



CHEMGUARD® Foam System Solutions



The power behind **your mission**





About CHEMGUARD Products

The CHEMGUARD brand has served the global firefighting industry since 1984 with high-quality, field-proven products, expert technical service, innovative R&D, and customized solutions for challenging fire hazards. The CHEMGUARD portfolio of foam concentrates and engineered equipment provides a comprehensive range of fire protection solutions for fixed and semi-fixed system installations, plus emergency response capability.

CHEMGUARD foam products are developed and tested at the Johnson Controls Fire Technology Center, one of the most extensive fire research and testing facilities in the world.

CHEMGUARD Foam Systems

Our complete line of firefighting foam products is one of the broadest in the industry. As a global manufacturer of both concentrates and hardware, CHEMGUARD foam products and systems are 3rd-party tested, rated, approved or certified to multiple industry standards, including:

- UL 162
- UL 139
- ULC S564
- FM 5130
- US DOD MIL-PRF-24385
- EN1568-2008
- ICAO Levels B&C
- IMO 1312



CHEMGUARD Foam System applications include:

Aviation

- Aircraft Hangars
- Airports
- Heliports
- Maintenance Bays
- Engine Test Facilities

Industrial

- Chemical Plants
- Hazardous Material Spills
- Blending Operations
- Power Plants
- Waste Treatment
- Pumping Stations
- Truck Loading Racks
- Warehouses

Marine and Offshore

- Engine and Pump Rooms
- Cargo Holds
- Helidecks
- Offshore Platforms
- FPSOs and FSOs
- Jetties
- Dry Docks
- Onshore - Offshore Storage

Oil, Gas and Petrochemical

- Refineries
- Tank Farms, Storage Tanks and Dikes
- Petrochemical Facilities
- LNG Terminals
- Pipelines

Foam Concentrates

CHEMGUARD foam concentrates are formulated and tested for fire and vapor suppression on a wide range of challenging hazards. Our concentrates are subject to stringent quality controls, from incoming raw materials inspection to finished product testing. CHEMGUARD concentrates intended for system application include AFFF, AR-AFFF, and Fluoroprotein concentrates for low- and medium-expansion systems, and C2 series concentrates for medium- and high-expansion systems.



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 the United States, Singapore, and Germany – provide fast turnaround for most foam analyses. Please contact your regional sales representative for information on foam concentrate sample testing.

CHEMGUARD Aqueous Film-Forming Foam (AFFF) concentrates combine fluoro- and hydrocarbon surfactant technologies to produce high performance firefighting foams for use on Class B hydrocarbon fuels such as oil, petroleum, gasoline, benzene, diesel, and aviation fuels.

CHEMGUARD Alcohol Resistant Aqueous Film-Forming Foam (AR-AFFF) concentrates combine AFFF surfactant technology with a polymeric membrane for use on both Class B polar solvent fuels – such as alcohols and ketones – as well as hydrocarbon fuel fires.

CHEMGUARD Fluoroprotein (FP) and Fluoroprotein Alcohol Resistant (FPAR) concentrates are produced from naturally occurring hydrolyzed proteins with fluorochemical additives to deliver a robust, aspirated foam blanket with high heat stability and good burnback resistance. FP concentrates are applicable for fire and vapor suppression on Class B hydrocarbon fuel fires, and FPAR foam may be used on both hydrocarbon and polar solvent fires.



