

# **TSM Ceramic**

**PE “METALLPROM”  
Official Dealer**

**Liquid  
Ceramic  
Heat-insulated  
Material**

**Krivoy Rog**

## ***TSM Ceramic)Coating Is Thermal Insulation of a New Generation.***

***TSM Ceramic*** are microscopic hollow ceramic spheres which are suspended in the liquid medium consisting of synthetic rubber, acrylic polymers and mineral pigments. This combination makes the material light, flexible and stretching. The material possesses a good adhesion to the surfaces to be coated.

***TSM Ceramic*** is a suspension of white color which forms an elastic coating after drying.

***TSM Ceramic*** is designed for coating surfaces of any shape and in the places which are difficult of access. It can be used for coating walls, ceilings, and roofs of buildings, pipes, steam boilers, inner walls of transport means, refrigerators, freezing chambers and others. The effect of hydrochloric mist on ***TSM Ceramic*** for **4000** hours resulted in no decomposition or corrosion.

***TSM Ceramic*** can be used for coating metallic, concrete, brick, wooden, plastic, rubber, cardboard and some other surfaces. The temperature of the surface to be coated with this material ranges from **+1°C до +150 °C**. The surface to be coated with ***TSM Ceramic*** must be clean deprived of fat, without dirt or rust.

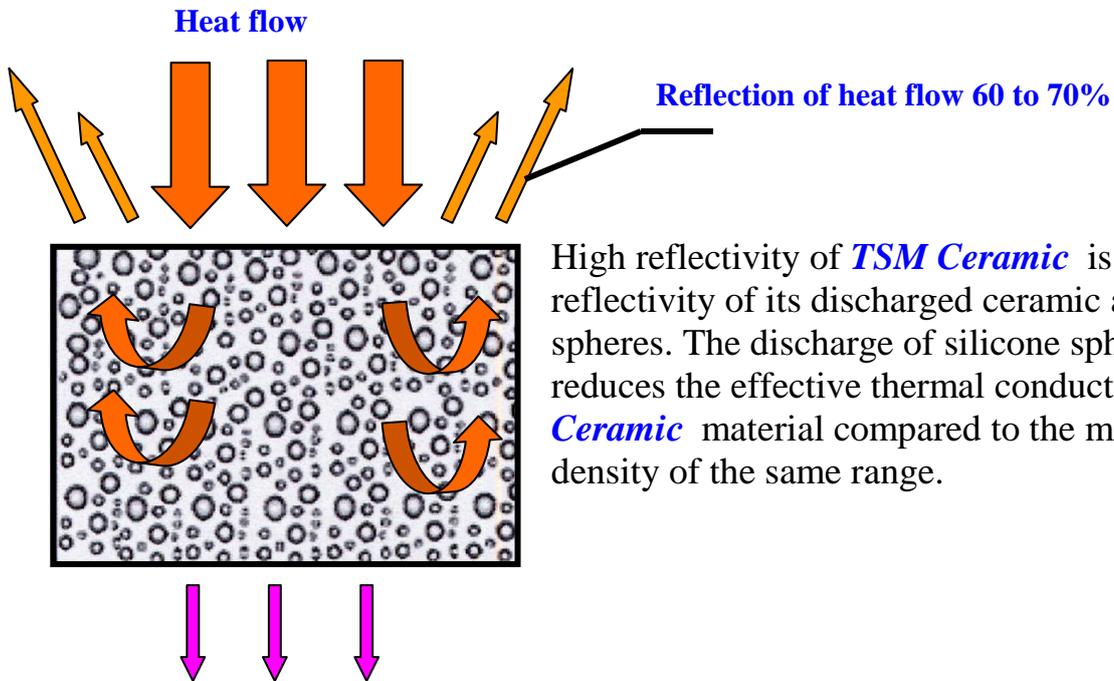
***The material is applied at temperatures ranging from – 47 °C to +260° C.***

***The surface is coated with TSM Ceramic either with an airless sprayer or a brush.***

The thickness of a coat is not more than 0.6 mm, the drying time of a coat is 24 hours with the vulcanization period of 12 hours at room temperature. The material consumption at one layer coating is **1 liter per 2 m<sup>2</sup> at 0.5 mm thickness of coat.**

