

GENERAL FIRE APPARATUS, INC.

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DATA SHEET
#AFC225

HICOMBAT A Class "A" Foam Concentrate

Description

Environmentally responsible HiCombat™ A Class A foam concentrate, is a unique new formulation providing unmatched firefighting performance and flexibility. HiCombat™ A is specially designed for use in Class A/B foam systems and is excellent for Compressed Air Foam Systems (CAFS). **This environmentally responsible formulation does not contain reportable components under SARA Title III, Section 313 of 40 CFR-372, or CERCLA.**

HiCombat™ A foam concentrate works in two ways. First, HiCombat™ A improves the penetrating capability of water. It reduces the surface tension of plain water, which allows it to penetrate surfaces where water might normally run off, to reach deep-seated fires. This helps reduce the amount of water required to extinguish the fire and also provides quicker knockdown. Secondly, HiCombat™ A increases the heat absorbing capabilities of water. Foaming ingredients give water the ability to adhere to vertical surfaces which allows the water longer contact with the fuel. The longer the water is in contact with the fuel, the more heat it is able to absorb. A coating of Class A foam may also be used for exposure protection to prevent fuels from igniting by raising their moisture content and providing a tough protective barrier to an oncoming flame front.

Features

- Meets USDA Forest Service Requirement per Specification 5100-307.
- Environmentally responsible formulation.
- UL Listed as a Wetting Agent, at substantially lower usage rates than most Wetting Agents.
- Premix is stable for more than 30 days (using potable water), which is significantly longer than traditional Class A foam solutions.
- Emulsifies Class B Hydrocarbon fuels.

- Contains NO alcohols for higher flash point and compatibility with Class A/B Systems.
- Can be used with fresh, brackish and seawater, plus exhibits good foamability, even in cold water.

Typical Physical Properties

Appearance	Pale green liquid
Specific Gravity @ 77°F (25°C).....	1.05
pH	9.0
Minimum Usable Concentrate Temp.	20°F(-7°C)
Maximum Usable Concentrate Temp.	120°F(49°C)
Freezing Point.	6°F(-14°C)
Viscosity @ 70°F (21°C).....	20 csks
Viscosity @ 20°F (-7°C).....	32 csks
Surface Tension at 0.1% Conc.....	25.7 Dynes/cm
Surface Tension at 0.5% Conc.....	24.1 Dynes/cm
Flash Point: Pensky Martens Closed Cup Method	>205°F
Freeze/Thaw:.....	No Effects on Concentrate Properties

Typical Proportioning Settings

UL Listed Wetting.....	0.3%
Class B, Hydrocarbon Spill Emulsification	0.3%
Structural Fire, Attack and Overhaul.....	0.5%- 0.7%
Exposure Protection, Aspirated	0.7%-1.0%
Compressed Air Application	0.1-0.5%
Air Attack: Water Bombers/Helicopters.....	0.3%-0.6%

Suggested Structural Fire Application Rates

Fully Involved, Well Vented	0.33 gpm/sq. ft.
Half Involvement.....	0.17 gpm/sq. ft.
Quarter Involvement.....	0.09 gpm/sq. ft.
Overhaul.....	5-10 gpm/sq. ft.

HiCombat™ A can also be used as a training foam for non-fire scenarios. Diluting 1 part HiCombat™ A with 4 parts water provides a cost effective foam for training simulation. The diluted foam can then be proportioned at 1%, 3% or 6% to provide foam expansion similar to AFFF foam concentrates.

Typical Physical Properties

Appearance	Colorless liquid
Specific Gravity @ 77°F (25°C)	1.04
pH @ 77°F (25°C)	8.2
Viscosity @ 77°F (25°C)	5 csks (5 mm ² /sec)
Maximum Usable Temperature	120°F (49°C)
Minimum Usable Temperature	35°F (2°C)
Freeze Point.....	12°F (-11°C)
Effect of Freeze/Thaw	No Performance Loss

Ordering Information

CONTAINER	SHIPPING WEIGHT	PART NUMBER
5-Gallon Pails (19 liters)	46 lb. (20.9 kg)	3170-0340-6
55-Gallon Drums (208 liters)	499 lb. (227 kg).....	3170-0481-6
275-Gallon IBC Reusable Tote Tank (1041 liters)	2528 lb. (1149.0 kg)	3170-0725-6
Bulk	8.67 lb./gal (3.9 kg/l)	3170-0001-6

Palletizing of pails and drums is available upon request.

