



# Firefighting Foam Concentrates and Hardware



The power behind **your mission**



# Firefighting Foam Performance Solutions

Since 1931, SKUM firefighting foam products have been globally renowned for industry-leading performance and innovation in protecting high-risk, special hazards. Our high-quality foam concentrates and hardware help make manufacturing and process industries around the world safer places in which to work and operate. Contact us to learn more about how we can help protect what matters most – your people, assets, and operations.



## Applications and Environments

### Aviation and Industrial

- Aircraft Hangars
- Airports
- Avionics Facilities
- ARFF Vehicles
- Engine Test Facilities
- Helipads
- Maintenance / Repair Areas
- Manufacturing Plants
- Power Plants
- Transformers
- Warehouse
- Waste Treatment

### Marine and Offshore

- Marine Vessels
- Crude Oil Tankers
- Oil / Chemical Tankers
- Offshore Platforms
- FPSOs and FSOs
- LNG Tankers
- Navy Ships
- Jetties
- Dry Docks
- Cargo Holds
- Engine and Pump Rooms
- Helidecks

### Petrochemical and Energy

- Refineries
- Tank Farms, Storage Tanks and Dikes
- Chemical Plants
- LNG Terminals
- Refuelling/Fuel Facilities
- Power Generation Facilities
- Truck Loading Racks
- Hazardous Material Spills
- Onshore – Offshore Storage
- Pipelines and Pumping Stations

# High-Expansion Foam Concentrates and Systems

## High-Expansion Foam



SKUM High-Expansion (Hi-Ex) non-fluorinated concentrates produce expansion ratios from 50:1 to 1000:1, quickly forming large volumes of foam. Our Hi-Ex foam concentrates are developed for use with SKUM high-expansion generators to maximise performance and minimise water usage. These systems provide effective suppression of horizontal and vertical (three-dimensional) fires with minimal water damage.

SKUM METEOR X concentrate is formulated for use with fresh water only. SKUM HOTFOAM concentrate may be proportioned with fresh, salt, or hard water

which makes it well-suited for marine applications.

SKUM Hi-Ex foam is used to suppress both indoor and outdoor Class A and Class B fires. Typical applications are large enclosures containing high-value assets such as:

- Aircraft hangars
- Distribution warehouses
- Marine engine and pump rooms
- Tunnels

SKUM Hi-Ex foam is also effective for fire and vapour suppression in open space applications such as flammable liquid storage areas and LNG facilities.

## High-Expansion Systems



Our high-expansion systems with HOTFOAM concentrate and HG Foam Generators offer excellent design flexibility. These systems are fire suppression tested and approved for use with inside or outside air supply. They are often utilised in machinery spaces, engine rooms, and small storage areas.

SKUM high-expansion systems with METEOR X concentrate and HIEX Foam Generators offer complete UL-Listed and FM-Approved installations. All HIEX generators are CE Marked.

Typical applications include aircraft hangars and large warehouse spaces. The HIEX product line also offers a selection of UL-Listed and FM-Approved systems (with METEOR-X concentrate) specifically designed for LNG applications.

The Fomax 7 Portable Foam Generator, with optional smoke extraction unit, mobilises high-expansion foam application. Typical usages include blanketing LNG spill fires, controlling vapour release from hazardous liquid spills, inerting tanks, and suppressing fire and vapours in ship holds and engine rooms.

| SKUM Foam Concentrate* | Application |        |            |     | Proportioning Rate | System Approvals, Listings, Standards, Certifications |                 |                                      |                 |                     |               |                |                             |                         |
|------------------------|-------------|--------|------------|-----|--------------------|---|-----------------|--------------------------------------|-----------------|---------------------|---------------|----------------|-----------------------------|-------------------------|
|                        | Aviation    | Marine | Industrial | LNG |                    | EN1568:2008   |                 | UL 139                               | FM 1350         | UL/FM               | IMO           |                |                             | APSAD (T12) Hydrocarbon |
|                        |             |        |            |     |                    | Part(s)   | Freeze Point °C | Listed/Approved SKUM HIEX Generators |                 | Minimum Use Temp °C | MSC/ Circ.670 | MSC/ Circ.1384 | Approved SKUM HG Generators |                         |
| METEOR X               | ✓           |        | ✓          |     | 2%                 | 2   | -2              | 2A, 5A<br>15A<br>20, 27              | 5A<br>15A<br>27 | 2                   |               |                |                             |                         |
|                        |             |        | ✓          |     |                    |   |                 | 2A LNG<br>5A LNG<br>20 LNG           | 5A LNG          |                     |               |                |                             |                         |
| HOTFOAM 2%             | ✓           | ✓      | ✓          | ✓   | 2%                 | 2   | -9              |                                      |                 |                     | MED B/D       | MED B/D        | HG-15<br>HG-25              | ✓                       |

\* Refer to the latest product technical data sheet for additional physiochemical, mechanical properties and application information.

