

FOAMING AGENTS FOR FIRE FIGHTING

1. SYNTHETIC HYDROCARBON FOAMING AGENTS

FOAMING AGENT PO-6TS mark A

TU 2481-348-05744685-2009

certified

Purpose. Synthetic biodegradable (over 90%), general-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion, as well as to prepare a solution of a wetting agent used to extinguish burning solid material.

Composition. An aqueous solution of hydrocarbon synthetic anionic surface-active substances with stabilizing additives.

Appearance. Transparent liquid with no sediment.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Mass fraction APAV, %, not less than	20,0
Kinematic viscosity at 20°C, mm ² /s, not more than	15
Solidification point, °C, not higher	- 3
Expansion of a working solution of foam with a volume fraction of 6% - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 200
Stability of medium expansion foam, s, not less than: - destruction of 50% of the foam volume from GPS-100 in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting foam - excretion of 50% of liquid volume from the resulting low expansion foam	1000 220 200
Time of extinguishing of n-heptane (gasoline A-76) with a working solution with the volume fraction of 6% at a flow rate of (0,042 ± 0,002) dm ³ /m ² s, s, no more than	300
Wetting capacity indicator for the working solution with a 2% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months; in metal barrels with polymer coating - 36 months.

Packaging. Steel, steel-with-polymer-coating, or plastic 200 dm³ barrels, or polymer containers from 700 dm³ to 1000 dm³, auto- and railway tank cars.

Terms of application. Concentration of the working solution for foam on sweet water - 6% (volume). Concentration of the working solution for wetting - 2% (volume). Normative flow rate of 6% working solution for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6TS mark B

TU 2481-348-05744685-2009

certified

Purpose. Synthetic biodegradable (over 90%), general-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion, as well as to prepare a solution of a wetting agent used to extinguish burning solid material.

Composition. An aqueous solution of hydrocarbon synthetic anionic surface-active substances with stabilizing additives.

Appearance. Transparent liquid with no sediment.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	15

Solidification point, °C, not higher	- 5	-10	-20	-30
Expansion of a working solution of foam with a volume fraction of 6% - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 200			
Stability of medium expansion foam, s, not less than: - destruction of 50% of the foam volume from GPS-100 in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting foam - excretion of 50% of liquid volume from the resulting low expansion foam	1000 220 200			
Time of extinguishing of n-heptane (gasoline A-76) with a working solution with the volume fraction of 6% at a flow rate of (0,042 ± 0,002) dm ³ /m ² s, s, no more than	300			
Wetting capacity indicator for the working solution with a 2% volume fraction, s, no more than	9			
Degree of biodegradation, %, more than	90			

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months; in metal barrels with polymer coating - 36 months.

Packaging. Steel, steel-with-polymer-coating, or plastic 200 dm³ barrels, or polymer containers from 700 dm³ to 1000 dm³, auto- and railway tank cars.

Terms of application. Concentration of the working solution for foam on sweet water - 6% (volume). Concentration of the working solution for wetting - 2% (volume). Normative flow rate of 6% working solution for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6TS (3%)

TU 2481-348-05744685-2009

certified

Purpose. Synthetic biodegradable general-purpose foaming agent designed to extinguish fires of classes A and B using the foam of medium expansion, as well as to prepare a solution of a wetting agent used to extinguish burning solid material.

Composition. An aqueous solution of hydrocarbon synthetic anionic surface-active substances with stabilizing additives.

Appearance. Transparent liquid with no sediment.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	20
Solidification point, °C, not higher	- 3
Expansion of a working solution of foam with a volume fraction of 3% - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 200
Stability of medium expansion foam, s, not less than: - destruction of 50% of the foam volume from GPS-100 in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting foam - excretion of 50% of liquid volume from the resulting low expansion foam	1000 220 200
Time of extinguishing of n-heptane (gasoline A-76) with a working solution with the volume fraction of 3% at a flow rate of (0,042 ± 0,002) dm ³ /m ² s, s, no more than	300
Wetting capacity indicator for the working solution with a 2% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months; in metal barrels with polymer coating - 36 months.

Packaging. Steel, steel-with-polymer-coating, or plastic 200 dm³ barrels, or polymer containers from 700 dm³ to 1000 dm³, auto- and railway tank cars.

