is used with accessories not provided or recommended by the manufacturer,  
175 or used in a manner not specified by the manufacturer.

## 176 6 Protection against electric shock

177 This clause of Part 1 is applicable except as follows:-

### 178 6.8.3.1 The a.c. voltage test

179 *Replacement:*

180 *Replace the first sentence by the following sentence:*

181 *The voltage tester shall be capable of maintaining the test voltage throughout the test within*  
182 *+/- 5% of the specified value.*

## 183 7 Protection against mechanical HAZARDS

184 This clause of Part 1 is applicable except as follows:

### 185 7.3.2 Exceptions

186 *Replacement:*

187 *Replace, in item a), the words "for example drilling and mixing equipment" by the following:*

188 for example stirrer shafts and impellers extending downwards into material being stirred.

189 *Addition:*

190 *Add the following subclauses:*

#### 191 7.3.101 Speed controls

192 If a SINGLE FAULT of an electronic speed control could cause a HAZARD, the equipment shall  
193 incorporate means to interrupt power or otherwise prevent the HAZARD.

194 *Conformity is checked by inspection and test.*

### 195 **7.3.102 Movement during operation**

196 Equipment [other than HAND-HELD EQUIPMENT](#) shall not change position during NORMAL USE.

197 *Conformity is checked by inspection and test. Equipment which has not moved by more*  
198 *than 5 mm after operation for 10 min is considered to meet the requirement.*

### 199 **7.3.103 Restarting after interruption**

200 Depending on the operation, a HAZARD may be caused either by re-starting or by not re-  
201 starting after interruption of the mixing action. Instructions shall specify whether equipment  
202 will re-start or not re-start, both in the case of MAINS interruption and in the case of a fault or  
203 mechanical interruption. If after interruption a HAZARD can occur the equipment shall be  
204 equipped with an audible or visible signal to warn that an interruption has occurred.

205 *Conformity is checked by inspection of documentation.*

### 206 **7.3.104 HAZARDS related to application**

207 Additional HAZARDS may occur with equipment used to mix flammable materials, or where the  
208 transfer of mechanical energy to glass apparatus could lead to breakage.

209 Instructions for use shall warn against the use of equipment in such applications unless the  
210 equipment incorporates appropriate safety devices to prevent a HAZARD in SINGLE FAULT  
211 CONDITION. Such safety devices shall be independent from control systems.

212 Examples of HAZARDS and appropriate safety devices include the following.

213 a) Where failure of the mixing action could cause a HAZARD, for example in metal-organic  
214 reactions, the safety device shall initiate an alarm signal:

- 215 1) if the drive shaft or mixer fails to turn when the mixer is switched on; or
- 216 2) when an overload causes the shaft speed to fall below a preset level.

217 NOTE Speed reduction can be caused by a lack of power or by the operation of an automatic device which  
218 reduces the shaft speed in the case of an overload.

219 b) Where a HAZARD could be caused by excessive torque applied to high-viscosity material,  
220 for example through glass breakage, the safety device shall initiate an alarm signal if the  
221 torque rises above a preset level. It is recommended that safety devices work according to  
222 the principle of rest-current.

223 *Conformity is checked by inspection and test.*

## 224 **8 Resistance to mechanical stresses**

225 This clause of Part 1 is applicable except as follows:

### 226 **8.1 General**

227 *Replacement:*

228 *Replace the text of item 3) by the following:*

- 229 3) *except for FIXED EQUIPMENT, for equipment with a mass over 100 kg, or for equipment*  
230 *whose size and weight make unintentional movement unlikely and which is not moved in*  
231 *NORMAL USE, the appropriate test of 8.3. The equipment is not operated during the tests.*

## 232 **9 Protection against the spread of fire**

233 This clause of Part 1 is applicable.

## 234 **10 Equipment temperature limits and resistance to heat**

235 This clause of Part 1 is applicable.