



Testing. Advising. Assuring.

Exova Warringtonfire, Frankfurt ist von der Bundesrepublik Deutschland anerkannte Prüfstelle für Brandprüfungen nach FTP-Code der IMO

Test report

No. 2011-1241-1

issued 29.04.2011

Applicant: Kolpa d.d.
Rosalnice 5
8330 Metlika
Slovenia

Date of order: 15.02.2011
Date of sampling: No official sampling by a representative
of the Exova Warringtonfire, Frankfurt
Date of arrival: 22.02.2011
Date of test: 20.04.2011

Order

Testing of the smoke development and toxicity to certificate the flammability characteristic according to Resolution MSC.61(67), FTP Code, Annex 1, Part 2.

Description / designation of the test object

KERROCK 100 - Composite material

Description of the relevant test procedure

IMO FTPC Part 2 for the smoke development and toxicity

1. Description of the specimen material

1.1 Details of the customer:

KERROCK 100 is a composite material, which contains 2/3 is $\text{Al}(\text{OH})_3$ - Aluminium Hydroxide (CAS No. 21645-51-2) and 1/3 is MMA – Methyl methacrylate (2-propenoic acid, 2-methyl, methyl ester) (CAS No. 000080-62-6).

Colour: white

1.2 At the sample preparation at the Exova Warringtonfire, Frankfurt determined values:

Composite Material

Thickness approx. 12 mm

Colour: elfenbein

Testing after clima storing (23°C / 50 % relative humidity).

Test results: Smoke development at 50 KW/m²

specimen	weight [g]	ignition [s]	extinguish [s]
1	120,7	-	-
2	119,8	-	-
3	118,0	-	-

minutes	DS specimen	DS specimen	DS specimen
	1	2	3
1	1	0	1
2	1	0	1
3	4	1	2
4	8	5	6
5	14	10	10
6	20	16	15
7	27	24	19
8	36	33	25
9	44	42	31
10	52	51	38
11	62	61	47
12	71	71	56
13	80	80	65
14	85	88	71
15	89	95	74
16	91	100	78
17	93	105	81
18	94	107	82
19	94	109	84
20	94	112	85
Ds max	95	112	86
Ds max [s]	1111	1200	1092

Test results: Smoke development at 25 KW/m²

specimen	weight [g]	ignition [s]	extinguish [s]
1	117,2	-	-
2	120,0	-	-
3	114,9	-	-

minutes	DS specimen	DS specimen	DS specimen
	1	2	3
1	1	1	1
2	1	1	1
3	1	1	1
4	1	2	1
5	1	2	1
6	1	2	2
7	2	4	2
8	3	3	4
9	4	4	5
10	7	6	8
11	10	8	10
12	13	11	14
13	16	13	16
14	19	14	20
15	23	15	24
16	27	15	28
17	31	15	31
18	34	15	35
19	38	17	39
20	43	20	42
DS max	43	20	43
Ds max [s]	1199	1201	1196

Test results: Smoke development at 25 KW/m² with flame

specimen	weight [g]	ignition [s]	extinguish [s]
1	121,2	900	1200
2	112,8	780	1080
3	113,7	900	1200

minutes	DS specimen	DS specimen	DS specimen
	1	2	3
1	0	0	0
2	0	0	0
3	0	0	1
4	0	0	1
5	0	0	1
6	0	0	1
7	0	2	1
8	1	3	1
9	2	5	1
10	3	7	1
11	5	9	1
12	7	11	1
13	9	10	1
14	11	8	1
15	12	6	1
16	11	5	1
17	9	4	1
18	8	4	2
19	6		3
20	5		5
Ds max	13	11	5
Ds max [s]	911	736	1201

Measurement of the toxicity:

Analytic procedure:	Measurement of the toxicity with at 50; 25 and 25kW/m ² flaming						
	Temperature sample extraction point: <40 °C						
Clima (23°C/50%r.F.):	>48	h	Testroom temperature / humidity	23	°C	50	% rel. LF

Specimen No.	Kw/m ² Gas	50 ppm	25 ppm	25 with flame ppm
1	Carbon	725	24	112
2	Monoxide	782	19	116
3	CO	812	26	124
	average	773	23	117
1	Hydrogen	0	0	0
2	Chloride	0	0	0
3	HCl	0	0	0
	average	0	0	0
1	Hydrogen	0	0	0
2	Fluoride	0	0	0
3	HF	0	0	0
	average	0	0	0
1	Nitrous Gases	2	0	3
2	NO-NO ₂	3	0	5
3		2	0	6
	average t	2	0	5
1	Bromwasser-	0	0	0
2	stoff	0	0	0
3	HBr	0	0	0
	average	0	0	0
1	Hydrogen	7	1	3
2	Cyanide	8	3	4
3	HCN	4	2	3
	average	6	2	3
1	Suflor Dioxide	0	0	0
2	Hydrogen Sulfide	0	0	0
3	SO ₂ -H ₂ S	0	0	0
	average	0	0	0

Requirements for classification:

The material fulfills the requirements for the smoke development and toxicity, if the average values of the test results the following limit values, see table not under and/or not exceed:

Probenart	Rauch	ppm	ppm	ppm	ppm	ppm	ppm	ppm
	D_m	CO	HCL	HF	NOx	HBr	HCN	SO₂
for materials used as surface of bulkheads, linings or ceilings, the D _m shall not exceed 200 in any test condition	≤ 200	≤ 1450	≤ 600	≤ 600	≤ 350	≤ 600	≤ 140	≤ 120
Result 50 KW	97,9	773	0	0	2	0	6	0
Result 25 KW nf	35,4	23	0	0	0	0	2	0
Result 25 KW fl	9,5	117	0	0	5	0	3	0

D_s = specific optical density

D_m = Average value from 3 attempts, with which, determined respective test condition maximum specific optical density

Assessment:

The in chapter 1 described material **fulfills** the requirements of the IMO FTPC Part 2 chapter 2.6.1.1 Smoke and chapter 2.6.2 toxicity for smoke development and toxicity

for the use as „materials used as surface of bulkheads, linings or ceilings”

In accordance with IMO FTPC, Annex 2, 2.2, in general surface materials and primary deck coverings with both the total heat release $Q_t < 0,2$ MJ and the peak heat release rate $q_p < 1,0$ kW (in accordance with part 5, annex1 / resolution A.653(16)) are considered to comply with the requirements of part 2, annex 1 without further testing.

