THE UKRAINIAN CIVIL PROTECTION RESEARCH INSTITUTE

SCIENTIFIC AND RESEARCH CENTER "FIRE SAFETY"
Accreditation certificate No.2H278 dated 30/04/2013

APPROVED BY:
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30/07/2013

SEAL: The State Emergency Service of Ukraine/
The Ukrainian Civil Protection Research Institute/
Identification code 37814631

TEST PROTOCOL No. 83/2II/1-2013

on determination of flammability group of Merolith facade filler mixture samples of Graf Group LLC production (Kyiv city) according to the 7 State Standard of Ukraine (DSTU) B V.2.7-19-95 (State Standard (GOST) 30244-94)

Kyiv-2013

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Date of the test: July 22, 2013

Conditions in the premises:
air temperature: 25.4°C
atmospheric pressure: 741 Mmhg
relative humidity: 68%

TEST CENTER: Scientific and research center (SRC) "FIRE SAFETY"
Address: 18, Rybalska street, Kyiv city, 01011
tel.: 280-33-10, 254-33-36

TEST SITE: Fire-testing ground of UkrCPRI (Dmytrivka village, Kyevo-Sviatoshenskyi district, Kyiv region).

CUSTOMER: Graf Group LLC
Address: 4 "g"-83, Kondratiuka street, Kyiv city, 04201
Tel.: (044) 233-06-51
Test was carried out based on the Contract No.181-13 dated 09/07/2013

TEST OBJECT: Merolith facade filler mixture of Graf Group LLC production (Kyiv city)

TEST SAMPLES: 12 (twelve) samples of white material with dimensions of 1000 mm x 190 mm, with an average thickness of 2.8 mm were subjected to the test. Samples of the material were applied to non-flammable lower coating (10 mm thick asbestos cement sheet). Samples conditioning was carried out at air temperature of (23 ± 2°C) and relative air humidity (50±5)% during 48 hours.

TEST EQUIPMENT AND MEASUREMENT INSTRUMENTS:
УВГБМ-1 installation and measurement instruments listed in Table 1 were used for tests according to the 7 DSTU B V.2.7-19-95 (certificate No.845, valid till 12/11/2014).

Table 1 - Measurement instruments

No.	Name	Manufacturing number	Measurement range	Accuracy class or deviation of measurement instrument	Date of next test
1	IVS "Termokont"	NA	From 0°C to 1200°C	± 0.35%	07/2013
2	Thermocouple TXA (4 units)	NA	From 0°C to 333°C from 334°C to 1200°C	± 2.5°C ± 0.0075 Tmeas	09/2013
3	Stopwatch COC, пр. 2Б-2-000	6307	From 0s to 3600s From 0 s to 60s more than 60 s	2nd class of accuracy $\pm (0.4\tau_{meas/60})$s $\pm (0.4+1.5\tau_{meas-60})/3540)$s	08/2013
4	Measuring rule	NA	From 0 mm to 1000 mm	± 1.0 mm	11/2014
5	Vernier scale ШЦ-1	3326713	From 0 mm to 125 mm	2nd class of accuracy ± 1.0 mm	06/2014
6	Scales РН-10ц13у	18876	From 0 kg to 2.5 kg From 2.5 kg to 10 kg	± 0.005 kg ± 0.0075 kg	05/2014
7	Aspirated hydrometer МВ-4М	14689	From -10°C to 50°C from 10 % to 100 %	± 0.2°C ± 4%	02/2014
8	Aneroid barometer М67	909	From 600 Mmhg to 800 Mmhg	± 1 Mmhg	02/2014

TEST METHOD: Building materials are divided into non-flammable materials (NM) and flammable materials (FM) according to the DSTU B V.2.7-19-95 (GOST 30244-94) *Building materials. Flammability test methods.* The method principle of determination of flammability group of flammable building materials according to the 7 DSTU B V.2.7-19-95 (GOST 30244-94) is to introduce simultaneously three samples, fixed in the holder, in the combustion chamber, the flame impact on the samples from the ignition source with the given parameters (fixed gas and air consumption) during 10 minutes and the determination of the next parameters for each test:

- temperature of smoke fumes (T);
- duration of self-burning (τ_{cr});
- damage degree by the length (S_L);
- damage degree by the mass (S_M).

