



INTERNATIONAL ACETYLS COMPANY

MATERIAL SAFETY DATA SHEET

1. PRODUCT MANUFACTURER INFORMATION

Product Name Acetic Anhydride (C₄H₆O₃)
Manufacturer International Acetyls Company (IAC)
P O Box 12021
Post Code 31961
Jubail Industrial City
Kingdom of Saudi Arabia

Emergency Telephone No +966 3 359 9985 (24 hours)
ID No UN1715
Company (affiliate) website <http://sipchem.com/en/affiliates.htm>

2. HAZARDOUS COMPONENTS

Trace Impurities: Acetic Anhydride 99.5% Minimum 108-24-7
Acetic Acid – 0.5% Maximum, Heavy Metals as Pb – 2 PPM Max,
Propionyl Content – 200 PPM Max., Butyryl Content – 30 PPM Max,
Sulfates – 1 ppm Max, Iron – 1 ppm Max., Non –Volatile Matter –
0.005 g/100 ml Max.

3. PRODUCT INFORMATION

Product Name ACETIC Anhydride (C₄H₆O₃)
Trade Name/Synonyms Acetanhydride; Acetic Acid Anhydride; Acetic Acid, Anhydride; Acetic Acid, Anhydride (9CL); Acetic Anhydride; Acetic Oxide; Acetic Oxide Anhydride; Acetyl Anhydride; Acetyl Ether; Acetyl Oxide; Anhydrid Kyseliny Octove; Anhydride Acetique; Anidride Acetica, Azijnzuuranhydride; Essigsaeureanhydrid, Ethanoic Anhydrate; Ethanoic Anhydride; Octowy Bezwodnik
U.N. Number 1715
Product Use In organic Synthesis: Acetylating, dehydrating and bleaching agent; manufacture of Cellulose acetate fibers, plastics, vinyl acetate, pharmaceuticals, magnetic tape, photographic films, and cigarette filters; as an esterifying agent for food starch (5% maximum); as an acetulizer in examining wool fat, glycerol, fatty and volatile oils, resins; or in the detection of rosin.

4. FIRST AID INFORMATION

Skin Quickly remove contaminated clothing. Rinse with flooding amounts of cold water for at least 15 minutes. Wash exposed area with soap and water. For reddened or blistered skin, consult a physician.

Eye Do not allow victim to rub or keep eyes tightly shut. Gently lift eyelids and flush immediately and continuously with flooding amounts of cold water until transported to an emergency medical facility. Consult a Physician or Ophthalmologist.

Inhalation Remove the exposed person to fresh air, monitor for respiratory distress, and administer 100% supplemental oxygen with assisted ventilation as required.

Ingestion Never give anything by mouth to an unconscious or convulsing person. Contact a poison control centre. Unless the poison control center advises otherwise, have the conscious and alert person drink 1 or 2



INTERNATIONAL ACETYLS COMPANY

MATERIAL SAFETY DATA SHEET

glasses of water. Do not induce vomiting. Do not give bicarbonate to neutralize.

POTENTIAL HEALTH EFFECTS

Target Organs	Eyes, Skin, Mucous membranes, respiratory system.
Entry Routes	Inhalation, Ingestion, Skin and/or Eye Contact, ingestion
Inhalation	Exposure to vapor concentration > 5 ppm causes acute irritation of the eyes and upper respiratory tract. Inhalation of high vapor concentrations causes harsh cough, difficulty breathing, and nasopharyngeal irritation and may produce ulcerations of the nasal mucosa and, in some instances, bronchospasm.
Eye:	Immediate burning followed some hours later by an increasing severity in reaction with corneal and conjunctival edema (swelling). In mild cases interstitial corneal opacity is reversible, but permanent opacification with loss of vision also may occur. Workmen exposed to acetic anhydride vapor have shown evidence of conjunctivitis with associated photophobia (abnormal sensitivity to light).
Skin:	Red, white and wrinkled appearance of the skin, but not immediately painful; burns may appear later.
Ingestion:	Burns of the mouth, esophagus and stomach.
Exposure Limits	US. ACGIH Threshold Limit Values Time Weighted Average (TWA) = 5 ppm, NOISH Pocket Guide to Chemical Hazards: Recommended Exposure Limit (REL) = 5 ppm, 20 mg/m ³ OSHA PEL – TWA = 5 ppm; 20 mg/m ³ ; OSHA PEL Vacated 1989 Limits: STEL = 5 ppm; 20 mg/m ³ ; Ceiling. IDLH Level = 200 ppm. DFG (Germany) MAK: TWA= 5 ppm; PEAK= 5 ppm.
Long Term Effects	Respiratory and skin disease.
Teratogenicity	No
Mutagenicity	No
Carcinogenicity	No

5. FIRE FIGHTING MEASURES

Fire hazards	Acetic Anhydride is a Class II Combustible liquid.
Fire-Fighting	If feasible and without undue risk, remove containers from fire hazard area. Otherwise, cool fire-exposed containers until well after the fire is extinguished. Do not get water inside containers. Do not release runoff from fire control methods to sewers or waterways. Because fire may produce toxic thermal decomposition products. Wear a self contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive pressure mode. Structural fire fighters protective clothing is not effective. Wear clothing specifically recommended by the manufacturer or shipper. It may provide little or no thermal protection.



INTERNATIONAL ACETYLS COMPANY

MATERIAL SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

Flash Point	52 Deg C (Tag Closed Cup)
Auto ignition	332 Deg C
Explosive Limit	LEL = 2.9% v/v UEL = 10.3% v/v
Extinguishing Media	Use dry chemical, "alcohol resistant" foam, carbon dioxide or flooding amounts of water.

