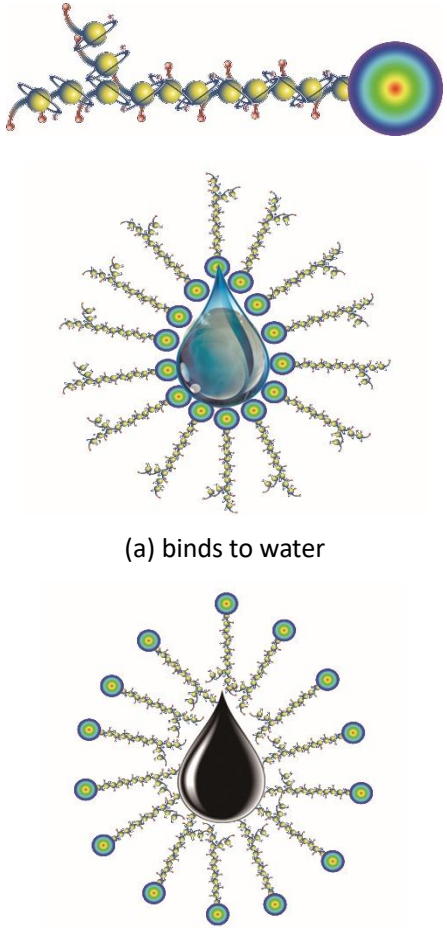
DATA SHEET OF LCF500

Description

According to the different characteristics of various fires, LCF500 isolates the air by wrapping and neutralizing combustibles, reduces the surface tension of water, enhances the penetration of water droplets, blocks the chain reaction of free radicals, and acts on the four elements of combustion at the same time to achieve rapid cooling of the fire scene , Eliminate smoke, improve visibility, and maximize fire fighting efficiency.

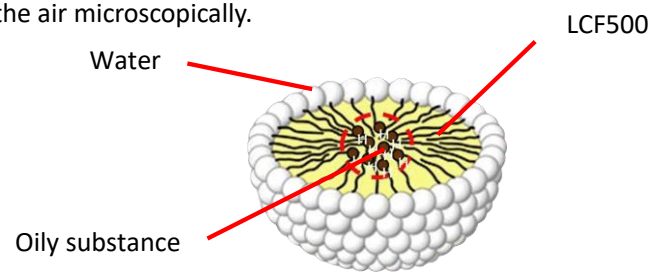
LCF500 is an amphiphilic surfactant molecule with a polar molecular head (hydrophilic) and a non-polar molecular tail (hydrophobic). The hydrophilic polar molecular head is easily soluble in water, while the non-polar molecular tail repels water molecules and seeks other types of molecular combinations, especially flammable molecules. The LCF500 molecular group can be arranged around a group of fuel molecules to form a negatively charged microcellular "chemical cocoon". This disperses the molecules in the water so that their concentration is too low to burn.



(a) binds to water

(b) binds to oil

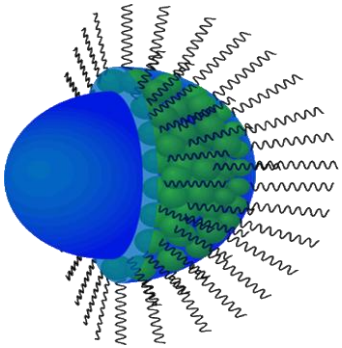
1. After the burning or hot liquid oily substance is wrapped by the LCF5000 aqueous solution, countless microcysts similar to "chemical cocoon" are formed, and the heat is released rapidly, and the temperature drops rapidly.
2. After the oily substance is wrapped in the "chemical cocoon" to form microcapsules, its surface is covered with a water layer, which is very difficult to be ignited, and at the same time isolates the air microscopically.



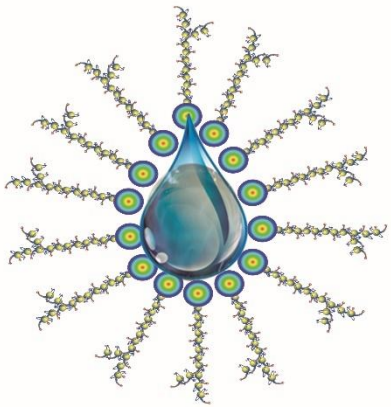
Microcapsules

The polar end of LCF500 will quickly adsorb to the surface of the water drop, and the surface of the water drop is covered with LCF500 molecules, with

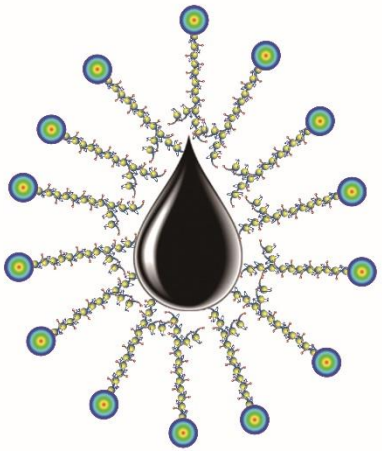
the non-polar end facing outward. Reduces the surface tension of water and enhances permeability.