# Foam Concentrates for Low/Medium-Expansion Systems

## AFFF / AR-AFFF Concentrates



SKUM Aqueous Film-Forming Foam (AFFF) concentrates combine fluoro- and hydrocarbon surfactants to produce high performance firefighting foams. AFFFs generate an aqueous film barrier at a hydrocarbon fuel/air interface. These low/medium-expansion foams are intended for use on Class B hydrocarbon fuels such as oil, petroleum, gasoline, benzene, diesel, and aviation fuels.

SKUM Alcohol Resistant Aqueous Film-Forming Foam (AR-AFFF) concentrates combine AFFF surfactants with polymeric

additives to create a membrane barrier at a polar fuel/air interface. These concentrates may be used on Class B polar solvent fuels – such as alcohols and ketones – as well as on hydrocarbon fuel fires.

The fast fire knockdown of these synthetic concentrates is advantageous in:

- Fixed systems
- Large, fuel-in-depth storage tanks
- Quick rescue responses involving helidecks and ARFF (Aircraft Rescue Fire Fighting) vehicles

| SKUM Foam Concentrate* | Proportioning Rate |               | Approvals, Listings, Standards, Certifications |                   |          |        |                  |                            |       |                  |
|------------------------|--------------------|---------------|--|-------------------|----------|--------|------------------|----------------------------|-------|------------------|
|                        | Fuel Type          |               | EN1568:2008                                    |                   | UL/FM    |        |                  | GESIP                      | ICAO  | IMO              |
|                        | Hydrocarbon        | Polar Solvent | Part(s)  | Freezing Point °C | Standard | FM     | Min. Use Temp °C | liters/m <sup>2</sup> /min | Level | MSC.1/ Circ.1312 |
| AFFF                   | 1% EG              | 1%            | 1,3  | -17               |          |        | -                |                            | B     |                  |
|                        | 1% UG              | 1%            | -  | -                 | UL-162   |        | 2                |                            |       |                  |
|                        | 1% MG              | 1%            | 1,3  | -18               |          |        | -                |                            | B     | MED B/D          |
|                        | 3% EG              | 3%            | 1,3  | -5                |          |        | -                | 2                          | B     |                  |
|                        | 3% UG              | 3%            | 3  | -2                | UL-162   | 1530   | 2                |                            |       |                  |
|                        | 3% MG              | 3%            | -  | -18               |          |        | -                |                            | B     | MED B/D          |
|                        | 3% ICAO C          | 3%            | -  | -3                |          |        | -                |                            | C     |                  |
|                        | 3% LT              | 3%            | 3  | -35               | UL-162   |        | -29              |                            | B     |                  |
|                        | 6% EG              | 6%            | 1,3  | -5                |          |        | -                | 2                          | B     |                  |
|                        | 6% UG              | 6%            | -  | -                 | UL-162   |        | 2                |                            |       |                  |
|                        | 6% ICAO C          | 6%            | -  | -6                |          |        | -                |                            | C     |                  |
| AR-AFFF                | ARC 1x1 LT         | 1%            | 1%   | 3,4               | -30      | UL-162 |                  | -18                        |       |                  |
|                        | ARC 1x3 IG         | 1%            | 3%   | 1,3,4             | -4       | UL-162 |                  | 2                          | 2     |                  |
|                        | ARC 3x3 UG         | 3%            | 3%   | 3,4               | -5       | UL-162 | 1530             | 2                          |       |                  |
|                        | ARC 3x3            | 3%            | 3%   | 1,3,4             | -4       | UL-162 |                  | 2                          | 2     |                  |
|                        | ARC 3x3 EG         | 3%            | 3%   | 1,2,3,4           | -15      |        |                  | -                          | B     | MED B/D          |
|                        | ARC 3x6 UG         | 3%            | 6%   | -                 | -        | UL-162 |                  | 2                          |       |                  |



## Foam Testing Services

Foam concentrate properties and performance may decline over time, even when stored under optimal conditions. Many industry standards require annual foam testing, and our regional foam laboratories – located in Germany, Singapore, and the United States – provide fast turnaround for most foam analyses. Please contact your regional sales representative for submittal of foam concentrate samples for annual testing.

