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Technical report

Date:	27.03.2009
Number of Technical report:	535 3920
Test object:	Afterglowing material samples
Client:	DNA Safety First Di Angelosante - Negri Associati S.R.L. (Centro Commerciale M.I.R.) Via Faentina, 175/A 48010 Fonace Zarattini (RA) ITALIA
Test order:	Measurement afterglowing characteristics according to DIN 67510 Part 1 - Measurement hours of afterglow - Measurement colour with and after lighting
Test method:	According to DIN 67510-1, Measurement system to measure afterglowing characteristics LMT B510LCOM Lighting with illuminant Xe, Geometry for colour measurement - with lighting according to DIN 5033 part 1, chapter 3.2: Illumination under e_1 = 45° Measurement under e_2 = 0° - during afterglow (inside of 5 min after lighting): Measurement under 0° Geometry for luminance measurement: Measurement under 0°

Test results:

Measurement hours of afterglow:

Time after ending the lighting in min	Luminance in mcd/m²	
	Sample 1	Sample 2
2	62.3	54.8
10	7.4	6.6
30	1.5	1.3
60	0.5	0.5

Based on the extrapolation of the measurement data results the hours of afterglow lasted 79 min for sample 1 and 84 min for sample 2 until the luminance of 0.3 mcd/m² was reached. Attachments 1 and 2 show the afterglowing characteristics in detail.

Measurement colour:

Time of measurement	Chromaticity coordinates		Chromaticity area
	x	y	
with lighting	0.329	0.389	EW
after lighting	0.325	0.395	EW

Summary:

Based on measurement data the material with afterglow characteristics has to be labelled in the following way:

54.8/6.6/0.5 - 79 - EW - EW / DIN 67 510-1

Berlin 30.03.2009

K. Anders
Deputy of head of laboratory

Attachement 1 of the Technical report No. 535 3920

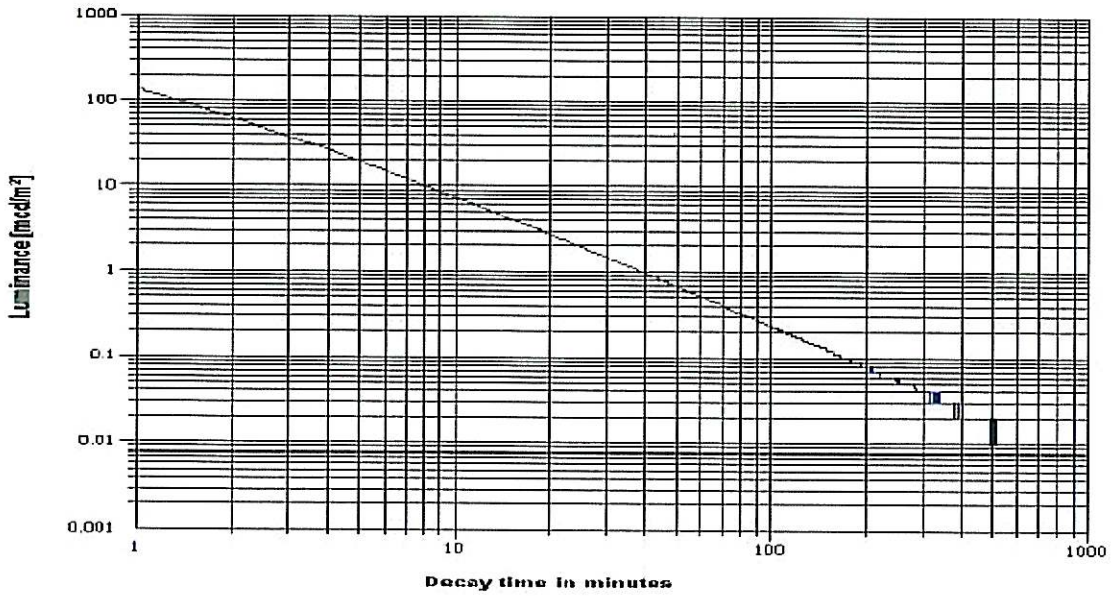
Measuring Protocol no.:	5353920/1		
Product designation:	Material Sample for helmet for fire fighters		
Article/Sample No.:	1		
Type of material:			
Type of lighting source:	XE-XBO 150W		
Illuminance on sample:	E = 991.6 lx	Temperature:	24 °C
Filename:	3920M1.153	Period of conditioning:	24h
Measurement performance:	Stahl	Size of measuring field:	35mm
Date:	Berlin, 25.03.2009	Starttime:	08:45

Measurement according to DIN 67 510 Part 1

Luminance after 2	minutes:	62.3	mcd/m²
Luminance after 10	minutes:	7.4	mcd/m²
Luminance after 30	minutes:	1.5	mcd/m²
Luminance after 60	minutes:	.5	mcd/m²
Luminance after 84	minutes	.3	mcd/m² (Decay time)