The defaults of the listed test rules and test standards (in so far as relevant):
IMO Res. MSC.61(67)-(FTP-Code), IMO MSC/Circ.916, IMO MSC/Circ.1004, IMO MSC/Circ.1036, IMO MSC/Circ.1120, ISO 1716 (2002) were noticed and kept.

Special remark:

The test result is only valid for the in chapter 1 described material.

The test results relate only the behaviour of the test specimen of a product under the particular conditions of the test. They are not intended to be the only criterion that can cause potential fire hazards of the product in use.

This test report replace the test report 2011-1241 issued 29.04.2011 (date of signature) which is invalid from now on.

Frankfurt, 13th May 2011

A handwritten signature in blue ink, appearing to read "Walter".

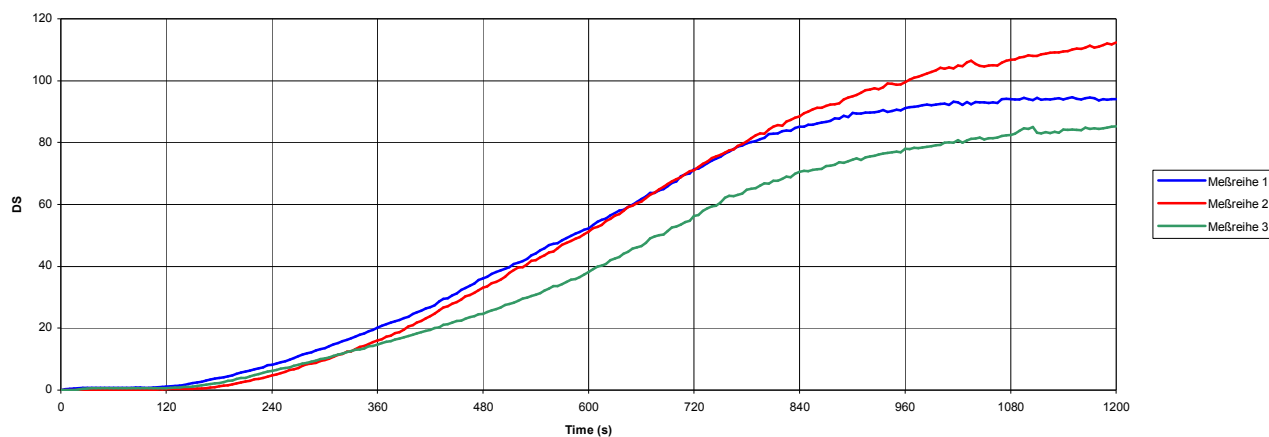
A. Walter
Tester in charge

A handwritten signature in blue ink, appearing to read "Zachäus".

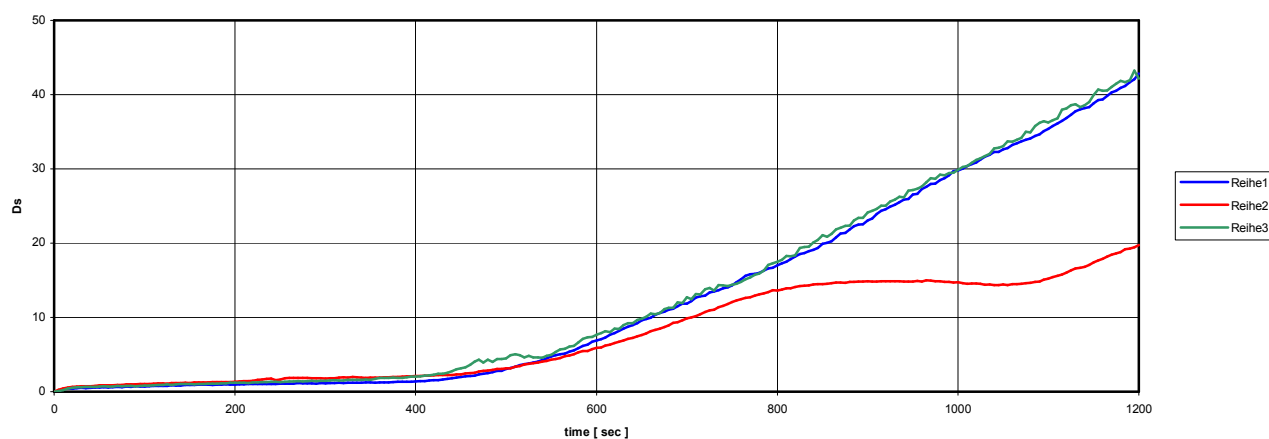
Dipl.-Ing. T. Zachäus
laboratory supervisor

The results of the tests relate only to the behaviour of the test sample which is designated on the top.
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The abridged account of a test report is only allowed with the agreement of the Exova Warringtonfire, Frankfurt.
This test report is a translation of the German version 2011-1241-1 (issued 13.05.2011). In case of doubt only the German version is valid
This test report contains 8 pages and 1 annex

Specific Optical Density Graph 50 Kw



Specific Optical Density Graph 25 Kw nf



Specific Optical Density Graph 25 Kw fl