## Protein Foam Concentrates



Protein-based, low/medium-expansion foam concentrates are produced from naturally-occurring hydrolysed proteins. They deliver a robust, aspirated foam blanket with high heat stability and good burnback resistance.

- Fluoroprotein (FP) foams contain fluorochemicals to enhance flame knockdown, fuel tolerance and vapour suppression on Class B hydrocarbon fuel fires.
- Fluoroprotein Alcohol Resistance (FPAR) concentrates offer suppression performance on Class B polar solvent fuel fires.

- Film-Forming Fluoroprotein (FFFP) concentrates provide additional fire suppression with an aqueous film barrier at the fuel/air interface of hydrocarbon fuel fires.

The wide spectrum of 3<sup>rd</sup> party approvals and listings make SKUM protein-based concentrates well-suited for a variety of fixed, semi-fixed, and emergency response applications. Typical uses include onboard marine systems, refineries, transfer stations, tank farms and fuel storage facilities.

| SKUM Foam Concentrate* |              | Proportioning Rate |               | Approvals, Listings, Standards, Certifications |                   |          |                  |                            |       |                 |
|------------------------|--------------|--------------------|---------------|--|-------------------|----------|------------------|----------------------------|-------|-----------------|
|                        |              | Fuel Type          |               | EN1568:2008                                    |                   | UL       |                  | GESIP                      | ICAO  | IMO             |
|                        |              | Hydrocarbon        | Polar Solvent | Part(s)  | Freezing Point °C | Standard | Min. Use Temp °C | liters/m <sup>2</sup> /min | Level | MSC.1/Circ.1312 |
| Protein                | TOWALEX P 3% | 3%                 |               | -  | -12               | UL-162   | -7               |                            |       |                 |
|                        | TOWALEX P 6% | 6%                 |               | -  | -12               |          | -                |                            |       |                 |
| FP                     | FP3% EG      | 3%                 |               | 1,3  | -12               | UL-162   | -7               | 2.5                        |       | MED B/D         |
|                        | FP6% EG      | 6%                 |               | 1,3  | -12               | UL-162   | -7               |                            |       |                 |
| FPAR                   | FP 3x3 MG    | 3%                 | 3%            | 1,3,4  | -15               |          | -                |                            | B     | MED B/D         |
|                        | FP 3x6 MG    | 3%                 | 6%            | 3,4  | -12               |          | -                |                            |       |                 |
| FFFP                   | FFFP3% EG    | 3%                 |               | 3  | -12               |          | -                |                            |       |                 |

## Class A & Training Foam Concentrates

SILV-EX G Class A foam concentrate is a non-fluorinated formulation designed to combat fires involving combustible materials such as wood, paper, coal, rubber, and plastics. SILV-EX G concentrate reduces the surface tension of water to allow greater penetration of the foam into most Class A fuels.

SKUM Meteor Training foam concentrate is intended to simulate AFFF concentrates for training (non-firefighting) purposes only.

| SKUM Foam Concentrate* |           | Proportioning Rate |                      | Freezing Point °C |
|------------------------|-----------|--------------------|----------------------|-------------------|
|                        |           | Class A Fuels      | N/A for Firefighting |                   |
| Class A                | SILV-EX G | 0.1 to 1%          |                      | -10               |
| Training Foam          | Meteor TF |                    | 3 or 6%              | -2                |

\* Refer to the latest product technical data sheet for additional physiochemical properties and application information.

## Fixed Systems and Mobile Equipment

SKUM fixed and mobile foam equipment is an industry leader in firefighting performance. Our innovators were the first to offer a semi-subsurface system for storage tank fire protection, and our latest UL-Listed/FM-Approved configurable bladder tank systems offer unmatched design flexibility. The extensive SKUM portfolio of foam equipment and concentrates provides comprehensive protection for flammable liquid hazards.