Terms of application. Concentration of the working solution for foam on sweet water - 3%

(volume). Normative flow rate of 6% working solution for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6CT

TU 0258-148-05744685-98

certified

Purpose. Synthetic biodegradable special-purpose foaming agent with enhanced extinguishing capacity designed to extinguish fires of classes A and B using the foam of low, medium and high expansion. Can be used to obtain heavy foams and thermal isolation of grounds.

Composition. An aqueous solution of hydrocarbon synthetic anionic surface-active substances with stabilizing additives.

Appearance. Homogeneous liquid with no sediment.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	20
Solidification point, °C, not higher	- 8
Expansion of a working solution of foam with a volume fraction of 6% - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 500
Stability of foam, s, not less than: - destruction of 50% of the foam volume from GPS-100 in 200 dm ³ of the container - destruction of 50% of the foam volume medium expansion foam (on the stand set) - excretion of 50% of liquid volume from the low expansion foam - excretion of 50% of liquid volume from the foam, obtained on the stand set - excretion of 50% of liquid volume from the resulting high expansion foam	3000 5000 400 1000 600
Time of extinguishing of n-heptane (gasoline A-76) with a working solution with the volume fraction of 6% at a flow rate of (0,032 ± 0,002) dm ³ /m ² s, s, no more than	100
Wetting capacity indicator for the working solution with a 2% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 120 months; in metal barrels - 12 months; in metal barrels with polymer coating - 36 months.

Packaging. Steel, steel-with-polymer-coating, or plastic 200 dm³ barrels, or polymer containers from 700 dm³ to 1000 dm³, auto- and railway tank cars.

Terms of application. Concentration of the working solution for foam on sweet water - 6% (volume). Normative flow rate of the working solution for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,065 dm³/m²s.

FOAMING AGENT PO-6TS-M

TU 2481-188-05744685-2002

certified

Purpose. First made-in-Russia synthetic biodegradable special-purpose foaming agent officially approved for extinguishing fires of classes A and B using the foam of low, medium and high expansion, with the use of sweet and sea water on vessels and objects of the sea and river fleet. Meets the international standards.

Composition. An aqueous solution of surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-9,5
Kinematic viscosity at 20°C, mm ² / s, not more than	200
Solidification point, °C, not higher	- 5

Expansion of a working solution of foam with a volume fraction of 6%, on sweet and sea water - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 1000
Stability of foam, s, not less than: - destruction of 50% of the medium expansion foam volume in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting medium expansion foam, obtained on the stand set - excretion of 50% of liquid volume from the resulting low expansion foam - excretion of 50% of liquid volume from the resulting high expansion foam, obtained on the stand set	720 150 200 150
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 6%, of sea water, at a flow rate of (0,042 ± 0,002) dm ³ /m ² s, s, no more than	300
Time of extinguishing of n-heptane (gasoline A-76) with a high expansion foam from the working solution with the volume fraction of 6%, of sea water, at a flow rate of (0,59 ± 0,002) dm ³ /m ² s, s, no more than	120
Wetting capacity indicator for the aqueous solution with a 2% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months, in metal barrels with polymer coating - 36 months.

Packaging. Steel or polyethylene 200 dm³ barrels, or polymer containers from 700 dm³ to 1000 dm³, auto- and railway tank cars.

Terms of application. Concentration of the working solution for foam on water with any level of hardness - 6% (volume). Normative flow rate of the working solution of the foaming agent for fires of fighting hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6TS-M (2%)

TU 2481-188-05744685-2002

certified

Purpose. Concentrated synthetic biodegradable special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion, with the use of sweet and sea water on vessels and objects of the sea and river fleet.