Shipping Cube

5-Gallon Pail.....	1.13 cu. ft. (0.032 cu. m.)
55-Gallon Drum	11.51 cu. ft. (0.326 cu. m.)
275-Gallon IBC Tote Tank	51.11 cu. ft. (1.061 cu. m.)

APPLICATIONS

Structural Firefighting

HiCombat™ A is a superior firefighting formulation for structural fire attack in the Municipal fire service. This formulation can be up to five times more effective than plain water on Class A materials. HiCombat™ A isolates the fuel by excluding oxygen, adhering to Class A materials, and penetrating faster than plain water, which means less water damage and **less water required**. HiCombat™ A can be used as a premix, batch mixed, educted, or injected into the water stream. HiCombat™ A can also be used for exposure protection. When applying it for this type of application, it is advisable to use air-aspirated nozzles and/or CAFS. Opposing structures can be protected by a durable, insulating blanket of foam deflecting radiant heat. HiCombat™ A significantly out-performs plain water during the overhaul phase of structural firefighting. Acting as a time release capsule, it slowly releases its water, while adhering to walls, ceilings and other surfaces.

Forestry

Using HiCombat™ A, the firefighter takes the offensive approach to attack the fire, minimizing the fire effects in the wildland/urban interface. The unique properties of HiCombat™ A provide an excellent foam blanket, which can be created using backpacks and all handlines. This ground application is particularly useful in building a fire line, and for direct attack, prescribed burning, and mop-up operations.

HiCombat™ A is especially beneficial for any type of air attack, including helicopters and fixed wing aircraft. It is well suited to provide accurate and dependable proportioning through all types of on-board injection systems. HiCombat™ A foam solution dropped from aircraft or helicopters will assist in controlling fire spread and greatly reduce the amount of time required and water used to successfully attack the fire. The unique foaming capabilities of HiCombat™ A create an excellent fire break by pretreating class A materials to increase the moisture content of the fuel, thus inhibiting ignition.

Mining

Whether your mine fire emergency is above ground or underground, HiCombat™ A allows you to take control. The fast wetting, cooling and penetrating characteristics of HiCombat™ A allow excellent fire suppressing capabilities when applied through bore holes for deep seated underground mine fires. These same characteristics make it the agent of choice for stubborn surface mine fires as well. The use of HiCombat™ A as a compressed air foam in

these types of applications can be most beneficial by actually flooding the mine area with a tough, durable blanket of foam. HiCombat™ A allows more water to penetrate the deep seated fires thus creating steam, which reduces temperatures and assists in the extinguishment of the fire.

Industrial

HiCombat™ A's specialized formulation is well suited in the industrial arena of fire fighting. The rapid control, fast wetting, and superior penetrating capabilities of HiCombat™ A allow it to be very effective through fixed sprinklers systems as well as hose stream applications. Kidde Fire Fighting manufactures a complete line of foam proportioning equipment and systems that are compatible with HiCombat™ A for this application. Existing sprinkler systems can easily be converted to Class A systems. This is especially beneficial in paper manufacturing, lumber and saw mills, as well as power generating stations having coalbunkers. Anywhere you find a Class A fuel hazard, you'll find HiCombat™ A as the fire suppressant agent of choice.