As a manufacturer of both foam concentrates and hardware, SKUM engineered solutions are 3rd party tested, rated, approved or certified to a wide array of industry standards, including:

- EN 1568:2018
- EN 13565-1&2
- ICAO level B&C
- UL 162
- UL 139
- FM 5130
- IMO 1312
- IMO 670
- Med B&D
- GESIP
- CNBOP

### Bladder Tanks

High-quality SKUM bladder tanks are pressure-rated vessels. An internal elastomeric bladder stores the concentrate and, when activated, pushes it to the external balanced-pressure proportioner.

Our UL-Listed, FM-Approved bladder tank systems are designed with a focus on ease of installation, reliability, field usability and quick delivery. The systems include a variety of features that make service and maintenance efficient and convenient.

**SKUM bladder tanks are available with a wide range of configurable options, including:**

- Foam concentrate volume
- Trim piping material
- Colour
- Corrosion resistance
- Sight gauges
- Thermal pressure relief valves
- Pre-piped, horizontal or vertical configurations



### Proportioners



SKUM proportioning equipment provides a calibrated ratio of foam concentrate to water to meet multiple application, specification and certification requirements.

**The product line includes:**

- Cost-effective inline inductors
- Self-inducing nozzles for easy installation and use
- Around-the-pump inductors for a consistent foam mixture
- Balanced pressure proportioners for variable flows/pressures
- UL-Listed/FM-Approved models

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## Tank Protection



SKUM tank protection hardware is designed for effective suppression of most flammable liquid hazards and is primarily constructed of high-quality 316L stainless steel and/or zinc-free bronze materials. Quick control of a flammable liquid storage tank fire is critical to minimise structural damage and protect tank contents. SKUM hardware offers protection for cone, fixed, open, closed, or floating roof designs, vertical or horizontal tanks, hydrocarbon or polar solvent hazards.

### SKUM Tank protection solutions include:

- Fixed foam generators for quick application of foam directly onto the fuel surface in storage tanks or diked areas; unique designs allow for easy inspection and testing
- FM-Approved OFG/OFGR foam generators
- Subsurface injection systems for closed roof storage tanks

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## Monitors



SKUM monitors offer a wide range of portable or fixed, manual or remote controlled options. These high-capacity monitors deliver large, targeted volumes of water or foam for distant application.

Constructed from high-quality materials, the unique design of SKUM monitors requires little maintenance whilst providing great throw range. Monitors are available in various sizes with a wide variety of features.

### Options and configurations include:

- Flow capacity: up to 20,000 litres/minute
- Throw range: up to 120 metres
- Flow: adjustable fog to jet spray for foam or water application
- Power: manual, electric, water, hydraulic, remote control
- Targeting: elevation, rotation and oscillation adjustment
- Mounting: fixed or mobile skid

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## Mobile Equipment and Trailers

SKUM mobile fire protection equipment and trailers are designed for flexible, rapid delivery of foam solutions to a fire scene. Our response equipment includes portable manifolds, nozzles, monitors, foam generators, hose materials, mobile carts and configurable trailers to enable quick firefighter response. Most SKUM mobile equipment can be trailer-mounted or installed on an emergency response vehicle.



We work closely with our customers to deliver high-quality, top-performance products, including bespoke fire suppression solutions for many special hazard applications. The SKUM Technical Service team draws upon decades of fire protection experience to provide knowledgeable assistance with system:

- Design
- Specification
- Installation
- Commissioning
- Field Service

**Put us to work for you** – Contact your local SKUM representative or distributor for additional information on SKUM firefighting foam concentrates, hardware, and engineered solutions.

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## About Johnson Controls Building Technologies & Solutions

Johnson Controls Building Technologies & Solutions is making the world safer, smarter and more sustainable – one building at a time. Our technology portfolio integrates every aspect of a building – whether security systems, energy management, fire protection or HVACR – to ensure that we exceed customer expectations at all times. We operate in more than 150 countries through our unmatched network of branches and distribution channels, helping building owners, operators, engineers and contractors enhance the full lifecycle of any facility. Our arsenal of brands includes some of the most trusted names in the industry, such as SKUM, Tyco®, YORK®, Metasys®, Sabroe®, ZETTLER® and Sensormatic®.

For additional information, please visit [www.skum.com](http://www.skum.com) or follow us [@johnsoncontrols](https://twitter.com/johnsoncontrols) on Twitter.

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