Composition. An aqueous solution of surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20 C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Kinematic viscosity at 20°C, mm ² / s, not more than	200
Solidification point, °C, not higher	- 15
Expansion of a working solution of foam with a volume fraction of 2%, on sweet and sea water - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 1000
Stability of foam, s, not less than: - destruction of 50% of the medium expansion foam volume in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting medium expansion foam, obtained on the stand set - excretion of 50% of liquid volume from the resulting low expansion foam - excretion of 50% of liquid volume from the resulting high expansion foam, obtained on the stand set	720 150 200 150
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 2%, of sea water, at a flow rate of (0,032 ± 0,002) dm ³ /m ² s, s, no more than	300
Time of extinguishing of n-heptane (gasoline A-76) with a high expansion foam from the working solution with the volume fraction of 2%, of sea water, at a flow rate of (0,59 ± 0,002) dm ³ /m ² s, s, no more than	120

Wetting capacity indicator for the aqueous solution with a 1% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months, in metal barrels with polymer coating - 36 months.

Packaging. Polyethylene 200 dm³ barrels, or polymer containers up to 1000 dm³, auto- and railway tank cars made of stainless steel.

Terms of application. Concentration of the working solution for foam on water with any level of hardness - 2% (volume). Concentration of the working solution for wetting agent - 1% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6TS-M (3%)

TU 2481-188-05744685-2002

certified

Purpose. Concentrated synthetic biodegradable special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion, with the use of sweet and sea water on vessels and objects of the sea and river fleet.

Composition. An aqueous solution of surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 15
Expansion of a working solution of foam with a volume fraction of 3%, on sweet and sea water - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 1000
Stability of foam, s, not less than: - destruction of 50% of the foam volume, received from the trunk of GPS-100 type, in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting medium expansion foam, obtained on the stand set - excretion of 50% of liquid volume from the resulting low expansion foam - excretion of 50% of liquid volume from the resulting high expansion foam, obtained on the stand set	720 150 200 150
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 3%, of sea water, at a flow rate of (0,032 ± 0,002) dm ³ /m ² s, s, no more than	300
Time of extinguishing of n-heptane (gasoline A-76) with a high expansion foam from the working solution with the volume fraction of 3%, of sea water, at a flow rate of (0,59 ± 0,002) dm ³ /m ² s, s, no more than	120
Wetting capacity indicator for the aqueous solution with a 1,5% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months, in metal barrels with polymer coating - 36 months.

Packaging. Polyethylene 200 dm³ barrels, or polymer containers up to 1000 dm³, auto- and railway tank cars made of stainless steel.

Terms of application. Concentration of the working solution for foam on water with any level of hardness - 3% (volume). Concentration of the working solution for wetting agent - 1,5% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6TS-M (4%)

TU 2481-188-05744685-2002

certified

Purpose. Concentrated synthetic biodegradable special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion, with the use of sweet and sea water on vessels and objects of the sea and river fleet.

Composition. An aqueous solution of surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	7,0-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 10
Expansion of a working solution of foam with a volume fraction of 4%, on sweet and sea water - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than - on the high expansion trunk, no less than	20 60 1000
Stability of foam, s, not less than: - destruction of 50% of the foam volume, received from the trunk of GPS-100 type, in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting medium expansion foam, obtained on the stand set - excretion of 50% of liquid volume from the resulting low expansion foam - excretion of 50% of liquid volume from the resulting high expansion foam, obtained on the stand set	720 150 200 150
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 4%, of sea water, at a flow rate of (0,032 ± 0,002) dm ³ /m ² s, s, no more than	300
Time of extinguishing of n-heptane (gasoline A-76) with a high expansion foam from the working solution with the volume fraction of 4%, of sea water, at a flow rate of (0,59 ± 0,002) dm ³ /m ² s, s, no more than	120
Wetting capacity indicator for the aqueous solution with a 2% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months, in metal barrels with polymer coating - 36 months.

Packaging. Polyethylene 200 dm³ barrels, or polymer containers up to 1000 dm³, auto- and railway tank cars made of stainless steel.

Terms of application. Concentration of the working solution for foam on water with any level of hardness - 4% (volume). Concentration of the working solution for wetting agent - 2% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT FIREX

TU 2481-203-05744685-2003

certified

Purpose. Biologically soft foaming agent designed to extinguish forest fires from land and by special aircrafts, as well as to extinguish fires of classes A and B using the foam of low and medium expansion.

Composition. An aqueous solution of surface-active substances mixture with stabilizing additives.

Appearance. Transparent liquid with no sediment.

Physico-chemical properties.