Arithmetical average of flammable parameters is calculated for three tests.

On the basis of the results of tests, flammable (F) building materials, in accordance with flammable parameters values, are divided into four flammable groups-F1, F2, F3, F4- as indicated in Table 2. If material can be subjected to different flammable groups due to different parameters, it should be subjected to more hazardous one.

Table 2. Classification of flammable building materials according to the DSTU B V.2.7-19-95 (GOST 30244-94)

Flammability group of materials	Flammability parameters			
	Temperature of smoke fumes T, °C	Damage degree by the length, S_L,%	Damage degree by the mass, S_M,%	Duration of self-burning τ, s
F1	≤ 135	≤ 65	≤ 20	0
F2	≤ 235	≤ 85	≤ 50	≤ 30
F3	≤ 450	> 85	≤ 50	≤ 30
F4	> 450	> 85	> 50	> 300

Note: Formation of melt drops that burn during the test is not allowed for F1-F3 flammable groups.
TESTS RESULTS: The results of tests are indicated in Table 3.

Table 3. Results of testing samples of Merolith facade filler mixture of Graf Group LLC production (Kyiv city)

Test No.	Sample No.	Initial temperature Tп, °C	Max. temperature of smoke fumes T, °C	Arithmetical average of smoke fumes temperature Tcp, °C	Damaged area length L, mm	Arithmetical average of damaged area length Lcp, mm	Damage degree of the samples by the length, S_L,%	Mass of the sample prior to the test m_1, g	Mass of the sample after the test m_2, g	Arithmetical average of mass lost Δmcp,g	Damage degree of the samples by the mass, S_M,%	Duration of samples self-burning τ, s
1	1	26	98	99.0	255	256.3	25.6	5200	5150	57.5	1.1	No burning
	2	28	100		260			5225	5155			
	3	24	99		255			5270	5225			
	4	25	99		255			5305	5240			
2	5	26	96	98.0	250	255.0	25.5	4640	4570	68.8	1.5	No burning
	6	27	98		255			4530	4450			
	7	24	99		255			4980	4915			
	8	24	99		260			4735	4675			
3	9	28	100	103.3	260	265.0	26.5	4700	4615	75.0	1.6	No burning
	10	28	103		265			4645	4570			
	11	26	105		270			5245	5170			
	12	25	105		265			4155	4090			
Arithmetical average of three tests (round to the integral)				100			26				1	No burning

Notes: Formation of melt drops that burn during the test didn't happen during the test.

Max. deviation of initial temperature measurement is ± 2.8°C.

Max. deviation of smoke fumes temperature measurement is ± 2.8°C.

Max. deviation of length measurement is 1.4 mm.

Max. deviation of mass measurement is 6.1 g.

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CONCLUSION: According to the 5.3 DSTU B V.2.7-19-95 (GOST 30244-94), the samples of Merolith facade filler mixture with the average thickness of 2.8 mm of Graf Group LLC production (Kyiv city), that was applied to the non-flammable low-coating (asbestos-cement sheet of 10.00 mm thickness), is related to materials of F1 flammable group (according to fire-engineering classification 2.3 DBN V.1.1-7.2002 *Fire safety of construction units* - materials of low flammability).

NOTES:

1. Protocol No. 83/2Ц/1-2013 is relevant only to the tested samples of Merolith facade filler mixture of Graf Group LLC production (Kyiv city).

2. Full or partial copying of protocol No. 83/2Ц/1-2013 without SRC "FIRE SAFETY" is forbidden.

3. Copies of protocol No. 83/2Ц/1-2013 are valid only in case of their certification in SRC "FIRE SAFETY".

Test chief:		
Deputy head of the center - head of the department on testing substances and materials on fire hazard	/signature/	O.V. Dobrostan
Responsible for tests:		
Principal engineer of the department on testing substances and materials on fire hazard	/signature/	E.M. Okhotskyi
Metrology sphere representor:		
1st category engineer of metrology sphere	/signature/	N.A. Povorozniuk

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