

TECHNICAL INFORMATION OF PRODUCT

Name of product FLAME STAL ®
Symbol of product F S
PKWiU 24.30.12-50.00

CHARACTERISTIC OF PRODUCT

Fire protection paint on base of modified gums, thixotropic, single-component. Under fluency of higher temperatures Flame Stal submit foaming, building perm thermal isolation which is slowing down incrementation of growing temperature on steel groundwork. Paint supposed to be put on surfaces which are previously indemnify against corrosion using epoxy paint or prepared for it galvanized surfaces. Flame Stal fire protection system builds elastic and reliable mechanical protection, resistance on influence of moisture, condensation water and atmosphere factors including industrial atmosphere (category of aggressiveness of corrosion according to PN-ISO 12944 part 2 from C1 to C5M) but only under condition that last set coats of paint will be put as polyurethane paint, acrylic paint or without surface paint in according to regulation records of Technical Approval ITB nr AT-15-7324/2007

DESTINATION OF PRODUCT

Intumescent coat in sets with proper ground and surface paints is use to protect from fire steel constructions and for closed and open profiles working outside or inside objects including galvanized surfaces. Before we approach to use this system we supposed to consult with technical advisor of producent or distributor of paint. Fire protection could be realize only by instructed companies, which have received or have actual licence of executive.

Thickness of imposed array of paint in fire protection set depends on:

- indicated for object critical temperature (in case when is not mentioned Tkr = 500 degree of C for fire resistance 60 minutes and Tkr = 550 for fire resistance 15 and 30 minutes)
- massiveness of construction
- shape of profile (close, open)
- demanded time of construction protection against temperature activity.

Thicknesses of dry covering for paint Flame Stal and for given massiveness and fire resistance class of construction we showed in table below:

Thicknesses for paint Flame Stal in (mm) on dry for Tkr = 500 or 550 degree of C

OPEN PROFILES				CIRCULAR PROFILES				RECTANGULAR PROFILES			
U/A	Only Flame Stal			U/A	Only Flame Stal			U/A	Only Flame Stal		
m-1	R15	R30	R60	m-1	R15	R30	R60	m-1	R15	R30	R60
80	0,18	0,18	1,16	80	0,18	0,18	1,24	80	0,18	0,18	1,17
100	0,18	0,18	1,22	100	0,18	0,18	1,32	100	0,18	0,18	1,26
120	0,18	0,18	1,26	120	0,18	0,27	1,36	120	0,18	0,19	1,32
140	0,18	0,21	1,29	140	0,18	0,36		140	0,18	0,26	1,36
160	0,18	0,25	1,30	160	0,18	0,43		160	0,18	0,31	
180	0,18	0,27	1,32	180	0,18	0,49		180	0,18	0,35	
200	0,18	0,29	1,33	200	0,18	0,53		200	0,18	0,38	
220	0,18	0,31	1,34	220	0,18	0,57		220	0,18	0,41	
240	0,18	0,32	1,35	240	0,18	0,60		240	0,18	0,44	
260	0,18	0,34	1,35	260	0,18	0,62		260	0,18	0,46	
280	0,18	0,34	1,36	280	0,18	0,64		280	0,18	0,47	
300	0,18	0,35		300	0,18	0,66		300	0,18	0,49	
320	0,18	0,51		320	0,18	0,85		320	0,18	0,63	
340	0,18	0,52		340	0,18	0,87		340	0,18	0,65	
360	0,18	0,53		360	0,18	0,89		360	0,18	0,67	
380	0,18	0,54		380	0,18	0,91		380	0,18	0,69	
400	0,18	0,55		400	0,18	0,93		400	0,18	0,70	

Thickness of system – To thickness of Flame Stal coat (look table above) is recommended to add thickness of cushion coat 0,06 mm (or minimum 0,04 for classes C1, C2) and thickness of superstructure coat which thickness is added below)

- 60 μm – in case environment of category corrosion C1, C2, C3,
- 80 μm – in case environment of category corrosion C4,
- 120 μm – in case environment of category corrosion C5-I, C5-M

In case environment of category corrosion C1 and C2 (inside constructional objects) fire protection by Flame Stal system can be realize without surface coat unless there's no other projects demands (ex. color, smoothness, burnish).