Tire Fires

Tire fires are an extreme threat to the environment and can be one of the most difficult fires to control and extinguish. HiCombat™ A has a proven track record for the extinguishment of these types of fires. Typically, thousands of gallons of water and heavy earth-moving equipment are required to extinguish a tire fire. The use of HiCombat™ A will greatly reduce the amount of water and equipment required. The alternating application of HiCombat™ A through aspirated and non-aspirated nozzles offer a penetrating and smothering blanket, allowing more water to get into the deep seated fire. This equates to less water, equipment, manpower and dollars spent to control and extinguish these tough fires. Not only is HiCombat™ A environmentally friendly, it is your best weapon for rapid fire attack on these environmentally destructive tire fires.

Hydrocarbon Spill Control

HiCombat™ A is also formulated for extinguishing and emulsifying hydrocarbon spills at a 0.3% application rate. Special care should be used when using HiCombat™ A on class B fire spill situations. The utilization of air-aspirating nozzles, over non-aspirating nozzles, may offer more effective control of these situations. HiCombat™ A should be used on hydrocarbon spills ONLY. Class A foam should never be used on polar solvent or water miscible fuels.

Wetting Agents vs. Foam

Foam and wetting agents are not the same, as evidenced by development of separate NFPA standards within the same technical committee.

NFPA-11, Standard for Low Expansion Foam defines foam as a stable aggregation of small bubbles of lower density than oil or water that exhibits a tenacity for covering horizontal surfaces. It flows freely over a burning liquid surface and forms a tough air-excluding, continuous blanket that seals volatile combustible vapors from access to air. The basic mechanism foam utilizes for extinguishment is to separate the fuel from oxygen eliminating one leg of the fire tetrahedron, thus interrupting the combustion process. In situations where a fire has been extinguished or ignition has not occurred, foam also serves to provide a visual confirmation that the surface of the fuel has been covered.

NFPA -18, Standard on Wetting Agents defines Wetting Agents as chemical compounds which, when added to water in proper quantities, materially reduce its surface tension, increase its penetrating and spreading abilities, and may also provide emulsification and foaming characteristics. Wetting agents generally contain a surfactant or emulsifying ingredient which enables them to mix (emulsi-

fy) with hydrocarbon fuels similar to oil and water in salad dressing. This is sometimes referred to as "encapsulating" or "locking up" the fuel.

Many fire service professionals are not aware there is a difference between foam, and wetting agents or emulsifiers. Understanding the above performance parameters and limitations of each will help the user determine the applicability of each agent for the intended use. HiCombat™ A, along with being an excellent class "A" extinguishing agent, can also be used as an emulsifier on hydrocarbon fuel spills. However, Class B Wetting Agent listings do not extend to polar solvents or water miscible fuels.

The Fire Protection Professionals

Kidde Fire Fighting is dedicated to the fire protection and prevention of all types of unique fire hazards. We have been manufacturing foam agents, hardware, apparatus and systems for over 70 years. We are dedicated professionals, providing superior products and technical assistance world-wide. Team up with **The Foam Solutions Professionals** at Kidde Fire Fighting to solve your specific fire protection needs.

Ordering Information

Capacity	Description	Part Number	Shipping Weight lbs.	(kg)	Approximate Shipping Cube Ft ³	(m ³)
5-Gallon . . . .	.Pails (Round) . . . . .	.3170-5340-6 . . . . .	.46 . . . . .	.(20.9) . . . . .	.113 . . . . .	.(0.029)
(19 litres)						
55-Gallon . . . .	.Drums . . . . .	.3170-5481-6 . . . . .	.503 . . . . .	.(228.0) . . . . .	.11.10 . . . . .	.(0.326)
(208 litres)						
275-Gallon . . . .	.IBC Reusable Tote Tank . . . . .	.3170-5725-6 . . . . .	.2549 . . . . .	.(1156.0) . . . . .	.48.20 . . . . .	.(1.061)
(1041 litres)						
Per Gallon . . . .	.Bulk . . . . .	.3170-5001-6 . . . . .	.8.75 . . . . .	.(4.0)		



DUAL - UHPS - V



Dual Pump - Dual Purpose

This dual pump/dual purpose portable fire suppression system provides ample gpm whether you're using the high pressure side or the normal pressure side. Rosenbauer's Enhanced Ultra High Pressure System (UHPS) is partnered with a Waterous CP-D2.