Additional CHEMGUARD non-fluorinated offerings for firefighting emergency response and training include:

- Directattack, Chemattack, Class-A Plus, and Extreme foam concentrates for Class A fire suppression
- CTF1 Training Foam concentrate to simulate 1%, 3%, or 6% AFFF for training (nonfirefighting) purposes only
- ABC, BC and Purple K dry chemicals for twin agent fire suppression



Concentrate Selection Guide for Low/Medium-Expansion Foam Systems

CHEMGUARD Foam Concentrate	Proportioning Rate		Application Type				Approvals, Listings & Standards										
	Fuel Type						UL	ULC	FM	US DOD	EN-1568:2008				ICAO		IMO 1312
	Hydro- carbon	Polar	Aviation	Marine	Industrial	Low Temp	162	S564	5130	MIL-PRF -24385	Part				Level		Med B/D
											1	2	3	4	B	C	
AFFF																	
C1B	1%				✓		✓	✓									
C1B-FP29	1%				✓	✓	✓	✓									
C3B	3%				✓		✓	✓	✓								
C306-MS-C	3%		✓		✓		✓	✓		✓							
C3IB2	3%		✓		✓										✓		
C3IC1	3%		✓		✓		✓	✓								✓	
C3B-FP29	3%		✓		✓	✓	✓	✓							✓		
C6B	6%				✓		✓	✓									
C606-MS-C	6%		✓		✓		✓	✓		✓							
C6IB2	6%		✓		✓										✓		
C6IC1	6%		✓		✓		✓	✓								✓	
AR-AFFF																	
C137	1%	3%			✓		✓	✓				✓		✓	✓		
C137-FP18	1%	3%			✓	✓	✓	✓									
C335	3%	3%			✓		✓	✓				✓		✓	✓		
C334-LV	3%	3%			✓		✓	✓	✓					✓	✓		
C337-FP13	3%	3%	✓	✓	✓	✓						✓	✓	✓	✓	✓	✓
C364	3%	6%			✓		✓	✓									
FLUOROPROTEIN																	
CFP3B	3%			✓	✓		✓	✓				✓		✓			✓
CFP6B	6%				✓		✓	✓				✓		✓			
CFPAR331-FP15	3%	3%	✓	✓		✓						✓		✓	✓	✓	✓

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

Note: If any foam product is discharged into the environment, efforts should be made to control, contain and collect the discharge for proper disposal, while following all applicable laws, regulations, and codes. Further information regarding the use, discharge, and disposal of firefighting foams can be found at www.CHEMGUARD.com

High-Expansion Foam Systems

CHEMGUARD high-expansion concentrates produce flexible firefighting foams for suppression of indoor and outdoor Class A, Class B, and LNG fires. With expansion ratios from 50:1 to 1000:1, these concentrates can quickly form substantial volumes of foam for large-capacity applications. High-Expansion foams contain minimal water while quickly flooding over-sized rooms and enclosures, providing effective suppression of horizontal and vertical (three-dimensional) fires while minimizing water damage. CHEMGUARD C2 and C2S concentrates are non-fluorinated formulations optimized for performance when paired with CHEMGUARD high-expansion foam generators:

- CHEMGUARD C2 high-expansion concentrate is formulated for use with fresh water only at a 2% proportioning rate and is UL Listed.
- CHEMGUARD C2-S high-expansion concentrate is formulated for use with fresh, salt, or hard water at a 2% proportioning rate, which makes it well-suited for marine applications.

CHEMGUARD high-expansion foam systems are used for fire and vapor suppression in large enclosures containing high value property such as aircraft hangars, distribution warehouses, marine/engine pump rooms, and tunnels. They may also be used in open space applications such as flammable liquid storage areas and LNG facilities.





CHEMGUARD high-expansion foam systems provide fire suppression solutions for a multitude of special hazards. The portfolio offers UL Listed configurations, design flexibility for utilization of inside or outside air supply, and specific generator models for LNG hazards. All CHEMGUARD high-expansion foam generators are CE Marked in conformance with the Machinery Directive 2006/42/EC.