LCF500 and water combine to form LCF500 water droplets.



LCF500 water molecules capture oily substances.



Oily substance is wrapped.

Oily substances are encapsulated to form chemical cocoon microcapsules.

Countless microcysts are formed.

LCF500 emulsifies and wraps fuel to form micro-capsules to make it non-flammable and at the same

time isolate air.

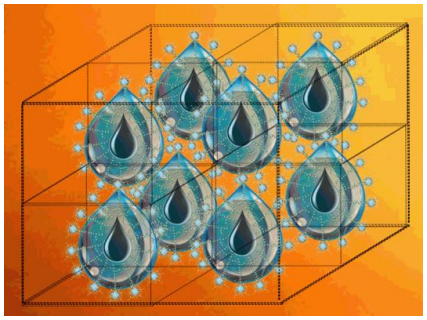
Under the action of hydrodynamic forces, oily molecules are quickly emulsified to form microcapsules, and the surface area of water droplets increases dramatically:

Surface area of a single drop of water = A

When the water droplet is cut into 8 water droplets of the same volume, its surface area is twice the original surface area:

Number of water droplets = 2^3 drops

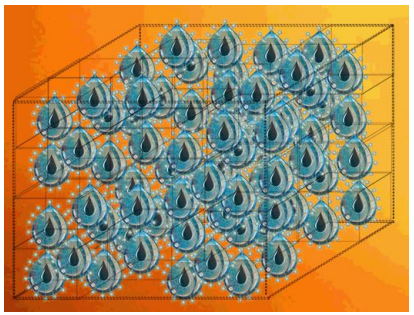
Surface area = 2A



When each water droplet is cut into 8 small water droplets with the same volume, its surface area is 4 times of the original surface area.

Number of water droplets = 2^6 drops

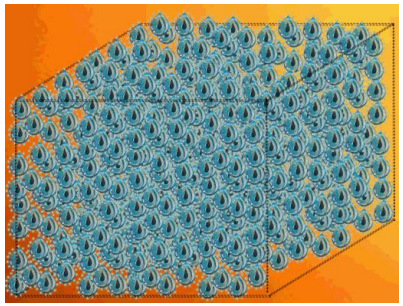
Surface area = 2^2A



When each water droplet is cut into 8 small water droplets with the same volume, its surface area is 8 times of the original surface area.

Number of drops = 2^9 drops

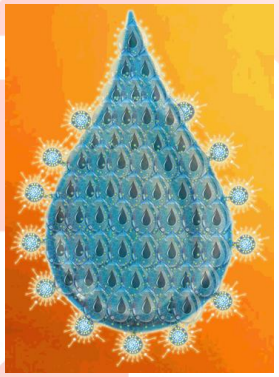
Surface Area = 2^3A



If the droplet is cut N times

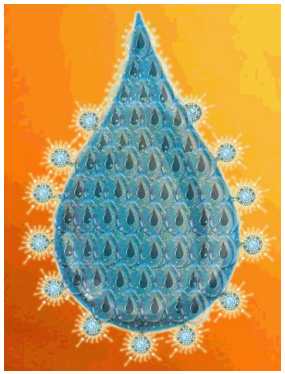
Number of water droplets = 23N drops

Increase in surface area = 2N times



Burning or hot liquid oily substances are instantly emulsified and wrapped by F-500 aqueous solution

to form countless chemical cocoon microcysts, with a sharp increase in surface area, opening up a channel for instant heat dissipation.



PERFORMANCE CHARACTERISTICS

1, Fire extinguishing quickly

Ø Reduce the surface tension of water by 6 30 times (can be reduced to 18 dynes/cm)

Ø Increase water coverage and increase the wetted surface area

Ø Enhance water penetration and penetration

Ø Enhance the fire extinguishing performance of water by 6 30 times, and the fire extinguishing function is 6 to 10 times faster than ordinary fire extinguishing foam concentrate

2, Efficient insulation, Prevent re ignition

Langchao LCF500 fire extinguishing foam concentrate can effectively flame retard, effectively insulate and protect the human body from high temperature damage. At the same time, it also has the effect of efficient heat insulation

Gas control:

Inspur LCF500 fire extinguishing agent can convert flammable and explosive gases into non combustible materials by chemical encapsulation (microencapsulation), and lock and prevent the evaporation of dangerous gases such as hydrocarbon vapor, hydrogen sulfide, and iron sulfide. Spontaneous combustion eliminates the basic elements of combustion and explosion. Reduce the lower explosion limit to a safe level. Reduce the LEL (Lower Explosive Limit).