Field of applications

Most effective extinguishing

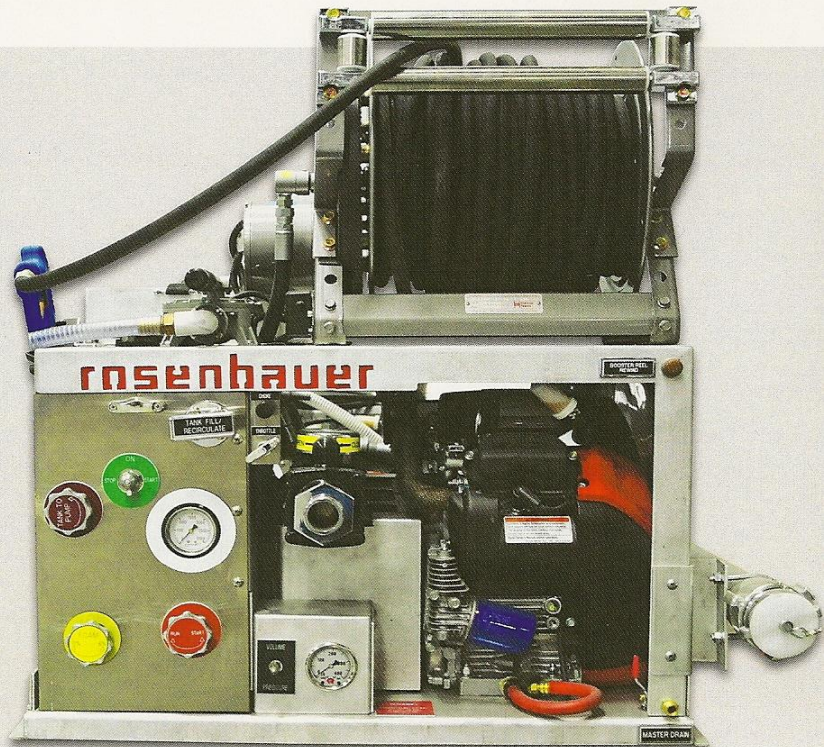
- First attack
- Car fire
- Forest/Brush fire
- Liquid Fire
- Aviation

Ultra High Pressure System

- 10 GPM @ 1500 PSI
- Foam rates 0-6%
- Foam attachment for spray nozzle
- Precisely adapted nozzle design
- Adjustable pattern for spray nozzle
- Pressure gauge
- 200 ft. hose
- Electric rewind reel

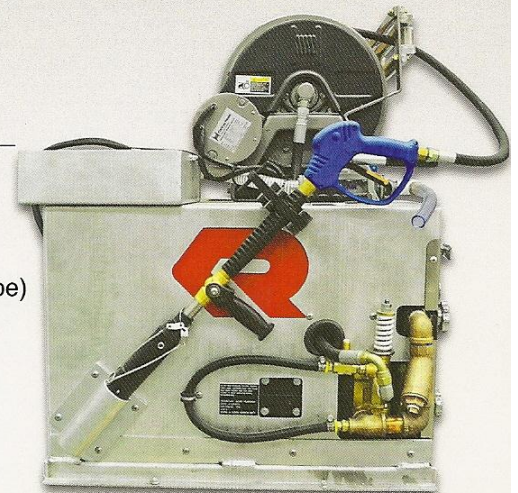
Waterous CP-D2

- 225 GPM @ 40 PSI
- 100 GPM @ 140 PSI
- Hand primer
- Bronze replaceable wear rings to increase pump life and minimize maintenance costs
- 1 1/2" NST discharge
- 2 1/2" Inlet



HONDA OHV V-Twin

- 18 hp
- 2 - Cylinder 4 stroke gasoline engine 37.5 Cu. in.
- 12.4 kW @ 3,600 rpm
- 12v Electric start (w/ manual rope)
- Automotive style oil filter
- 2.5 Gallon fuel tank



Weight 600#

