



Common Name: **NITRIC ACID**

Synonyms: Aqua Fortis; Hydrogen Nitrate

CAS No: 7697-37-2

Molecular Formula: HNO₃

RTK Substance No: 1356

Description: Colorless to yellow liquid, or reddish if *fuming Nitric Acid*, with a characteristic, irritating odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
<p>4 - Health</p> <p>0 - Fire</p> <p>2 - Reactivity</p> <p>DOT#: UN 3031 UN 3032</p> <p>ERG Guide #: 157</p> <p>Hazard Class: 8 (Corrosive)</p>	<p>REACTIVE LIQUID</p> <p>Nitric Acid is not combustible, but it is a STRONG OXIDIZER that enhances the combustion of other substances.</p> <p>Use water only in flooding quantities. DO NOT USE CHEMICAL or FOAM as extinguishing agents.</p> <p>Use water spray to reduce vapors.</p> <p>POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Nitrogen Oxides</i>.</p> <p>Use water spray to keep fire-exposed containers cool.</p>	<p>Nitric Acid reacts with WATER to release heat.</p> <p>Nitric Acid reacts violently or explosively with most METALS and POWDERED METALS (such as ANTIMONY, BISMUTH, MANGANESE and TITANIUM); ALKALI METALS (such as LITHIUM, SODIUM and POTASSIUM); ALKALINE EARTH METALS (such as BERYLLIUM, MAGNESIUM and CALCIUM); and METAL HYDRIDES to form flammable and explosive <i>Hydrogen gas</i>.</p> <p>Nitric Acid may react violently or cause fires with COMBUSTIBLES; ORGANICS (such as TURPENTINE, CHARCOAL and other CARBON CONTAINING COMPOUNDS); AMMONIA; CYANIDES; SULFIDES; CARBIDES; OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); STRONG BASES (such as SODIUM HYDROXIDE and POTASSIUM HYDROXIDE); and ALCOHOLS.</p>

SPILL/LEAKS

Isolation Distance:

Small Spill: 30 meters (100 feet)
 Large Spill: 150 meters (500 feet)
 Fire: 800 meters (1/2 mile)

Absorb liquids in dry sand, earth, or a similar noncombustible material and place into sealed containers for disposal.
 Neutralize remaining liquid with *Sodium Carbonate* or mild caustic.
Nitrogen Oxides are toxic to animal life.

PHYSICAL PROPERTIES

Odor Threshold: 0.29 to 0.98 ppm
Flash Point: Nonflammable
Vapor Density: 2.2 (air = 1)
Vapor Pressure: 48 mm Hg at 68°F (20°C)
Specific Gravity: 1.5 (water = 1)
Water Solubility: Soluble
Boiling Point: 181°F (83°C)
Freezing Point: -44°F (-42°C)
Ionization Potential: 11.95 eV
Molecular Weight: 63.02
pH: 1

EXPOSURE LIMITS

OSHA: 2 ppm, 8-hr TWA
NIOSH: 2 ppm, 10-hr TWA; 4 ppm STEL
ACGIH: 2 ppm, 8-hr TWA; 4 ppm STEL
IDLH: 25 ppm

The Protective Action Criteria values are:
 PAC-1 = 0.16 ppm PAC-2 = 24 ppm PAC-3 = 92 ppm

PROTECTIVE EQUIPMENT

Gloves: Butyl, Neoprene, SilverShield®/4H®, Viton and Barrier® (>8-hr breakthrough) (only Barrier® for *fuming Nitric Acid*)
Coveralls: Tychem® CPF3, F, BR, Responder® and TK; and Trelchem®, HPS and VPS (>8-hr breakthrough)
Respirator: >2 ppm - full facepiece APR with *acid gas filters* specific for **Nitric Acid**
 >20 ppm - SCBA

HEALTH EFFECTS

Eyes: Severe irritation, burns and possible eye damage
Skin: Irritation and burns
Inhalation: Nose, throat and lung irritation with coughing and severe shortness of breath (pulmonary edema)

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.
Quickly remove contaminated clothing and wash contaminated skin with large amounts of water. Seek medical attention.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility.
Medical observation is recommended as symptoms may be delayed.