"SOGDA" HEAT SHIELDS & FIRE BARRIERS

UNIQUE METHOD OF HEAT PROTECTION
General information and specifications

The “Sogda” heat shields are a brand new product based on the unique innovative technology of the radical decrease of heat flux.

The shields' know-how is protected by several patents in Russia and abroad, including Great Britain, France, Germany, Italy, China, Canada, Australia and other countries.

The shield is constructed of a metal skeleton and two mesh panels which are sprayed by water using special nozzles.

The “Sogda” shields provide a 50-times heat flux reduction due to thermophysical and optical effects. The shields are intended to withstand heat flux densities of up to 60 kW/m² and allow the user to localize the flame with a temperature of up to 1200°C.

*maximum allowable value of the heat flow for the fireman in the special clothing without additional protective equipment – 4.2 kW/m².

Uniqueness of the shields

- Decreasing heat flux no less than 50 times - ensuring equipment and personnel protection from thermal exposure even during large-scale fires; reducing fire extinction time due to cutting down the distance to the combustion source and the more effective use of fire-extinguishing agents; reducing consumption of these agents.
- Full protection from open flame - creating the possibility to evacuate people from the fire zone using passages made up of the shields and assembling the fencing to stop the fire spreading.
- Unlimited operating time during firefighting – while people and machinery work in extreme thermal conditions and fire exposure conditions.
- Providing the visibility of burning objects via the shield - that allows the monitoring of the situation in the fire zone and making quick decisions.

Application area

The shields can be used during fire extinguishing at oil-and-gas, fuel, chemical, timber and woodworking industry facilities, power engineering, metallurgy and mechanical engineering enterprises, in residential and office buildings. They can be used when extinguishing aircraft post-accident fires and fires in subways.

“SpecPozhTech” manufactures portable, mobile and stationary shield models. The shields are rated at working with the heat flows of up to 220 kW/m² density. Depending on the shield model, the water flow rate is 0.2–0.6 L/sec at a working pressure of 0.4–0.6 MPa. Technical requirements 4854-003-19202261-2011.

The shields can be manufactured in compliance with individual orders depending on application purposes.
The “Sogda” 1A shield protects a two-man fire crew from large-scale heat flux. Firefighters can fulfill fire extinguishing as well as execute search-and-rescue works. The heat shield is equipped with wheels for it to be displaced. A fire engine or a trailer should be used for transportation of the shields to the fire source.

The new model - “Sogda” 1A.01. With this portable shield, firefighters can use both a hand fire nozzle and a portable fire monitor (through a special window in the lower part of the shield).
The “SOGDA” 2A HEAT SHIELD
Max heat flux – up to 60 kW/m²
Heat flux decreasing ratio - 50 times
Rate of water flow - 0.45 l/sec
Height - 2125 mm
Length - 1415 mm
Width - 330 mm
Weight - 40 kg

It is placed on stationary carriage hoses at oil-and-gas, fuel, chemical industry enterprises, dumps and other fire-hazardous sites. During a fire, carriage hose operators protected by the shield can stay at their crew station regardless of the extreme heat flows and keep fire extinguishing or cooling down the object until the fire is fully suppressed.
“SOGDA”

The “SOGDA” 3 HEAT SHIELD

Max heat flux – up to 60 kW/m²
Heat flux decreasing ratio - 50 times
Rate of water flow - 0.7 l/sec
Height - 2125 mm
Length - 2070 mm
Width - 950 mm
Weight - 80 kg

This mobile shield is meant for both firefighters protection during fire-extinguishing operations and protecting equipment, buildings and people from thermal radiation. Using the shield protection allows the user to fulfill urgent work on equipment during a fire.

The shields permit mounting thermal protection walls or passages for the safe evacuation of people from the fire zone. The shield construction allows the use of both manual firefighting hose nozzles, supplying continual and atomized water jet, and foam generators during fire-extinguishing operations.
The “SOGDA” 4 HEAT SHIELD
Max heat flux – up to 60 kW/m²
Heat flux decreasing ratio - 50 times
Rate of water flow - 0.5 l/sec
Height - 2258 mm
Length - 1880 mm
Width - 1590 mm
Weight - 500 kg

These shields are placed around a burning flowing, whereas the water, supplied via the nozzles, detaches the flame from the wellhead allowing the user to carry out emergency-eliminating operations without resort to echelon protection.

