



H-70 Propellant

H-70 (hydrazine, 70% aqueous solution) is used as the propellant in emergency power units (EPU) on the F16 and other single engine aircraft. When there is a loss of engine power, the EPU activates and provides power to maintain the aircraft's vital functions such as hydraulic and electrical systems.

H-70 does not work like conventional propellants in that it does not burn to provide energy. Instead it is passed over a catalyst bed which causes the hydrazine to decompose into gaseous nitrogen, hydrogen and ammonia. The presence of the water acts to modify the decomposition temperature in order to prevent thermal damage to the catalyst bed and to the turbine parts. As the water removes heat, it is turned into steam which aids in powering the EPU.

The Mil Specs for H-70 are listed in Table 1.

Table 1 Specifications

MIL-PRF-87930A

Component	Value
Hydrazine, %	69-70
Water, % min	30
Iron, % max	0.002
Particulates, max, mg/l	1.0
Chloride, % max	0.0005
Aniline, % max	0.40
NVR, %	0.004
CO ₂ , %	0.002

H-70 is a clear liquid with the appearance of water, but having a strong odor resembling ammonia. It is very caustic and is a strong reducing agent

The physical properties of H-70 are listed in Table 2.

**Table 2
Physical Properties**

Density @ 25°C (g/ml)	1.003
(lb/gal)	8.337
Boiling Point @ 760 mm Hg (°C)	119
(°F)	246
Freezing Point (°C)	-49
(°F)	-56
Flash Point, TCC (°C)	82
(°F)	179
Flammable Limits in Air (% N ₂ H ₄ by vol.)	4.7 - 100

Handling, Storage and Safety

The experience accumulated by the chemical and aerospace industries indicates that with adherence to proper precautions, H-70 can be handled safely.

Proper personal protective equipment (PPE) must be used when handling H-70. This should include gloves, face mask and an apron or suit made of the proper material. Neoprene, butyl or nitrile rubber and Tychem[®] are acceptable. If hydrazine vapors are present, a supplied air breathing apparatus must be employed. Prolonged exposure to hydrazine vapor, contact with skin, or ingestion may produce harmful or fatal effects.

Because hydrazine vapors have no upper explosive limit and because hydrazine liquid is extremely reactive with many materials, the safety precautions outlined are necessary to avoid fire or explosions.

H-70 may be stored in the DOT approved container in which it is shipped (See *Shipping Information* below). Store away from heat, sparks, open flame and oxidants, and only in well ventilated areas. Do not allow H-70 to become contaminated with foreign matter.

¹ Tychem is a registered trademark of DuPont.



Technical Product

Information

Since it is stable, it can be stored without loss of purity as long as the container is closed securely. Vent the drums carefully when opening.

H-70 is insensitive to shock or friction. But both H-70 hydrazine and its vapor can be flammable or explosive in the presence of heat, flame, sparks, contaminants and oxidizers, including air.

All containers and handling equipment for H-70 hydrazine should be electrically grounded.

Nitrogen, which is inert and readily available, has been adopted as the padding material for H-70 hydrazine storage and transfer. The lower explosive limit for hydrazine vapor in air is 4.7%. This value increases significantly when a nitrogen atmosphere is used.

Avoid contact between H-70 and strong oxidizers such as hydrogen peroxide, nitrogen tetroxide, halogens and nitric acid. Such contact may result in immediate ignition or explosion.

Performance Chemicals Hydrazine

Do not allow H-70 to come into contact with metal oxides such as those of iron, copper, lead, manganese and molybdenum. Contact with such metallic oxide surfaces may lead to flaming decomposition. Absorption of H-70 hydrazine by rags, cotton waste, sawdust or similar organic materials with large surface areas will eventually result in spontaneous ignition.

For additional details on handling and use of H-70, contact the Arch Chemicals Technical Service

Shipping Information

H-70 hydrazine is available in 30-gal (240 lbs. net) and 55-gal (430 lbs. net) stainless steel drums. Drums meet DOT Specification 1A1/X and are constructed of 304 stainless steel containing less than 0.5% molybdenum. H-70 hydrazine can also be supplied in customer-provided pressure cylinders.

Please refer to the Material Safety Data Sheet (MSDS) for complete information on Storage and Handling, Toxicological Properties, Personal Protection, First Aid, Spill and Leak Procedures, and Waste Disposal. To order an MSDS, call the Arch Chemicals sales office listed below or the MSDS Control Group at (800) 511-MSDS. Before using or handling this product, the MSDS should be thoroughly reviewed.

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