

**PEMALL
USA**



FM
APPROVED



SNAP
SIGNIFICANT - NEW - ALTERNATIVES - POLICY

**PEMALL
CLEAN
AGENTS**



WWW.PEMALLUSA.COM

PEMALL

Since the establishment of Pem System, Inc. in the year 1947, we have been trusted and committed manufacturers of fire safety systems aimed to protect human lives.

Firmly rooted for seven decades in the fire protection industry, our commitment to thrive in the areas of Research and Development led Pem System, Inc. to its acquisition by an International Company in 2010. Our innovative advancement in providing best fire protection solutions in the market gained esteemed recognition as the world's leading independent manufacturer in the field of fire protection industries.

INTRODUCTION



Today, after years of relentless hard work and drive, we launch our new trademark as "PEMALL USA", our latest innovation of superb clean agents and fire suppression systems. With the numerous fire suppression options in the market, PEMALL USA stands out among them by providing both quality and sustainable products that are ideal for your facility, business, critical assets and people.

PEMALL USA continues to develop state-of-the-art facility that produces high-quality fire suppression systems catered to meet our customers' unique needs, as well as sustaining specialization in manufacturing Clean Agents and System Components that is proven to have reliable product quality. Our products carry various international approvals such as Underwriters Laboratories (UL) listings, Factory Mutual (FM) Approval, GOST (Russian) Approvals and various European certifications or approvals to CE and TPED, which ascertain PEMALL USA's highest quality in products and systems. Each type of fire suppression solution has its own inherent benefits. We provide one-stop complete system solution where our customers can acquire products and services essential to their fire protection needs.

APPROVALS & CERTIFICATIONS



CLEAN AGENTS

PEMALL 227



PEMALL HFC-227ea provides superior fire protection in a wide range of applications from sensitive electrical equipment to industrial applications using flammable liquids.

PEMALL HFC-227ea – is formed from the elements carbon, fluorine and hydrogen (CF₃CHFCF₃-heptafluoropropane). The primary extinguishing mechanism of HFC-227ea is heat absorption, with a secondary chemical contribution from the thermal decomposition of PEMALL HFC-227ea in the flame.

When discharged, PEMALL HFC-227ea will suppress via discharge nozzles and effectively mix with the air through-out the protected area. PEMALL HFC-227ea is perfectly suited to protect high value assets in areas that may be normally occupied, in locations where clean-up of other agents is difficult. Its ASHRAE nomenclature the way it is designated in the NFPA 2001 clean agent is HFC-227ea.

HFC-227ea has a gas pressure of 3.91 bar at 20°C, that positively affects a fast evaporation at the nozzle and the fast distribution in the room. PEMALL HFC-227ea fire suppressant can be safely used where people are present and causes no damage or residues at sensitive electronic components. HFC-227ea absorbs the heat of the flame and interrupts thereby the combustion reaction. So, the extinguishing effect is caused for the most part physically and for a small part chemical.



PHYSICAL AND CHEMICAL CHARACTERISTICS

Chemical Name	Heptafluoropropane (CF ₃ CHFCF ₃)
General	Colorless, Odorless Liquefied Gas
Molecular Weight	170.03
Boiling Point	-16.4 °C / 2.48°F
Freezing Point	-131°C / -203.8°F
Vapor Pressure @ 21°C/70°F	58.8 psia
Critical Temperature	101.7°C / 215.1 °F
Critical Pressure (PSI)	422.3 PSI
Vapor Density (AIR=1)	6.04
Water Reactive	No
Specific Gravity (H ₂ O=1)	1.46
Percent Volatile (by volume)	n/a
Water Solubility (V/V @ 20°C / 68°F)	280 mg/L
Estimated Atmospheric Lifetime (years)	31-42



1 TON MASTER CYLINDER

CLEAN AGENTS

PEMALL
227

PEMALL
5112

□ FEATURES

- Non-corrosive
- Extinguished fire in 10 secs
- Leave no residue
- Zero ozone-depleting potential