The CHEMGUARD portable foam generator, with optional smoke extraction unit, provides mobile application of high expansion foam for smaller-scale hazard responses. Typical applications include:

- Blanketing LNG spill fires
- Controlling vapor release from liquid spills
- Inerting tanks
- Suppressing fire and vapors in ship holds and engine rooms



CHEMGUARD High-Expansion Foam Systems						
CHEMGUARD System Components				Application Type		
Generator	Concentrate	Proportioning Rate	UL Listing	Aviation	Industrial	LNG
CHX2000	C2	2%	139	X	X	
CHX5000	C2	2%	139	X	X	
CHX15000	C2	2%	139	X	X	
CHX20000	C2	2%	139	X	X	
CHX27000	C2	2%	139	X	X	
CHX2000-SS-LNG	C2	2%	139			X
CHX5000-SS-LNG	C2	2%	139			X
CHX15000-SS-LNG	C2	2%	139			X
3000WP	C2	2%	139	X	X	X

Fixed and Semi-Fixed Systems for Low/Medium-Expansion Foam

Our extensive portfolio of firefighting foam products provides comprehensive protection for flammable liquid hazards.

Proportioners

In addition to bladder tank systems, the wide array of CHEMGUARD proportioning equipment provides a calibrated ratio of foam concentrate to water for a host of application, specification and certification requirements.

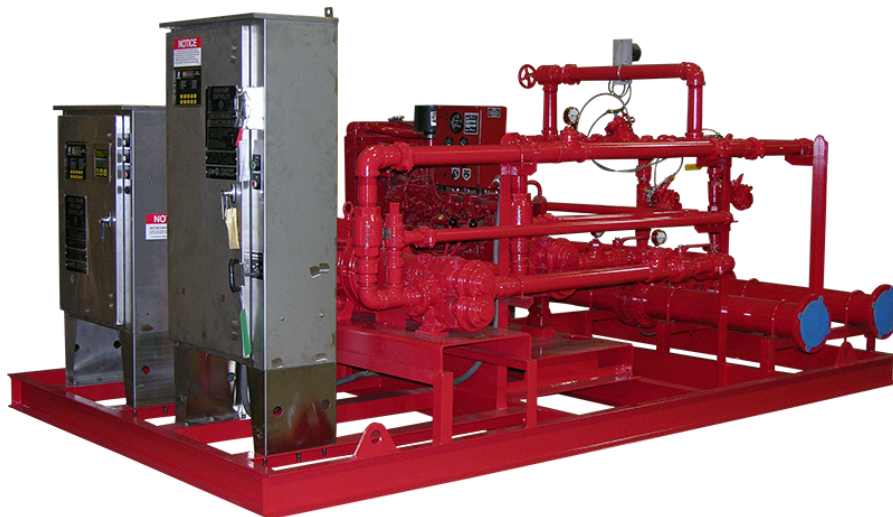
The UL Listed, FM Approved CHEMGUARD Ultra-Wide PPW-6 variable range proportioner mitigates the need for multiple, different-sized IBPs.