THEORETHICAL USE of paint Flame Stal (liter /m2)

OPEN PROFILES				CIRCULAR PROFILES				RECTANGULAR PROFILES			
U/A	Only Flame Stal			U/A	Only Flame Stal			U/A	Only Flame Stal		
m-1	R15	R30	R60	m-1	R15	R30	R60	m-1	R15	R30	R60
80	0,21	0,21	1,36	80	0,21	0,21	1,46	80	0,21	0,21	1,38
100	0,21	0,21	1,44	100	0,21	0,21	1,55	100	0,21	0,21	1,48
120	0,21	0,21	1,48	120	0,21	0,32	1,60	120	0,21	0,22	1,55
140	0,21	0,25	1,52	140	0,21	0,42		140	0,21	0,31	1,60
160	0,21	0,29	1,53	160	0,21	0,51		160	0,21	0,36	
180	0,21	0,32	1,55	180	0,21	0,58		180	0,21	0,41	
200	0,21	0,34	1,56	200	0,21	0,62		200	0,21	0,45	
220	0,21	0,36	1,58	220	0,21	0,67		220	0,21	0,48	
240	0,21	0,38	1,59	240	0,21	0,71		240	0,21	0,52	
260	0,21	0,40	1,59	260	0,21	0,73		260	0,21	0,54	
280	0,21	0,40	1,60	280	0,21	0,75		280	0,21	0,55	
300	0,21	0,41		300	0,21	0,78		300	0,21	0,58	
320	0,21	0,60		320	0,21	1,00		320	0,21	0,74	
340	0,21	0,61		340	0,21	1,02		340	0,21	0,76	
360	0,21	0,62		360	0,21	1,05		360	0,21	0,79	
380	0,21	0,64		380	0,21	1,07		380	0,21	0,81	
400	0,21	0,65		400	0,21	1,09		400	0,21	0,82	

A+B Poland Sp. z o.o. can realize termomechanical analysis and appoint critical temperature of steel. This way we can individually define thickness of intumescent paint for an object. In majority cases we can get significant austerities in relation to thicknesses mentioned in table above.

Documents of references:

- National Institute of Hygiene – Hygienic Certificate Nr HK/B/1195/01/2004
- Technical Approval ITB – AT-15-7324/2007
- Certificate of Conformity ITB – ZC-ITB-1590/W
- Local Declaration of Conformity – A+B/1/06/2007

Physical-Chemical Informations:

Color: White
 Solids, % of circumference: Minimum 85 %
 Temperature of ignition: 4,4 degree of C
 Density: 1,345 ±0,03 kg/dm3
 Times of withering in 20 degree of C and relative wetness 70± 5 % degree:
 - 1 0,25 of hour
 - 3 2 ± 10 % of hour
 - 7 24 ± 10 % of hour

Application of Information:

Diluent to Flame Stal ® paint only Carboline Nr 10

Minimal time for mixing by mechanical mixer about 3 minutes

Method of imposing: hydrodynamic painting, paintbrush, paint roller

Transfer of aggregate: about 66:1

Pressure: about 6,5 barrio

Diameter of nozzle: 0,017” – 0, 025”

Spray Conductor: 3/8”

Recommendation: remove filters from aggregate to spray and gun, angle of spray it’s necessary to fit to the form of painting construction.

Cleaning of tools: diluent is delivered by a producent.

Recommended thickness of one layer: Hydrodynamic spray to about 450 µm of dry coat

Attention: Paint is ready for hydrodynamic application, doesn’t required to add diluent, it is allowed to add diluent in quantity 3-5 % only to application by paintbrush and paint roller.

Times of putting appropriate coats, in environment of temperature 20 degree of C.

SORT OF COATS	PROTECTIONS R15, R30 Another coat after shrinkage of previous coat	PROTECTION R60 Another coat after shrinkage of previous coat
Surface paint	According to technical card of paint	According to technical card of paint
Flame Stal	After 12 hours	After 24 hours
Ground paint	After 3-4 days	After 5-6 days

Multilayer array of fire protection acquire full mechanical resistance after long term of drying which means about 6 days from shutting-down construction works.

TERMS OF USING FLAME STAL SYSTEM

Surface coat should be put on prepared surface according to requirements concluded in Technical Terms of surface paint producer.