Density at 20°C, kg/m ³	1050-1090
Convention kinematic viscosity at 20°C, mm ² /s, by viscosimeter of VZ-246 type (or VZ-4 type) with the outlet diameter of 4 mm at the temperature of: - (20 ± 0,5)°C - (10 ± 0,5)°C	10-30 15-40

Kinematic viscosity at 20°C, mm ² /s, not more than	100
PH value (pH) of the foaming agent	7,3-10,0
PH value (pH) of the aqueous solution with a 1% mass fraction of the product	6,5-9,0
Solidification point, °C, not higher	- 3
Expansion of a working solution of foam with a volume fraction of 6% - on the trunk of GPS-100 type, no less than - on the low expansion trunk, no more than	60 20
Stability of medium expansion foam, s, not less than: - destruction of 50% of the foam volume from GPS-100 in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting foam	720 220
Stability of foam, %, not more than: - destruction of the foam in 30 min	25
Time of extinguishing of n-heptane (gasoline A-76) with a working solution with the volume fraction of 6% at a flow rate of (0,042 ± 0,002) dm ³ /m ² s, s, no more than	300
Wetting capacity indicator for the working solution with a 1% volume fraction, s, no more than	6
Degree of biodegradation, %, more than	90

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - in polyethylene drums and polymer containers - 60 months; in metal barrels - 12 months, in metal barrels with polymer coating - 36 months.

Packaging. Polyethylene 20 litre canisters, steel 200 dm³ barrels, auto- and railway tank cars.

Terms of application. Firex foaming agent is used for fighting forest fires, in the form of aqueous solution with the concentration of 0,5 – 1,0 % (volume). It is used for fighting fires of classes A and B in the form of aqueous solution with 6% volume fraction. Normative flow rate of the working solution of the foaming agent for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,08 dm³/m²s.

2. FLUORSYNTHETIC FOAMING AGENTS

FOAMING AGENT PO-6TF

TY 20.41.20-372-05744685-2016

certified

Purpose. Synthetic fluorinated film-forming special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion.

Composition. An aqueous solution of fluorinated surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	6,5-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 5*
Expansion of a working solution of foam with a volume fraction of 6% on sweet and sea water - low, not more than - medium, no less than - high expansion, no less than	20 40 200
Stability of foam, s, not less than: - destruction of 50% of the medium expansion foam volume in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting medium expansion foam, obtained on the stand set - excretion of 50% of liquid volume from the resulting low expansion foam	1200 200 200
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 6% at a flow rate of (0,032 ± 0,002) dm ³ /m ² s, s, no more than	300

Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam from the working solution with the volume fraction of 6% at a flow rate of $(0,059 \pm 0,002) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	120
Surface tension of a working solution of foaming agent of 6 % at 20°C, mH/m, no more	17,3
Interfacial tension on border of section of a working solution of foaming agent with n-heptane at 20°C, mH/m, not less	2,5
Factor of spreading of a working solution of foaming agent on a surface n-heptane at 20°C, mH/m, not less	0,3
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam in a layer of fuel with intensity $(0,030 \pm 0,003) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	43
Wetting capacity indicator for the aqueous solution with a 6% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	80

*) Upon the consumer request the foaming agent PO-6TF is optionally produced with a lower solidification temperature of -35°C and lower.

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - 180 months.

Packaging. Polyethylene 200 dm³ barrels, polymer containers up to 1000 dm³.

Terms of application. Concentration of the working solution for foam formation - 6% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of petrochemicals and hydrocarbon fuels with the foam of medium expansion - no more than $0,05 \text{ dm}^3/\text{m}^2\text{s}$, with the foam of low expansion – no more than $0,08 \text{ dm}^3/\text{m}^2\text{s}$.

FOAMING AGENT PO-6TF mark B

TY 20.41.20-372-05744685-2016

certified

Purpose. Synthetic fluorinated film-forming special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low expansion.