***The coating has warranty of 10 years. The service time is over 20 years.***

## *The principle of action of TSM Ceramic Heat-insulation*



## *TSM Ceramic Specifications*

Description	Units	Values
Thermal conductivity at 20 °C, not more	W/m °C	0,001-0,0016
Convective heat transfer	W/m <sup>2</sup> °C	1,29 – 2,5
Dry density	kg/m <sup>3</sup>	410
Wet density	kg/m <sup>3</sup>	590
Water vapour permeability ratio	mg/m h Pa	0,0014
Specific heat capacity	kJ/kg °C	1,08
Heat resistance at 200 °C	No cracking, swelling or separating	
Water absorption	g/sm <sup>3</sup>	0,03
Elongation at breakage, not less	%	8,0
Elongation at the breakage after the accelerated aging of 10 years, not less	%	8,0
Linear elongation	%	65
Adhesion breaking strength, not less: - with metal - with concrete - with wood	Mpa	1,53 1,84 1,84
Tensile strength, not less - after coating - after the accelerated aging of 10 years	Mpa	2,0 3,0
Impact strength	Kg*sm	50
Whiteness (%) of diffuse reflection - after coating - in 10 years	%	93,0 90,0
The temperature of transporting and storing	°C	≥ +1
The temperature of the surface at coating with the material	°C	from +1 to +150
The operating temperature	°C	- 47 to +200

## **Physical Properties**

### **TSM Ceramic – heat-insulated material.**

The unique heat-insulating ability of **TSM Ceramic** is in hollow microscopic (0.03-0.08 mm) ceramic and air-filled silicone spheres, which possess the exclusive ability to be heated or cooled.

### **The additional Properties of the Material:**

#### **Anticorrosive:**

**TSM Ceramic** possesses high adhesion which prevents the surface from water or air, thus excluding external corrosion or rust formation in difference to “wrapping thermal insulators” like expanded polyurethane or mineral wool.

### **TSM Ceramic is ecologically pure material.**

**TSM Ceramic** does not contain poisonous or harmful substances which permits to work in the buildings without additional ventilation. The material has sanitary resolutions of Russia and Ukraine (**Sanitary resolution No. 5.03.02-03/51537 dated of 19.08.2009**). The contents of harmful substances in the material do not exceed the following values:

Description	Name	Values
Formaldehyde	mg/m <sup>3</sup>	< 0,007
Ammonia	mg/m <sup>3</sup>	< 0,04
Styrene	mg/m <sup>3</sup>	< 0,002
Acrylonitriles	mg/m <sup>3</sup>	< 0,03
Benzene	mg/m <sup>3</sup>	< 0,08
Toluene	mg/m <sup>3</sup>	< 0,6
Xyloene	mg/m <sup>3</sup>	< 0,2
Methyl metacrylate	mg/m <sup>3</sup>	< 0,1

### **TSM Ceramic is a fireproof material.**

**TSM Ceramic** is an insulating material which does not sustain combustion. The film of 1.0 mm thickness chars at 500 °C and decomposes at 840°C, giving off carbon and nitrogen oxides which slow down flame spreading.

Material corresponds to fire safety requirements, has resolutions of fire laboratories of Ukraine and Russia: combustibility group – Г1 under GOST 30244-94 , inflammability group – B1 under GOST 30402-96 , group according to smoke-forming ability – Д1 .

**TSM Ceramic** is registered on the territory of Ukraine by The State Standardization Center of Metrology and Certification (No. 26.6-33205528-001:2009 dated of 29.04.2009 Specifications – TYV (Specifications of Ukraine) .

*Liquid insulation is brushed as paint and acts as thermal safety coating*

## ***Applications***

### **Construction:**

The walls of residential and industrial buildings from both internal and external sides.  
The roofs of dwelling and industrial buildings from both internal and external sides.  
Metal roofs.  
Metal structures.  
Hangars and garages.  
Elevators.  
Poultry plants.  
Crane girders.  
The lower part of bridges (reduces freezing).

### **Heat power engineering:**

Pipes for thermal systems of heating.  
Steam and gas pipes.  
Pipes for oxygen and nitrogen pumping and others.  
Air conditioning systems.  
Cold water tubes (to prevent condensation).  
Hydrants, water heaters and boiler houses.  
Heat exchangers.  
Steam boilers.  
Underground and ground oil pipe-lines.  
Hot chemical mixing tanks.  
Capacities and tanks for water, nitrogen, gasoline, chemical reagents, etc.  
Freezing chambers.

## **Transport:**

Coating the inner part of a car body, a motor compartment and a roof of a car.

Coating the inner part of the body of military and specialized vehicles.

Refrigerators.

Automobile and railway tanks for different liquids.

Machine compartments of ships.

Decks and the inner part of ships.

Fuselages of planes.

### **Official Dealer**

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