- Surface paint should be dry, devoid of corrosion spots, fat and dust. Pay your attention on eventual limit concern time of putting another coats on epoxy paints. In occurrence of galvanized surfaces it’s indicate to use ground Carboguard 888, degreased galvanized surfaces can be painted by Flame Stal direct on galvanized surface.
- As surface paint is recommended to use epoxy paint Carboguard 888 or another types of epoxy surfaces paints, applying another surfaces please adjust with technical adviser
- As ground paint is recommended to use polyurethane paint Carbothane 134 or another polyurethane paint - it’s recommended to advice your change with technical adviser. Thicknesses of coats depends on environmental class of corrosion. In some cases it is acceptable to leave intumescent paint without ground paint.

TERMS DURING PAINTING:

- minimal temperature of ground +5 degree of C, at least 3 degrees of C higher than temperature of dew point.
- relative humidity of air: beneath 85 %
- good ventilation
- during painting and in nearest time after painting is done, Flame Stal coat needs to be protect against direct impact of water (rain, snow, frost). In case of humidity coat Example: after rain precipitation you should wait till paint will be dry. Putting paint on wet or humidity coat of intumescent paint, ground paint will caused breaking away or cracking in latest period of exploitation.

ATTENTION: Information about executed fire protection should be inscribed through executive of fire protection to journal of structure. Content of this information should included at least:

- name of fire protection according to present Technical Approval ITB
- class of fire immunity of protected elements
- name of company which is executing fire protection
- date of executed fire protection
- protocol from receipt of execution of fire protection.

WRAPS:

Cans from steel polished plate – only of capacity 25 kg. (20 liters)

Usefulness of application for FLAME STAL – to 10 months from production date.

SAFETY OF SANITATION AT WORK:

Class IMO/ADR 3.2 UN 1263 PG III. Includes explosive diluents. Malicious fumes for health. Avoid direct contact with skin. It is necessary to keep caution till total dryness of coat. Keep away from sources of warm, flame and sparks. Coating and wither should carry on in good ventilated accommodation. Use resources of yourself protection during works. After every use close container hermetically. Staying inside diluent fumes without necessary protection or ventilation is harmful for your health. Before you will open container please familiarize with indicators of protections set on wrap. Product should be imposed by instructed staff.

Keep in positive temperature inside ventilated accommodations.

PROCEDURE OF WRAPS AND WASTES:

We obligate user of paints to:

Make suitable place for paints inside store house: separate for empty and full wraps and to assay accommodations strictly with obligatory regulations.

All empty expandable cans upon paints should be carefully cleaned from residues of paint.

It is forbidden to leave inside cans slops of paint, rubbish and others wastes and frowing them into generally available garbages. In case of existing of spilling or another type of waste it is necessary to progress with Card of Dangerous Substance.

ATTENTION:

Extensive informations about dangerous substances contained in product and connected with them risks are specified in Card Of Dangerous Substance, which we are able to expose for our clients.

Licence of Executor – Conditions of Acquire

FLAME STAL can be use only by companies which are licenced. Licence is charged and it's dispense by A+B Poland. Cost of licence is 250 PLN/hour of training, companies which has already licence are free of charge in name of training.

Term of getting and release licence of executor is accomplishment with consecutive conditions:

- Arrange in seat of company training for employees which will be engage in compound with applying of fire protection products FLAME STAL
 - Handover reference list - painting works
 - List of possessed painting equipment and control – measuring equipment.
 - Signed protocol of accomplishment training.
 - Send to A+B Poland under – mentioned documents:
1. Register of National Economy
 2. Number of Tax Identification
 3. Register Documents of Company
 4. Number of account and Name of Bank
 5. Copy of civilian responsibility polis in title of carried activity (delicted or contracted)
 6. Declaration of Board about not filling with charges of taxes in Department of Taxes
 7. Declaration of Board about not filling with charges in Department of Social Insurance.

Instruction of using FLAME STAL doesn't proclaim guarantee on product or on fire protection system. It only shows informations necessary for user in preparing specifications of painting in given object and running with painting works. It has been processed with our previous knowledge and experience. Instruction can be changed without previous anticipation. Former content cancels each next issued. That's why at use of prepared informations we kindly ask you to make sure that instruction which user have is current.

Producent

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