Afterglowing characteristics: 62.3 / 7.4 / .5 - 84 / DIN 67510-1

min	mcd / m²	min	mcd / m²	min	mcd / m²	min	mcd / m²	min	mcd / m²	min	mcd / m²
8	10.16	16	3.79	24	2.09	32	1.36	40	.97	48	.73
56	.58	64	.47	72	.39	80	.34	88	.29	96	.25
104	.22	112	.19	120	.18	128	.16	136	.14	144	.13
152	.12	160	.11	168	.1	176	.1	184	.09	192	.09
200	.08	208	.07	216	.07	224	.06	232	.06	240	.06
248	.05	256	.05	264	.05	272	.05	280	.05	288	.04
296	.04	304	.04	312	.04	320	.04	328	.04	336	.03
344	.03	352	.03	360	.03	368	.03	376	.03	384	.02
392	.02	400	.02	408	.02	416	.02	424	.02	432	.02
440	.02	448	.02	456	.02	464	.02	472	.02	480	.02
488	.02	496	.01	504	.02	512	.01	520	.01	528	.01
536	.01	544	.01	552	.01	560	.01	568	.01	576	.01
584	.01	592	.01	600	.01	608	.01	616	.01	624	.01
632	.01	640	.01	648	.01	656	.01	664	.01	672	.01
680	.01	688	.01	696	.01						



Measuring device: Photometer 059899 Manufacturer: LMT Lichtmesstechnik GmbH Berlin Type: B 510

Attachement 2 of the Technical report No. 535 3920

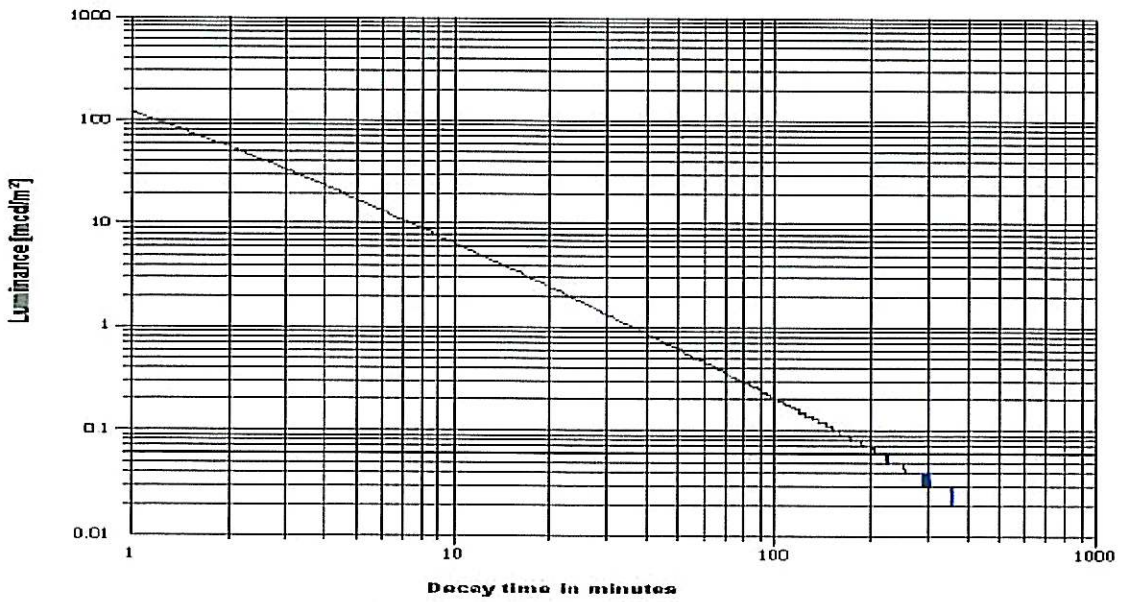
Measuring Protocol no.:	5353920/2		
Product designation:	Material Sample for helmet for fire fighters		
Article/Sample No.:	2		
Type of material:			
Type of lighting source:	XE-XBO 150W		
Illuminance on sample:	E = 993 lx	Temperature:	24 °C
Filename:	3920M22.153	Period of conditioning:	60h
Measurement performance:	Stahl	Size of measuring field:	35 mm
Date:	Montag, 30. März 2009	Starttime:	08:54

Measurement according to DIN 67 510 Part 1

Luminance after 2	minutes:	54.8	mcd/m²
Luminance after 10	minutes:	6.6	mcd/m²
Luminance after 30	minutes:	1.3	mcd/m²
Luminance after 60	minutes:	.5	mcd/m²
Luminance after 79	minutes	.3	mcd/m² (Decay time)

Afterglowing characteristics: 54.8 / 6.6 / .5 - 79 / DIN 67510-1

min	mcd / m²	min	mcd / m²	min	mcd / m²	min	mcd / m²	min	mcd / m²	min	mcd / m²
4	22.94	8	8.93	12	5.06	16	3.35	20	2.42	24	1.85
28	1.48	32	1.21	36	1.01	40	.86	44	.75	48	.65
52	.58	56	.51	60	.46	64	.42	68	.38	72	.35
76	.32	80	.29	84	.27	88	.26	92	.23	96	.22
100	.21	104	.19	108	.18	112	.17	116	.16	120	.15
124	.15	128	.14	132	.13	136	.13	140	.12	144	.12
148	.11	152	.1	156	.1	160	.1	164	.09	168	.09
172	.08	176	.08	180	.08	184	.08	188	.07	192	.07
196	.07	200	.07	204	.07	208	.06	212	.06	216	.06
220	.06	224	.05	228	.05	232	.05	236	.05	240	.05
244	.05	248	.05	252	.04	256	.04	260	.04	264	.04
268	.04	272	.04	276	.04	280	.04	284	.04	288	.03
292	.04	296	.04	300	.03	304	.04	308	.03	312	.03
316	.03	320	.03	324	.03	328	.03	332	.03	336	.03
340	.03	344	.03	348	.03	352	.02	356	.03	360	.02



Measuring device: Photometer 059899 Manufacturer: LMT Lichtmesstechnik GmbH Berlin Type: B 510