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AMENDMENT 1
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Carbon-fibre-reinforced plastics — Determination of the size and aspect ratio of crushed objects

AMENDMENT 1

Plastiques renforcés de fibres de carbone — Détermination des dimensions et du rapport d'apparence d'objets broyés

AMENDEMENT 1

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This document was prepared by Technical committee ISO/TC 61, *Plastics*, Subcommittee SC 13, *Composites and reinforcement fibres*.

Carbon-fibre-reinforced plastics — Determination of the size and aspect ratio of crushed objects

AMENDMENT 1

Clause 10

Replace Clause 10 with the following.

10 Precision

Table 1 gives the repeatability data from tests conducted at one laboratory with three materials. Four samples were sampled from a pile of each crushed CFRP, respectively. Each test result was the average of 100 individual measurements by method B.

Table 1 — Average and repeatability — Method B

Material	Parameter	Unit	Average	s_r	r
UD TYPE CFRP	L	mm	7,8	0,47	1,31
	W	mm	1,4	0,07	0,19
	R_A	—	7,4	0,66	1,83
FABRIC TYPE CFRP	L	mm	5,8	0,40	1,12
	W	mm	3,1	0,11	0,32
	R_A	—	2,1	0,07	0,18
MIXTURE CFRP	L	mm	6,0	0,99	2,76
	W	mm	1,9	0,33	0,94
	R_A	—	4,9	0,34	0,95

s_r is the inter-sample standard deviation from the mean.

r is the inter-sample repeatability limit (= 2,8 s_r; 95 % confidence limits).

Table 2 provides the results of a comparison study of the three test methods at one laboratory with three materials. One sample was sampled from a pile of each crushed CFRP. Each test was conducted with the same 100 fragments. Each result was the average of 100 individual measurements by methods A, B and C.

Table 2 — Average and comparison of the three test methods

Material	Parameter	Unit	Average			Mean	s_m	CV
			Method A	Method B	Method C			
UD TYPE CFRP-1	L	mm	15,0	15,2	14,3	14,8	0,46	3,1 %
	W	mm	2,6	2,7	2,6	2,6	0,05	1,8 %
	R_A	—	7,9	8,3	7,5	7,9	0,40	5,0 %
UD TYPE CFRP-2	L	mm	12,2	12,3	12,0	12,2	0,16	1,3 %
	W	mm	5,8	5,8	5,8	5,8	0,03	0,5 %
	R_A	—	2,7	2,7	2,5	2,6	0,11	4,4 %

s_m is the inter-test method standard deviation from the mean.

CV is the coefficient of variation.

Table 2 *(continued)*

Material	Parameter	Unit	Average			Mean	s_m	CV
			Method A	Method B	Method C			
FABRIC TYPE CFRP	L	mm	6,8	6,6	7,0	6,8	0,21	3,1 %
	W	mm	4,1	4,0	4,4	4,2	0,18	4,3 %
	R_A	—	1,7	1,8	1,7	1,8	0,03	1,9 %
s_m is the inter-test method standard deviation from the mean.								
CV is the coefficient of variation.								

Table 3 gives the interlaboratory reproducibility data from tests conducted at four laboratories with three materials. One sample was sampled from a pile of each crushed CFRP. Each test was conducted with the same 100 fragments. Each result was the average of 100 individual measurements at two laboratories by methods A, B and C.

Table 3 — Average and reproducibility of the three test methods

Material	Parameter	Unit	Average			Mean	s_R	R
			Method A	Method B	Method C			
UD TYPE CFRP-1	L	mm	16,8	14,5	15,4	15,6	1,74	4,88
	W	mm	2,9	2,5	2,9	2,8	0,37	1,04
	R_A	—	7,9	8,5	6,8	7,8	0,68	1,91
UD TYPE CFRP-2	L	mm	13,0	12,1	13,1	12,7	0,99	2,77
	W	mm	6,1	5,9	6,2	6,0	0,33	0,91
	R_A	—	2,7	2,7	2,5	2,6	0,08	0,23
FABRIC TYPE CFRP	L	mm	7,1	6,6	7,1	6,9	0,30	0,84
	W	mm	4,6	4,3	4,4	4,4	0,37	1,04
	R_A	—	1,6	1,7	1,7	1,7	0,11	0,30
s_R is the interlaboratory standard deviation from the mean.								
R is the interlaboratory reproducibility limit (=2,8 s_R; 95 % confidence limits).								

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