The heat shield was designed for ensuring thermal protection of people, fire-extinguishing machinery and equipment during operations for eliminating emergencies involving an oil and gas gusher.
Also, in case of an explosion, they provide mechanical protection of the personnel against possible injuries by fragments of processing equipment.

Extinguishing a 90-meter gas flowing using “Sogda” 4
The “SOGDA” 1B HEAT SHIELD
Max heat flux – up to 60 kW/m²
Heat flux decreasing ratio - 50 times
Rate of water flow - 0.25 l/sec
Height - 1763 mm
Length - 748 mm
Width - 436 mm
Weight - 12 kg

This is a portable foldout shield meant for the individual thermal protection of the firefighter carrying-out his operational activities using a manual firefighting hose nozzle. Its low weight and the compactness of the shield make this protective device the most convenient during fire extinguishing in residential and office buildings and other premises as well as open territory.

The shield is transported and stored in a special case. The shield casing easily fits in a fire-fighting vehicle compartment and, if needed, can be transported on the rear seat or in a car baggage compartment.
MOBILE “SOGDA” FIRE EXTINGUISHING COMPLEX

Max heat flux – up to 60 kW/m²
Heat flux decreasing ratio - 50 times
Rate of water flow - 0.25 l/sec
Height - 2050 mm
Length - 1560 mm
Width - 1530 mm
Weight - 180 kg

It is meant for allocating and extinguishing the flame base in its initial stage by the personnel of a fire-hazardous facility (e.g. gas filling station) prior to fire brigade arrival. It is equipped with a thermal protection shield and the required primary fire-fighting equipment (fire extinguishers, a hook, a felt mat, etc.). The shield can work with water from an outer water-supply source (via a fire-hose) or can be operated in a free running mode.
Fire barriers consist of mesh panels formed by two parallel metal surfaces, which are sprayed with water or non-freezing liquids (for cold climate) through special nozzles. Barriers have been tested to protect tanks with liquefied natural gas (LNG) as well as for fire protection of tanks for petroleum derivative with capacity up to 20,000 m$^3$.

**The uniqueness of the “Sogda” heat barriers and the area of their application**

- Don’t get destroyed in case of explosions as the explosive wave passes through the mesh. Water films are formed again owing to sprayed water and heat barriers continuously protect from fire.
- Are able to divide indoor area on fire compartments.
- Shorten distances between fire hazardous objects.
- Essential on offshore oil and gas platforms, ships. Safety zones for personnel or passengers can be assembled using fire barriers.
- Applicable for fire protection of tanks with petroleum derivative (are able to protect containers with fire-extinguishing agents).

The “SOGDA” FIRE BARRIERS allow flame localization with temperature up to 1800°C, withstand the heat fluxes above 220 kW/m$^2$ and reduce heat flux levels more than 50 times.
GAS CLOUD DISSIPATOR

a fundamentally new device type (patents in Russia, USA, China) developed for fire safety of facilities engaged in liquefaction, storage and use of liquefied natural gas (LNG).

The uniqueness of the Dissipator:
- Allows localization of flames with a temperature up to 1800°C, withstands heat fluxes over 220kW/m² and reduces these heat flux density more than 50 times.
- Protects tanks with LNG and liquefied petroleum gas (LPG). Prevents gas accumulation to an explosive concentration and provide self-extinguishing.
- Doesn’t get destroyed in case of explosions.

Prospects and Recommendations

Usage of the Dissipator will substantially increase the fire safety of facilities engaged in LNG production, storage and processing. The dissipator can be used to ensure the fire safety of low-volume ground-based tanks mounted at various enterprises and in inhabited localities.

Fire localization in case of inflammation of LNG leak

Gas dissipation in case of gas accident
РОССИЙСКАЯ ФЕДЕРАЦИЯ

ПАТЕНТ
НА ИЗОБРЕТЕНИЕ

№ 2506103

СПОСОБ РАССЕИВАНИЯ ГАЗОВОГО ОБЛАКА, ОБРАЗУЮЩЕГОСЯ ПРИ УТЕЧКЕ ИЗ НАЗЕМНОЙ ЕМКОСТИ, И УСТРОЙСТВО ДЛЯ ЕГО ОСУЩЕСТВЛЕНИЯ

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Запись № 2012125835
Зарегистрировано в Государственном реестре изобретений Российской Федерации 10 февраля 2014 г.
Срок действия патента истекает 21 июня 2032 г.

Руководитель Федеральной службы по интеллектуальной собственности

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