Composition. An aqueous solution of fluorinated surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	6,5-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 5*
Expansion of a working solution of foam with a volume fraction of 6% - on the low expansion trunk, not more than	20
Stability of foam, s, not less than: - excretion of 50% of liquid volume from the resulting foam	200
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam from the working solution with the volume fraction of 6% at a flow rate of $(0,059 \pm 0,002) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	120
Surface tension of a working solution of foaming agent of 6 % at 20°C, mH/m, no more	17,3
Interfacial tension on border of section of a working solution of foaming agent with n-heptane at 20°C, mH/m, not less	2,5
Factor of spreading of a working solution of foaming agent on a surface n-heptane at 20°C, mH/m, not less	0,3
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam in a layer of fuel with intensity $(0,030 \pm 0,003) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	43
Wetting capacity indicator for the aqueous solution with a 6% volume fraction, s, no more than	9
Degree of biodegradation, %, more than	80

*) Upon the consumer request the foaming agent PO-6TF mark B is optionally produced with a lower solidification temperature of -35°C and lower.

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - 180 months.

Packaging. Polyethylene 200 dm³ barrels, polymer containers up to 1000 dm³.

Terms of application. Concentration of the working solution for foam formation - 6% (volume).

Normative flow rate of the working solution of the foaming agent for fighting fires of petrochemicals and hydrocarbon fuels with the foam of low expansion – no more than 0,08 dm³/m²s.

FOAMING AGENT PO-6TF-U

TU 2412-191-05744685-2002

certified

Purpose. Synthetic fluorinated film-forming special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low and medium expansion, including extinguishing class B fires of hydrocarbon fuels and water-soluble (polar) liquids.

Composition. An aqueous solution of fluorinated and hydrocarbon surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	6,5-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 5*
Expansion of a working solution of foam with a volume fraction of 6% - on the low expansion trunk, no more than - on the trunk of GPS-100 type, no less than	20 40
Stability of foam, s, not less than: - destruction of 50% of the foam volume from GPS-100 in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting medium expansion foam, obtained on the stand set	1200 200
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 6% at a flow rate of (0,032 ± 0,002) dm ³ /m ² s, s, no more than	300
Time of extinguishing of acetone with a medium expansion foam at a flow rate of (0,080 ± 0,005) dm ³ /m ² s, s, no more than	120
Degree of biodegradation, %, more than	80

*) Upon the consumer request the foaming agent PO-6TF-U is optionally produced with a lower solidification temperature of -35°C and lower.

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - 180 months.

Packaging. Polyethylene 200 dm³ barrels, polymer containers up to 1000 dm³.

Terms of application. Concentration of the working solution for foam formation - 6% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of petrochemicals and hydrocarbon fuels with the foam of medium expansion - no more than 0,05 dm³/m²s, with the foam of low expansion – no more than 0,08 dm³/m²s. Normative flow rate of the working solution of the foaming agent for fighting fires of water-soluble (polar) liquids with the foam of medium expansion - no more than 0,01 dm³/m²s.

FOAMING AGENT PO-6TF-U mark B

TU 2412-191-05744685-2002

certified

Purpose. Synthetic fluorinated film-forming special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low expansion, including extinguishing class B fires of hydrocarbon fuels and water-soluble (polar) liquids.

Composition. An aqueous solution of fluorinated and hydrocarbon surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	6,5-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 5*

Expansion of a working solution of foam with a volume fraction of 6% - on the low expansion trunk, no more than	20
Stability of foam, s, not less than: - excretion of 50% of liquid volume from the resulting low expansion foam	200
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam from the working solution with the volume fraction of 6% at a flow rate of $(0,059 \pm 0,002) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	120
Degree of biodegradation, %, more than	80

*) Upon the consumer request the foaming agent PO-6TF-U mark B is optionally produced with a lower solidification temperature of -35°C and lower.

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - 180 months.

Packaging. Polyethylene 200 dm³ barrels, polymer containers up to 1000 dm³.

Terms of application. Concentration of the working solution for foam formation - 6% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of petrochemicals and hydrocarbon fuels with the foam of low expansion – no more than $0,08 \text{ dm}^3/\text{m}^2\text{s}$.

FOAMING AGENT PO-3TF

TY 20.41.20-372-05744685-2016

certified

Purpose. Synthetic fluorinated film-forming special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low, medium and high expansion.