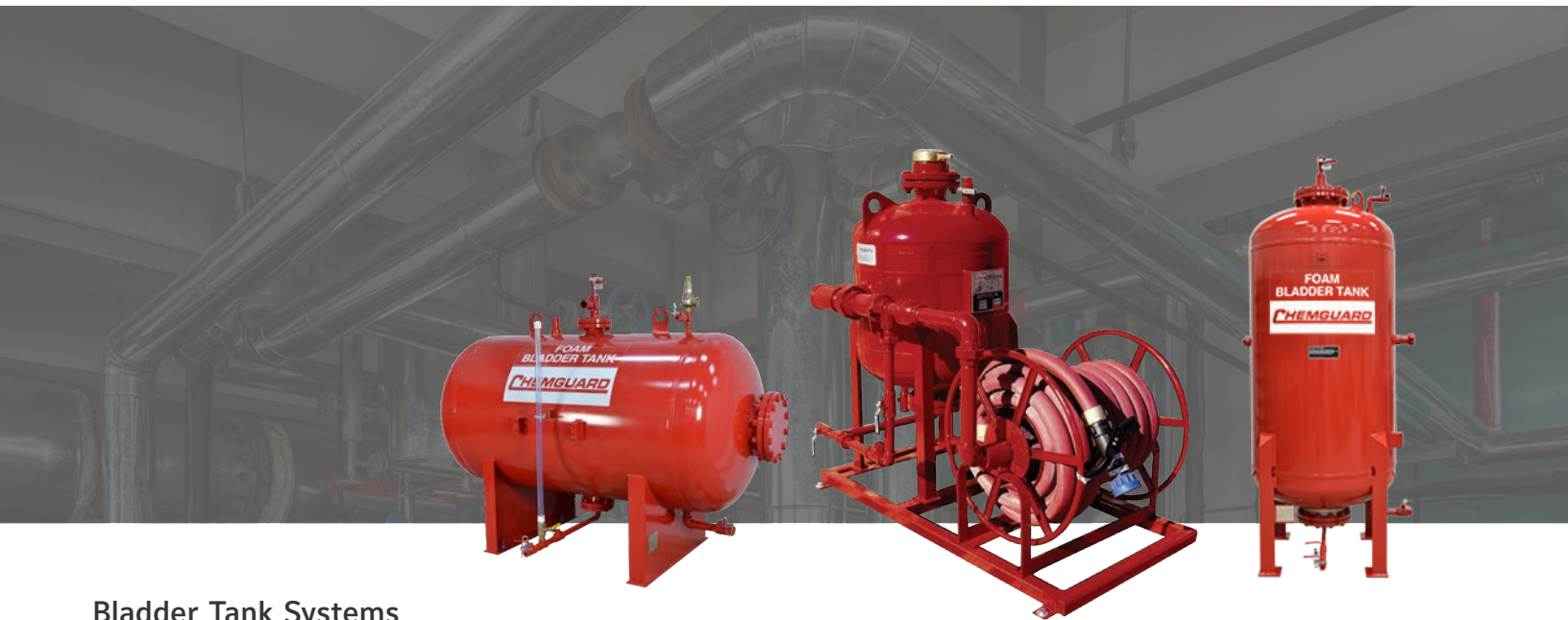
Around-the-pump (ATP) proportioners provide a simple and effective means to introduce the desired foam concentrate percentage to the water being discharged from a firefighting pump system.

When used in conjunction with atmospheric concentrate storage tanks, Balanced Pressure Pump proportioning skids maintain equal pressure in the foam concentrate and water inlets, allowing operation over a wide range of flows and pressures.

The CHEMGUARD foam proportioning product line includes:

- In-line balanced pressure proportioners for variable flows/pressures
- Around-the-pump inductors for a consistent foam mixture
- Cost-effective inline inductors
- Self-inducing nozzles for easy installation and use





Bladder Tank Systems

CHEMGUARD bladder tanks are a key component of a complete balanced pressure proportioning system. These pressure-rated tanks contain an internal elastomeric bladder that stores the foam concentrate.

Upon system actuation, pressurized water propels the concentrate from the bladder to the system proportioning device. The proportioner meters the concentrate into the firefighting water line to create the

foam solution, which is then piped to the system discharge device(s) positioned to protect the hazard area.

Configurable CHEMGUARD bladder tanks range from 50 to 3000 gallons (189 to 11356 liters) with multiple available options, and they are UL Listed with a variety of foam concentrates. FM Approved systems are qualified with CHEMGUARD C3B 3% AFFF or C334-LV 3x3 AR-AFFF, in conjunction with specified

CHEMGUARD proportioners and discharge devices. CHEMGUARD bladder tanks up to 800 gallons (3028 liters) meet the minimum requirements for Seismic Zone 4 earthquake resistant design as calculated per the 1997 Uniform Building Code.

Designed and manufactured for rapid delivery, these systems include a variety of features that make installation, service and maintenance efficient and convenient.

