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TERMION FIRE-PROTECTION 01

Fire protection of reinforced concrete and metal structures

TU 20.30.11-007-04242160-2020

TECHNICAL REGULATIONS

1. DESCRIPTION, AREAS OF USE

1.1 "TERMION FIRE PROTECTION 01®" is a comprehensive solution to increase the resistance threshold of metal structures to fire, by layer-by-layer application (TU 20.30.11-007-04242160-2020).

1.2 "TERMION FIRE PROTECTION 01®" can be used for all types of buildings, both industrial (nuclear power plant, state district power station, thermal power plant, food industry buildings (without interaction with food), etc.), and residential purposes.

1.3 The degree of fire protection of the material "TERMION FIRE PROTECTION 01®" provides for compliance with all points of fire safety standards (TR EAEU 043/2017 of the Technical Regulations of the Eurasian Economic Union "On the requirements for fire safety and fire extinguishing equipment") and the relevant GOSTs.

2. CHARACTERISTICS

2.1 "TERMION FIRE PROTECTION 01®" is produced in a convenient form, immediately ready for application.

2.2 All components of "TERMION FIRE PROTECTION 01®" correspond to the specified characteristics in TS.

2.3 Characteristics of the components:

1. Organoleptic indicators: Thick homogeneous mass, White (tinting options are possible), after drying it has a matte tint.
2. Material gloss level: Matt
3. Density, g/cm3: 1.3-1.5
4. Mass of dry residue, in%: 60-69
5. Time to reach dry state up to the 3rd degree (t = 20°C), h, no more than: 6
6. Adhesion properties relative to metal, in points: 1
8. Tare weight, in kg, net: 14.25

2.4 Packaged products are labeled with reference to specifications.

3. PREPARATION OF THE SUBSTRATE BEFORE APPLYING THE MATERIAL

3.1 The metal base is prepared before spraying "TERMION FIRE PROTECTION 01®" in accordance with the norms of SNiP 2.03.11-85.

3.2 The base is cleared of all types of coatings applied earlier. Rust removal is done by blast cleaning or mechanically (using sandpaper or a brush). The degree of purification should be at least level 2 according to GOST 9.402. The remains of dirt and grease stains are removed with

detergents or solvents. The use of solvents such as nefras and petroleum solvent is strictly prohibited. Drying is the final step in surface preparation.

3.3 The bases are covered with a primer layer with anti-corrosion properties. One of the primer options is GF-021. Depending on the type and operating conditions, primers containing iron, zinc and mica may be used. Such an anti-corrosion layer should have a thickness of 50 microns. The primer is applied according to the manufacturer's instructions.

3.4 The type, as well as the conditions for using the primer, must be agreed with the manufacturer "TERMION FIRE PROTECTION 01®".

3.5 Considering the environmental conditions, the primer coat is allowed to dry for 24 hours or more.

! Insufficient drying of the primer layer, dirt residues or other non-compliance with the rules for surface preparation can cause cracks or peeling of "TERMION FIRE PROTECTION 01®", a decrease in the service life and a decrease in fire protection characteristics.

4. METHOD OF APPLICATION OF THE MATERIAL "TERMION FIRE PROTECTION 01®"

4.1 Spray onto metal surfaces (based on the substrate preparation instructions above) using an airless sprayer or by hand (roller or brush). The use of pneumatic sprayers is prohibited. When using spray systems, it is necessary to choose devices that correspond to the indicators:

- Standard pressure, atmospheres (min.): 200-250
- Spray nozzle size, inch: 0027 - 0031
- Spray Angle Degree: 20-60
- supply hose ø, in mm: 10
- Supply hose length, in m, up to: 30

4.2 Recommended operating parameters for an airless sprayer:

- Paint pressure, MPa: 19-22
- Spray nozzle size, inch: 0027 - 0031
- Spray angle, degree: 20-60
- Distance from the nozzle to the surface to be coated, mm:
  - in the upward direction: 600-800
  - when the paint is directed downwards and horizontally: 600-800
  - in hard-to-reach places: 300-400

4.3 "TERMION FIRE PROTECTION 01®" is produced as a ready-to-use solution. In some cases, water may be added (up to 10%). Tinting (exclusively in pastel colors) is carried out only in the factory. Before using, it is enough to mix (from 5 to 10 minutes) the components using a construction mixer or a drill with a kneading attachment. High ambient temperatures and high agitation speeds may slightly reduce the astringency of the formulation without affecting the performance of the applied coating.

4.4 When using an airless sprayer, make sure the machine is clean. In the case of using a sprayer, previously used for applying components with an organic base, it is washed with appropriate solvents. The indicator of the end of washing can be the transparency of the liquid used. In the case of previously using a sprayer with the use of aqueous solutions, rinsing is carried out with water, then with a solvent, and finally with water.