Composition. An aqueous solution of fluorinated and hydrocarbon surface-active substances mixture with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH)	6,5-10,0
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 5*
Expansion of a working solution of foam with a volume fraction of 3% on sweet and sea water - on the low expansion trunk, not more than - on the trunk of GPS-100 type, not less than - on the high expansion trunk, not less than	20 40 200
Stability of foam, s, not less than: - destruction of 50% of the medium expansion foam volume in 200 dm ³ of the container - excretion of 50% of liquid volume from the resulting low expansion foam - excretion of 50% of liquid volume from the resulting medium expansion foam	1200 200 200
Time of extinguishing of n-heptane (gasoline A-76) with a medium expansion foam from the working solution with the volume fraction of 3% at a flow rate of $(0,032 \pm 0,002) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	300
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam from the working solution with the volume fraction of 3% at a flow rate of $(0,059 \pm 0,002) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	120
Surface tension of a working solution of foaming agent of 3 % at 20°C, mH/m, no more	17,3
Interfacial tension on border of section of a working solution of foaming agent with n-heptane at 20°C, mH/m, not less	2,5
Factor of spreading of a working solution of foaming agent on a surface n-heptane at 20°C, mH/m, not less	0,3
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam in a layer of fuel with intensity $(0,030 \pm 0,003) \text{ dm}^3/\text{m}^2\text{s}$, s, no more than	43
Degree of biodegradation, %, more than	80

*) Upon the consumer request the foaming agent PO-3TF is optionally produced with a lower solidification temperature of -35°C and lower.

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - 180 months.

Packaging. Polyethylene 200 dm³ barrels, polymer containers up to 1000 dm³.

Terms of application. Concentration of the working solution for foam on water with any level of hardness - 3% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of hydrocarbon fuels with the foam of medium expansion - no more than 0,05 dm³/m²s, with the foam of low expansion - no more than 0,08 dm³/m²s.

FOAMING AGENT PO-3TF mark B

TY 20.41.20-372-05744685-2016

certified

Purpose. Synthetic fluorinated film-forming special-purpose foaming agent designed to extinguish fires of classes A and B using the foam of low expansion.

Composition. An aqueous solution of fluorinated surface-active substances with stabilizing additives.

Appearance. Homogeneous liquid with no sediment and stratification.

Physico-chemical properties.

Density at 20°C, kg/m ³	1000-1200
PH value (pH) of the foaming agent	6,5-10,0
Kinematic viscosity at 20° C, mm ² /s, not more than	200
Solidification point, °C, not higher	- 5*
Expansion of a working solution of foam with a volume fraction of 3% on sweet and sea water - on the low expansion trunk, no more than	20
Stability of foam, s, not less than: - excretion of 50% of liquid volume from the resulting low expansion foam	200
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam from the working solution with the volume fraction of 3% at a flow rate of (0,059 ± 0,002) dm ³ /m ² s, s, no more than	120
Surface tension of a working solution of foaming agent of 3 % at 20°C, mH/m, no more	17,3
Interfacial tension on border of section of a working solution of foaming agent with n-heptane at 20°C, mH/m, not less	2,5
Factor of spreading of a working solution of foaming agent on a surface n-heptane at 20°C, mH/m, not less	0,3
Time of extinguishing of n-heptane (gasoline A-76) with a low expansion foam in a layer of fuel with intensity (0,030 ± 0,003) dm ³ /m ² s, s, no more than	43
Degree of biodegradation, %, more than	80

*) Upon the consumer request the foaming agent PO-3TF is optionally produced with a lower solidification temperature of -35°C and lower.

Toxicity. Low-hazard substance.

Guaranteed shelf life. Subject to the conditions of storage and transportation - 180 months.

Packaging. Polyethylene 200 dm³ barrels, polymer containers up to 1000 dm³.

Terms of application. Concentration of the working solution for foam on water with any level of hardness - 3% (volume). Normative flow rate of the working solution of the foaming agent for fighting fires of hydrocarbon fuels with the foam of low expansion - no more than 0,08 dm³/m²s.

FLUORO PROYEIN FOAMING

FOAMING AGENT PO-6FFFP

TS 2412-356-05744685-2010

Definition: Foaming agent PO-6 FFFP purpose film forming fluoro protein, designed to extinguish fires of classes A and B using the foam of low, medium and high expansion obtained using drinking water and sea water.