Eliminate harmful smoke:

Langchao LCF500 fire extinguishing foam concentrate can wrap carbon particles and dust so that it no longer emits into the air, preventing the formation of soot and black smoke. The only remaining is the whitewater mist formed when the water evaporates. Increase visibility and enter the disaster area in a short time to save people and things.

Extinguishing metal fire

Inspur LCF500 fire extinguishing agent can extinguish fires caused by the combustion of combustible metals such as magnesium and titanium, and is suitable for fire protection in major chemical plants. Combustible metals do not need oxygen to burn themselves. Inspur LCF500 fire extinguishing agent can pass through the micropores on the metal surface to the inside of the metal, filling the inside of the object with water droplets, reducing the temperature and controlling the fire.

Effectively extinguish three-dimensional fires:

LCF500 can penetrate through three-dimensional fires in an instant and quickly cool down to extinguish fires; it is difficult for traditional foam to form a covering layer in a short time when facing three-dimensional fires.

TYPICAL PHYSIOCHEMICAL PROPERTIES

Specification		Standards
PH （at 20℃）		6.0~9.5
Freezing point		-10℃
Surface tension （mN/m）		20±20%(3%)
Interfacial tension （mN/m）		
Diffusion coefficient （mN/m）		
Corrosion rate （mg/(d·dm2)		Q235 steel sheet: 5.2 LF21 aluminium sheet: 1.6
Foam Expansion(20℃)	3%	⩾5
	6%	⩾6
25% Drainage Time(20℃）（min)	3%	⩾2.5
	6%	⩾3.5
Toxicity test (Fish mortality)		0%
Shelf life(years)		15
Extinguishing time	Class A fire （1%）	⩽90s
	Hydrocarbon fire （3%）	⩽3min
	Polar solution fire （6%）	⩽5min
25% Fire-resistance time	Hydrocarbon fire	⩾10min
	Polar solution fire	⩾10min

Approvals, Listings, and Standards

LANGCHAO FIRE LCF500 is designed in Q/LYLC02-2015, CNCA-C18-03:2024 (mandatory product certification implementation Rules fire extinguishing equipment products) design. The concentrate is approved, listed, qualified under, or meets the requirements of the following specifications and standards:

- ✓ CCC (China Compulsory Product Certification)
- ✓ CCS (China Classification Society, Standards: MSC.1/Cire.1312)

中国强制认证

Application

LCF 500

1% for class A type fires,

3% for Class B hydrocarbon fires,

6% for Class B polar solvent fires, Part of Class C fire, Parts of Class D fire, and Class K fire.

Our LCF500 has been proven through experiments to have a very good suppression effect on lithium battery fires.

Equipment

LANGCHAO Fire Fighting Foam Concentrate is readily proportioned using conventional foam proportioning equipment such as portable and fixed (in line) foam venturi proportioners, handline nozzles/branchpipes with pick up tubes, balanced pressure variable flow proportioners, balanced pressure bladder tank proportioners, and around the pump proportioners.

LANGCHAO Fire Fighting Foam Concentrate can be used with air aspirating discharge devices such as low expansion branchpipes, monitors, top pourer sets, rimseal foam pourers, foam/ water sprinklers, and base (sub surface) injection systems.

LANGCHAO Fire Fighting Foam Concentrate can be used with non aspirating discharge devices such as spray/fog branchpipes and nozzles, monitors, and spray/fog sprinklers.

However, no aspirated application is not recommended as the primary method of attack for major fires where a stable foam cover is essential。

LANGCHAO Fire Fighting Foam Concentrate is suitable for use in combination with foam compatible dry chemical extinguishing agents.

Compatibility

LANGCHAO Fire Fighting Foam Concentrate is suitable for use in combination with:

✓ Soft or hard, fresh, brackish or sea water.

(Usually we offer two kinds of model.

✓ Dry powder extinguishing agents either separately or as twin agent systems.

✓ Expanded protein based or synthetic foam for a fire in sequence or simultaneously;

If other questions, please contact our sales term.

Corrosion

LCF 500 Foam Concentrate meets the corrosion requirements with cold rolled carbon steel (Q235A:

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≤15d*dm2), Aluminum(LF21 ≤15) by GB15308 2006.

To help avoid corrosion, galvanized pipe and fittings should never be used in contact with undiluted LANGCHAO FIRE FOAM CONTENTRATE.