□ CHEMICAL CHARACTERISTICS

- Colorless
- Odorless
- Electrically non-conductive
- Boiling Point: -16.4° C / 2.48° F

□ FEATURES

- Environment friendly
- Extinguished fire in 10 secs
- Leave no residue
- Zero ozone-depleting potential
- GWP of 1

□ CHEMICAL CHARACTERISTICS

- Colorless
- Odorless
- Electrically non-conductive
- Boiling Point: 49.2 °C / 120.6 °F

Efficient | Safe | Sustainable.

COMMON APPLICATIONS

□ COMMON



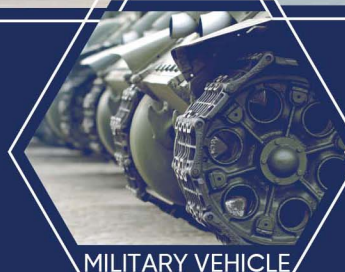
AVIATION



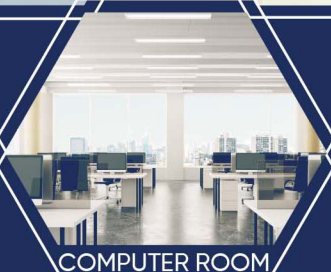
MRI ROOM



MUSEUM



MILITARY VEHICLE



COMPUTER ROOM



CONTROL ROOM



LIBRARIES



HOME - ARCHIVES



MACHINE EQUIPMENT



At PEMALL FK-5-1-12, we use science to improve lives. We set out to develop PEMALL FK-5-1-12® Fire Protection Fluid with the intention to find a solution with high performance and a large margin of safety that does no harm to the environment, extinguish fire quickly without harming people or equipment and ensure continuity of business and lives!

PEMALL FK-5-1-12 Clean Agent is the new generation of clean agent fire suppressant chemicals based on sustainable technology and is the only chemical agent currently available that meets the most stringent actual and future environmental standards. The clean extinguishing agent is a clear, colorless and low odor liquid perfectly suited to protect high value assets in areas that may be normally occupied, in locations where clean-up of other agents is difficult. Its ASHRAE nomenclature the way it is designated in the NFPA 2001 and ISO 14529 clean agent standards- is FK-5-1-12.

PEMALL FK-5-1-12 Clean Agent is formed from the elements carbon, fluorine and oxygen $CF_3CF_2C(O)CF(CF_3)_2$ - dodecafluoro-2-methylpentan-3-one. The primary extinguishing mechanism of FK-5-1-12 Clean Agent is heat absorption, with a secondary chemical contribution from the thermal decomposition of FK-5-1-12 Clean Agent in the flame. PEMALL FK-5-1-12 Clean Agent leaves no residue and is safe for use in occupied spaces.



250 KG DRUMS

PHYSICAL AND CHEMICAL CHARACTERISTICS

IUPAC Name	1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone
ASHRAE Designation	FK-5-1-12mmy2
Synonym	Dodecafluoro-2-methylpentan-3-one
CAS Registry Number	756-13-8
Chemical Formula	$CF_3CF_2C(O)CF(CF_3)_2$
Molecular Weight	316.04
Freezing Point	-162.4°F (-108°C)
Boiling Point at 760mmHg	49.2 °C / 120.6 °F
Critical Temperature	335.6°F (168.66°C)
Critical Density	39.91 lbm/ft ³ (639.1 kg/m ³)
Critical Pressure	270.44 psi (1,865 kPa)
Critical Volume	0.0251 ft ³ /lbm (494.5 cc/mole)
Viscosity, Liquid at 77°F (25°C)	1.27 lb/ft-hr (0.524 cP)
Water Solubility at 70°F (21.1°C)	<0.001% by weight



GLOBAL NETWORK

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UNITED ARAB EMIRATES



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