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AMENDMENT 2
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Plastics — Determination of Izod impact strength

AMENDMENT 2: Precision data

Plastiques — Détermination de la résistance au choc Izod

AMENDEMENT 2: Données de fidélité

Reference number
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Foreword

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Amendment 2 to ISO 180:2000 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties*.

Plastics — Determination of Izod impact strength

AMENDMENT 2: Precision data

Page 8, Clause 9

Replace the paragraph with: “See Annex A.”.

Page 10, Clause 10

Add, at the end of the clause, the following new Annex A:

Annex A
(informative)

Precision statement

A.1 Table A.1 is based on a round-robin test involving six laboratories and three materials. All of the test samples were prepared and distributed by one source, except for notching, which was the responsibility of the laboratories involved. Notches were then verified by the laboratory responsible for specimen distribution. Each "test result" was the average of ten individual determinations. Each laboratory obtained and reported one test result for each material on two consecutive days. Test results are labelled according to laboratory and day (e.g. A1, A2, B1 and B2). Data from laboratory F were significantly different than data from the others; for this reason, they were excluded from the analysis and not reported.

A.2 Table A.2 contains statistical results output from ASTM E691.

CAUTION — Due to the limited number of laboratories and materials, the following explanations of *r* and *R* (see A.3) are only intended to present a meaningful way of considering the approximate precision of the test method. The data in table A.2 should not be rigorously applied to the acceptance or rejection of material, as those data are specific to the round robin and might not be representative of other lots, conditions, materials or laboratories.

A.3 The concepts of "*r*" and "*R*" in Table A.2: if s_r and s_R have been calculated from a large enough body of data, and for test results that were from one test determination, then:

a) repeatability: two test results obtained within one laboratory shall be judged not equivalent if they differ by more than the *r* value for that material. *r* is the interval representing the critical difference between two test results for the same material, obtained by the same operator using the same equipment in the same laboratory.

b) reproducibility: two test results obtained by different laboratories shall be judged not equivalent if they differ by more than the *R* value for that material. *R* is the interval representing the critical difference between two test results for the same material, obtained by different operators using different equipment in different laboratories.

Any judgement in accordance with A.3 above would have approximately 95 % (0,95) probability of being correct.

Table A.1 — Data for two consecutive days, notched impact strength

Notched impact strength in kilojoule per square metre (kJ/m^2)

Laboratory/day	ABS		PBT		PBT GF30	
	Average	Std. dev.	Average	Std. dev.	Average	Std. dev.
A1	22,32	1,72	5,96	2,48	11,13	1,53
A2	22,46	0,64	6,46	0,96	11,31	0,84
	–	–	–	–	–	–
B1	20,70	0,32	4,81	0,37	10,12	0,62
B2	21,08	0,44	4,59	0,16	10,41	0,46
	–	–	–	–	–	–
C1	20,27	0,35	4,37	0,29	9,19	0,36
C2	19,97	0,27	4,11	0,13	8,93	0,31
	–	–	–	–	–	–
D1	20,57	0,41	5,09	0,12	9,85	0,52

Table A.1 *(continued)*

D2	20,54	0,46	5,16	0,06	10,06	0,64
	–	–	–	–	–	–
E1	21,59	0,85	7,73	0,38	12,00	1,23
E2	20,59	0,56	7,61	0,28	11,96	1,61
	–	–	–	–	–	–
Average	21,01	–	5,59	–	10,50	–

Table A.2 — Precision, notched impact strength

Notched impact strength in kilojoule per square metre (kJ/m^2)

Material	Average	s_r	s_R	r	R
ABS	21,01	0,35	0,89	0,99	2,49
PBT	5,59	0,20	1,38	0,55	3,86
PBT GF30	10,50	0,15	1,14	0,42	3,19

s_r = standard deviation within laboratory

s_R = standard deviation between laboratories

r = 95 % repeatability limit = 2,8 s_r

R = 95 % reproducibility limit = 2,8 s_R

Page 10, Clause 10

At the end of the clause and the new Annex A, add the following new Bibliography:

Bibliography

[1] ASTM E691-11, *Standard Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method*

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