Foaming agent is recommended for fire extinguishing oil and petroleum products. Foaming agent is highly efficient when using the subsurface fire extinguishing oil and petroleum products in tanks, as well as in fire-fighting foam oil and petroleum products and low magnification supplied monitors and high performance combined fire monitors. Foaming agent has a low corrosivity.

Foaming agent is characterized by a great time of the protective action of the foam. Foaming agent can be used to cover the foam accidental spills of oil and oil products, as well as to cover the

surface of the foam combustible liquids in containers and tanks to reduce the risk of explosion or fire.

Foaming agent PO-6FFFP comes with a pour point of not higher than minus 15 ° C. At the request of the consumer PO-6FFFP can additionally be produced with low pour point not higher than - 25 ° C (brand "-25") and -40 ° C (brand "-40").

Technical specifications.

Appearance	Transparent liquid with no sediment and layering
Density at 20 °C, kg/M ³	1000-1200
Kinematic viscosity at 20°C, mm ² /s, not more than	200
Solidification point, °C, not higher	-15
PH value (pH)	6,5-10,0
Expansion of a working solution of foam with a volume fraction of 6% for drinking water and sea water - low, not more than - medium, not less than	20 40
Stability of medium expansion foam, s, not less than: -excretion of 50% of liquid volume from the resulting low expansion foam - excretion of 50% of liquid volume from the resulting medium expansion foam	120 200
Time of extinguishing of n-heptane (gasoline according to GOST P 51105, stamp Normal-80) - low expansion foam at flow rates (0,059 ± 0,002) dm ³ / (m ² • s), with no more than - Medium expansion foam at flow rates (0,032 ± 0,002) dm ³ / (m ² • c), with no more than - Medium expansion foam at flow rates (0,032 ± 0,002) dm ³ / (m ² • c), with no more than	120 120 300
Time of rekindling (gasoline according to GOST P 51105, stamp Normal-80) in stantartized fire source at low expansion foam, c, not less	600
Wetting capacity indicator for the working solution at 20 °C, mH/M, not more	17,3
The surface tension at the interface with the aqueous solution of the foaming agent n-heptane at 20 ° C mH/M, not less	2,5
Spreading coefficient of water solution foam on the surface of n-heptane at 20 °C, mH/M, not less	0,3
Time of extinguishing n-heptane, flow of low expansion foam at the intensity of a combustible layer (0,03 ± 0,003) dm ³ / (m ² • c), not more than	43

Application.

The foaming agent used to extinguish fires of class A and B.

The concentration of the working solution of the foaming agent to obtain a foam on drinking and sea water - 6 % (volumetric).

Normative flow rate of the working solution with a volume share of 6% when extinguishing hydrocarbon fuels with low expansion foam is not more than 0.07 dm³/(m²•s), medium expansion foam is not more than 0.05 dm³/(m²•s).

The temperature of the foaming agent in the application:

- maximum 40 °C;

- minimum:

- for 6FFFP with a pour point of not higher than minus 15 ° C - 10 °C;

- for 6FFFP with a pour point of not higher than minus 25 °C -15 °C;
- for 6FFFP with a pour point of not higher than minus 40 °C - 30 °C.

Storage .

Foaming agent is stored in closed containers in covered warehouses at:

- Not more than 40 ° C and below 10 ° C for PO-6FFFP with a pour point not higher than minus 15 ° C;

- Not more than 40 ° C and not lower than minus 20 ° C- for PO-6FFFP r with a pour point not higher than minus 25 ° C;

- Not more than 40 ° C and not lower than minus 35 ° C for PO-6FFFP with a pour point of not higher than minus 40 ° C, which ensures the safety of the product and the possibility of immediate use.

Guaranteed shelf life in the container manufacturer - 20 years from the date of manufacture.

Compatibility.

If necessary during storage or operating conditions (in fire) may be mixed blowing agent software-6FFFP with fluoro protein foamers type FFFP.

Packing.

Foaming agent PO-6FFFP packed in plastic barrels for up to 200 dm³, polymeric tanks capacity of up to 700 dm³ or 1000 dm³, rail or road tankers made of stainless steel.