Configurable options for CHEMGUARD bladder tanks include:

- Foam Concentrate Volume
- Trim Piping Material
- Paint Color
- Corrosion Resistance
- Sight Gauges
- Thermal Pressure Relief Valves
- Pre-Piped / Skid-Mounted
- Horizontal or Vertical Orientation

CHEMGUARD Bladder Tank Selection Guide

CHEMGUARD Bladder Tank Design

System Listings, Approvals, Ratings, Certifications

Pre-Piped	Capacity		Orientation		ASME Sec VIII, Div 1	UL	FM	CE Marked	Seismic Zone 4
	Gallons	Liters	Horizontal	Vertical					
Standard	25-36	95-136		✓	175 psi	162	5130		
Optional	50	189		✓	175 psi	162	5130		✓
	100-200	379-757	✓	✓	175 psi	162	5130		✓
	300-800	1136-3028	✓	✓	175 psi	162	5130	✓	✓
	900-2000	3407-7571	✓	✓	175 psi	162	5130	✓	
	2200-3000	8328-11356	✓	✓	175 psi	162	5130	✓	

For complete approved system requirements refer to product technical datasheets and respective agency standard, listing and/or approval manual.

Monitors



Foam monitors are designed to control the horizontal and vertical delivery of large capacity discharge streams from a distance. The CHEMGUARD product line offers a wide range of monitor sizes with a host of features, including adjustable oscillation, variable spray patterns and multiple control options. CHEMGUARD monitors may be mounted to a fixed system, a mobile skid, or an emergency response vehicle for firefighting flexibility.

Options and configurations for CHEMGUARD monitors include:

- Flow Capacity - Up to 5300 gallons per minute (20062 liters/minute)
- Throw Range - Up to 400 feet (122 meters)
- Flow - Adjustable Fog to Jet Spray patterns, Foam or Water
- Power - Electric, Water, Hydraulic
- Control - Remote or Manual
- Targeting - Elevation, Rotation and Oscillation adjustment
- Mounting - Fixed or Mobile skid

Tank Protection



CHEMGUARD foam chambers and foam makers are air-aspirating foam discharge devices designed to protect flammable liquid storage tanks. These devices offer effective fire and vapor suppression options for most vertical tank configurations - cone, fixed, open, closed or floating roof design. These specialized discharge devices provide protection for hydrocarbon or polar solvent fuel tanks when coupled with the appropriate CHEMGUARD concentrate and foam system design.

CHEMGUARD tank protection solutions include:

- Fixed foam chambers for quick application of foam with minimal submergence and agitation of the fuel surface in storage tanks or diked areas
- Floating roof and area foam makers
- Rim seal foam pourers for floating roof tank
- High back-pressure foam makers for closed-roof storage tank subsurface injection systems

Design and Installation Services

We partner with our customers to deliver high-quality, top-performing fire suppression systems for many special hazard applications. Whether delivering a standard, configured or customized system, the CHEMGUARD Technical Service team draws upon decades of fire protection experience to provide knowledgeable assistance with:

- Design
- Specification
- Installation
- Commissioning
- Field Service
- Training





A Passion for Protection

Dedicated customer support. Extensive product portfolio. Engineering excellence. Trusted, proven brand. CHEMGUARD products offer all of these attributes, plus a passion for protection. It's what drives us to create solutions to help safeguard what matters most – your valued people, property and business.



About Johnson Controls

At Johnson Controls, we transform the environments where people live, work, learn and play. From optimizing building performance to improving safety and enhancing comfort, we drive the outcomes that matter most. We deliver our promise in industries such as healthcare, education, data centers and manufacturing. With a global team of 105,000 experts in more than 150 countries and over 130 years of innovation, we are the power behind our customers' mission. Our leading portfolio of building technology and solutions includes some of the most trusted names in the industry, such as Tyco®, YORK®, Metasys®, Ruskin®, Titus®, Frick®, Penn®, Sabroe®, Simplex®, and Grinnell®.

For more information, contact your regional CHEMGUARD product representative or visit www.CHEMGUARD.com.

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