4.5 Conditions under which "TERMION FIRE PROTECTION 01®" is applied:
• air tº +5ºC and higher
• humidity level - up to 80%
• The tº of the surface to be coated must be at least 3ºC above the dew point tº
• during application it is necessary to protect the surface from the effects of atmospheric conditions
• it is forbidden to apply on a damp surface

4.6 "TERMION FIRE PROTECTION 01®" is applied on a metal base in 3 or 4 layers, with a 6-hour drying of each layer, at tº 20°C and a humidity level of 70%. tº of air +5°C increases the drying time by 2-3 times. To improve the adhesive qualities of "TERMION FIRE PROTECTION 01®", its first layer is applied with a thickness of 0.5 mm.

4.7 The maximum thickness of each applied layer of "TERMION FIRE PROTECTION 01®" is 1.3mm. The thickness of the wet layer can be measured with a comb-type thickness gauge.

4.8 In order for "TERMION FIRE PROTECTION 01®" to acquire its final operational parameters, it may take about 170 hours, provided: tº + 20 ° C and humidity level - 70%.

! To prevent the appearance of cracks on the finished coating, the layer of the composition "TERMION FIRE PROTECTION 01®" must be completely dried and not exceed the specified maximum thickness.

4.9 Final drying, taking into account the application by airless spray and humidity level - 75%, occurs in the time:

air tº:	10°C	20°C	30°C
Lack of air exchange, h:	240	168	120
With air exchange 2 m/s, h:	168	120	96

With the manual method of application, the period of absolute drying of "TERMION FIRE PROTECTION 01®" is increased by 20% compared to the figures above.

4.10 Tools are cleaned with water. After each work shift, the tools are washed to a state of complete absence of paint. In the event of a break during work of 1.5 hours or more, the tool must also be washed. During operation at tº from +35°C and above, it is not recommended to take breaks.

5. CONSUMPTION

5.1 The consumption level of "TERMION FIRE PROTECTION 01®" and the thickness of the finished layer depend on the required level of fire resistance of the metal base and its thickness:

• 4th group in terms of fire protection efficiency (resistance limit - 45 min.), protective layer thickness - 1.07 mm, estimated consumption - 1.59 kg per m2. These indicators are relevant for bases with a thickness of 3.4mm.
• 3rd group in terms of fire protection efficiency (resistance limit - 60 min.), with a dry layer thickness - 1.38 mm, estimated consumption - 2.03 kg/m2. These figures are given for metal bases, 3.4mm thick.
• 2nd group in terms of fire protection efficiency (resistance limit - 90 min.), protective layer thickness - 2 mm, estimated consumption - 2.82 kg per m2. These indicators are relevant for bases with a thickness of 3.4mm.

5.2 The consumption level of "TERMION FIRE PROTECTION 01®" is given without taking into account technological losses, which can be in the range from 5% to 35%. This figure depends on the method of application, surface characteristics and application conditions.

6. PROTECTIVE COATING

6.1 In the case of using "TERMION FIRE PROTECTION 01®" in an environment with a high level of humidity (80% or more), high temperature fluctuations, harsh atmospheric conditions, chemical and radioactive exposure, a protective decorative coating is used.

6.2 Such a protective coating can be paints and varnishes that are resistant to atmospheric precipitation, excess moisture, aggressive and radiation effects. Considering the operating conditions, it is permissible to use materials based on polyurethane, polyacrylate, urethane acrylate, epoxy acrylate, vinyl chloride and other paints and varnishes with film-forming properties.

For the correct selection of a protective decorative layer, it is recommended to coordinate with the manufacturer NPO ALTERMO LLC.

6.3 "TERMION FIRE PROTECTION 01®" operates in environments with different levels of aggressiveness in the following way:
- In the absence of aggressive influence of the environment - coating with an additional decorative and protective layer is not necessary
- In slightly aggressive environments - the surface is protected with a layer of material based on alkyd, epoxy and acrylic resins.
- In environments with an average level of aggression - the material is also coated with a layer of material based on alkyd, epoxy and acrylic resins.
- For an environment with highly aggressive conditions, it is recommended to use the TERMION FIRE PROTECTION 01® coating in combination with a protective coating layer, having previously coordinated it with the manufacturer NPO ALTERMO LLC.

6.4 A protective decorative layer is applied no earlier than one week after applying the final layer "TERMION FIRE PROTECTION 01®", at t ° +20 ° C and a humidity level of up to 60%. The decorative protective coating is applied according to the coating manufacturer's instructions.

7. QUALITY CONTROL

7.1 The readiness of the metal base (surface) is checked by visual inspection for the presence of traces of rust, various types of dirt, including grease, traces of paintwork, unprimed areas. The thickness of the primer layer and the uniformity of its application are also checked. Upon completion of acceptance, an act is drawn up for the performance of hidden work.