Storage and Handling

LANGCHAO Fire Fighting foam concentrate is ideally stored in its original shipping container or in tanks or other containers which have been designed for such foam storage. Recommended construction materials are stainless steel, high density cross linked polyethylene, or reinforced fiberglass polyester (isophthalic polyester resin) with a vinyl ester resin internal layer coating.

Recommend sealed storage. Foam concentrates are subject to evaporation which accelerates when the product is exposed to air. Storage tanks should be sealed and fitted with a pressure vacuum vent to prevent free exchange of air. Use of Seal Oil is only recommended in stationary storage tanks.

It is recommended that LANGCHAO Fire Fighting foam concentrate not be mixed with any other type of foam concentrate in long term storage. Such mixing could lead to chemical changes in the product and a possible reduction in or loss of firefighting capability. Most expanded foams are compatible for side by side application during an incident.

The product should be maintained within the recommend temperature range. Prevent exposure. If the concentrate freezes during transport or storage, full product serviceability can be restored upon thaw with gentle re mixing.

Recommended storage temperature：:
Maximum continuous storage temperature: 49°C (120°F)
Maximum intermittent storage temperature: 60°C (140°F)
Minimum continuous storage temperature: -8℃ （14°F）
We can also offer ultra-low temperature models for special customers. Please contact our sales team to customize your cryogenic foam.

Avoid temperature fluctuations. Long-term exposure to high temperatures may accelerate the aging of the foam liquid, and low temperatures may increase the viscosity and affect the mixing ratio.

It should be stored in a cool place, away from direct sunlight to prevent ultraviolet rays from accelerating the decomposition of chemical components. The storage place should be kept dry and well ventilated, and the relative humidity should not exceed 80%.

Factors affecting the foam concentrate’s long--term effectiveness include temperature exposure and cycling, storage container characteristics, air exposure, evaporation, dilution, and contamination.
The effective life can be maximized more than 15 years through optimal storage conditions and proper handling.

Inspection

When the foam is stored in strict accordance with "Storage and Handling", the product will not deteriorate in general. An annual inspection and

sample analysis is typically sufficient, unless the product has been exposed to unusual conditions. Customers can also sample the foam and send it to us to check its effectiveness. If the quantity of order is more than 10,000L, we will automatically retain the sample when shipping. If the customer needs testing, we can test the validity of foam for the customer from the retention sample.

Environmental and Toxicological

Please refer to the product's Material Safety Data Sheet (MSDS) and website for more information regarding the use, discharge and disposal of all firefighting foam products.

We supply the environmentally--mindful LANGCHAO Fire Fighting foam concentrate formulation which contains short--chain, C--6 fluorochemicals manufactured using a telomer--based process. The telomer process produces no PFOS, and these C--6 materials do not breakdown to yield PFOA. The fluorochemicals used in the concentrate meet the goals of the China 2010/15 PFOA Stewardship Program.

But we still recommend that prevent the foam concentrate and foam solution from entering ground water, surface water, or storm drains. Discharge and disposal should be made in accordance with local regulations.

Results of tests for acute oral toxicity and primary skin irritation have proved negative. Repeated skin contact will remove oils from the skin and cause dryness. The foam concentrate and foam solution is a primary eye irritant, and contact with the eyes should be avoided. Users are advised to wear protective equipment. If it enters the eyes, flush them well with water and seek immediate medical attention. For further details, see the Material Safety Data Sheet.

Quality Assurance

LANGCHAO FIRE LCF500 Foam Concentrate is subject to stringent quality controls throughout production, from incoming raw materials inspection to finished product testing, and is manufactured in an ISO 9001:2015, ISO 14001:2015 and ISO45001: 2018 certified facility.

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Typical Packing Specification

Container	20L / 5.28 US gallons 25L / 6 US gallons	200L / 52 US gallons	1000L / 264 US gallons
Size / Volume	20L: 27*24*37cm / 0.024CBM 25L: 30*25*43cm / 0.03CBM	59*59*93cm / 0.32CBM	120*100*115cm / 1.38CBM
Sales packaging			
Pallet/Wooden case	24drums / wooden case 20L: 107*90*86CM / 0.83CBM 25L: 113*98*108Cm / 1.2CBM	4drums / pallet 115*115*100Cm /1.38CBM	1drum / pallet 120*100*115cm / 1.38CBM
Shipping Packaging			
Loading quantity of 1pc 20GP	20L: 12160L / 608drums / 24pcs wooden case 25L: 12000L / 480drums / 20pcs wooden case	16000L / 80drums / 20pallets	18000L / 18drums
Loading quantity of 1pc 40GP (MAX 28TONS)	20L: 23600L / 1180drums / 50pcs wooden case 25L: 24000L / 960drums / 40pcs wooden case	24800L / 124drums / 31pallets	25000L / 25drums