7.2 During the work on applying the layer "TERMION FIRE PROTECTION 01®", the site foreman or foreman monitors the level of material consumption and enters the results in the work log.

7.3 The final control check includes measurement of the thickness of the applied layer and visual inspection. This check is carried out after complete hardening by accredited organizations only.

7.4 A visual inspection is carried out, the surface should not show signs of cracking.

7.5 The thickness of the final layer is measured according to the standards of GOST R51694, method No. 6A. To do this, use a magnetic type thickness gauge that does not violate the coating itself. The measurement is carried out at 5 or more points, at intervals from 1 meter on a site up to 500m2. The final thickness must always be equal to the design.

8. FEATURES OF OPERATION "TERMION FIRE PROTECTION 01®"

8.1 The surface coated with "TERMION FIRE PROTECTION 01®" is suitable for use in rooms with non-aggressive or slightly and medium aggressive environments, at a temperature of -50 ºC - +50 ºC and a humidity level of up to 80%. When used together with a protective decorative coating, it can be used in open spaces.

8.2 The final coating based on "TERMION FIRE PROTECTION 01®" does not change its characteristics under the influence of water droplets and fire extinguishing agents, which is important when fire safety systems are triggered.

8.3 The warranty period for "TERMION FIRE PROTECTION 01®" is 10 years or more, subject to the above rules and operation in the temperature range from +5 ºC to +50 ºC, at a humidity level of up to 80%.

8.4 In the event of mechanical damage or disturbances caused by the influence of the liquid during operation, the coating can be restored.

8.5 Coating areas with traces of damage are sanded to the primer layer. If the primer (protective layer) is also damaged, a full surface preparation cycle is performed, described in section No. 3 of this manual.

8.6 The areas that have undergone the preparation cycle again are covered with "TERMION FIRE PROTECTION 01®" of the required thickness and with a decorative and protective coating (if necessary). The new layer should cover adjacent layers by 20 cm or more, along the entire perimeter of the restored area. Application is carried out according to the rules of this manual.

9. SAFETY AND ENVIRONMENT

9.1 All components of "TERMION FIRE PROTECTION 01®" are explosion and fire safe.

9.2 Neither during operation, nor during production and application, "TERMION FIRE PROTECTION 01®" does not emit harmful substances.

9.3 Employees involved in the production process and application of "TERMION FIRE PROTECTION 01®" must have eye protection goggles, special shoes and clothing, personal protective equipment (GOST 12.4.011), hand protection and respiratory protection equipment (respirators) , in accordance with GOST 12.4.02. Personal protective equipment, including clothing, must have a certification mark and the conclusion of the sanitary and epidemiological service.

9.4 Working with the equipment requires compliance with the safety standards specified in the instructions for the relevant apparatus.

9.5 Work should be carried out by people who have reached the age of 18 and have passed the necessary medical examinations.

9.6 Briefing of workers is carried out before the start of work, at the work site itself. The fact of the briefing is recorded in the appropriate log and is accompanied by the signature of the instructed workers.

9.7 Production premises are not intended for eating, drinking and smoking. The end of work should be accompanied by washing of the face and hands. In case of contact with "TERMION FIRE PROTECTION 01®" on open areas of the skin, the material is washed off with water and the skin is lubricated with Vaseline. In case of contact with the eyes, they are thoroughly washed with water for 15 minutes until the vision is completely clear. If a burning sensation occurs, seek medical attention.

9.8 During the entire service life, the material does not emit substances harmful to humans and the environment.

10. CONDITIONS OF TRANSPORT AND STORAGE

10.1 Transportation and storage of "TERMION FIRE PROTECTION 01®" is carried out in accordance with GOST 9980.5 and TU.

10.2 Transportation can be carried out by any type of covered transport that does not allow the penetration of atmospheric moisture on the packaging of the material.

10.3 Finished products must be kept in the manufacturer's packaging in closed dry rooms. It is necessary to exclude the influence of aggressive media on the packaging and protect it from direct sunlight.

10.4 "TERMION FIRE PROTECTION 01®" must be transported and stored under the following conditions: tº from +5°C to +40°C and humidity level - up to 80%.

10.5 During transportation and storage, "TERMION FIRE PROTECTION 01®" is built in one or two tiers. It is also possible to install in three tiers, provided that sheets of plywood or hardboard are laid between the tiers.

10.6 The established shelf life for "TERMION FIRE PROTECTION 01®" is 1 year, with obligatory observance of storage conditions and hermetically sealed packaging. After the end of the warranty period, "TERMION FIRE PROTECTION 01®" can be used only after passing the test in the laboratory of the manufacturer.