7. HANDLING AND STORAGE

Storage	Storage tanks should be preferably constructed of Stainless Steel SS316 L. Tanks must be grounded, vented and should be nitrogen blanketed. Store in a cool, dry, well – ventilated area away from heat and ignition sources, oxidizers, and incompatibles. Outside or detached storage is preferred. Inside storage should be in a standard flammable liquid storage room or cabinet in a area equipped with an automatic sprinkler system. Keep moisture away from vapor space in storage areas.
Handling	Avoid any vapor inhalation and skin and /or eye contact. Use only with ventilation sufficient to reduce airborne concentrations to nonhazardous levels. Wear personal protective equipment and clothing to prevent skin and eye contact. Never eat, drink, or smoke in work areas. Practice good personal hygiene after using acetic anhydride, especially before eating, drinking, smoking, using the toilet or applying cosmetics.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls	Where feasible, enclose all processes to prevent mist or vapor dispersion into the workplace. To prevent static sparks, electrically ground and bond all containers and equipment used in shipping, handling , and transferring operation. Use Class I, Group D electrical equipment. Provide general or local exhaust ventilation because it prevents contaminant dispersion into the work area by controlling it at its source to maintain airborne concentrations below permissible exposure limit.
Gloves	Chemical Resistant Gloves
Respiratory	Use NIOSH approved supplied air respirator when airborne concentrations exceed exposure limits. Follow the OSHA respirator regulations in 29CFR 1910.134.
Eye	Wear protective eye glasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.
Clothing	Teflon and butyl rubber are recommended materials for personal protective clothing. Fluoro carbon rubber, natural rubber, nitrile rubber, and PVC are not recommended materials.



INTERNATIONAL ACETYLS COMPANY

MATERIAL SAFETY DATA SHEET

9. PHYSICAL AND GHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Colorless
Specific Gravity	1.08 (20 deg C)
Freezing Point	-73 Deg C
Boiling Point	139 Deg C
Vapour Pressure kPa	0.533 kPa at 15 Deg C
Vapour Density (air=1)	3.5
Molecular Weight	102.09
Volatiles % v/v @ 21 deg C	100

10. STABILITY AND REACTIVITY

Stability	Stable
Incompatible with	Oxidizing materials, water, alcohols, alkaline materials, aniline, 2-aminoethanol, ethylenediamine, chlorosulfonic acid, CrO ₃ + acetic acid, ethyleneimine, glycerol, oleum, hydrofluoric acid, sodium hydroxide, permanganates, hydrosulfuric acid, Na ₂ O ₂ , N ₂ O ₂ , and glycerol+ phosphoryl chloride.
Conditions of Reactivity	Reacts violently with strong oxidizing agents. Potentially explosive reactions occur with boric acid, barium peroxide, 1,3-diphenyltriazene, chromium trioxide, hydrochloric acid + water, nitric acid, hypochlorous acid, perchloric acid+water, peroxyacetic acid, potassium permanganate, tetrafluoroboric acid, acetic acid + water, and 4-toluenesulfonic acid+ water. Reactions with Sodium Hydrogen sulfate+ Ethanol, and hydrogen peroxide form explosive products. Reactions with ammonium nitrate+hexamethylenetetrammonium acetate+ nitric acid form the military explosives RDX and HMX. Acetic anhydride reacts violently with metal nitrates, chromic acid, glycerol+phosphoryl chloride, N-tert-Butylphthalimic acid+ tetrafluoroboric acid. It corrodes Iron, steel, and certain other metals at normal atmosphere and temperature and temperature due to the reaction with water to form acetic acid.

11. TOXICOLOGICAL INFORMATION

Acetic Anhydride	LD50 Oral Rat :	1780 mg/kg
	Dermal LD50 Rabbit	4 mL/kg
	Inhalation LC50 (Rat):	1000 ppm /4 hours
	Irritation (Rabbit) :	10 mg/24 hours, open patch test caused mild irritation
	Eye Irritation (Rabbit):	250 micro grams, open caused severe irritation



INTERNATIONAL ACETYL COMPANY

MATERIAL SAFETY DATA SHEET

12. ECOLOGICAL INFORMATION

Acetic Anhydride Acetic Anhydride will not bio-accumulate or contaminate the food chain. Acetic anhydride will readily infiltrate downward towards ground water.

Acute Aquatic Effects data:
48 h LC-50 (golden orfe): 265-279 mg/l
24 h EC-50(Daphnia magna): 100 mg/l

13. DISPOSAL CONSIDERATIONS

Spill Notify safety personnel immediately, evacuate all unnecessary personnel, isolate hazard area (150 ft in all directions), deny entry, remove heat and ignition sources, and ventilate area. Cleanup personnel should protect against vapor inhalation and skin/eye contact. Wear fully – encapsulating, vapor protective clothing for spill and leaks with no fire. Use water to cool and disperse vapors, protect personnel, and dilute spills to nonflammable mixtures. Do not get water inside containers. In case of Small Spills, take up spilled acetic anhydride with a noncombustible, inert absorbent such as sand or vermiculite. Neutralize with dilute caustic soda, lime, or soda ash and place in appropriate containers for disposal. For Large Spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or water ways. Follow applicable OSHA regulations (29 CFR 1910.120)

Disposal Consider atomizing in a suitable combustion chamber equipped with an appropriate effluent gas cleaning device. Follow applicable international, country and local regulations.

14. TRANSPORT INFORMATION

Shipping Name Acetic anhydride
Hazard Class 8 – Corrosive material
ID No UN1715
Packing Group II – Medium Danger
Label 8 – Corrosive, 3- Flammable Liquid
NFPA Rating Health = 3, Flammability = 2, Reactivity = 0





INTERNATIONAL ACETYLS COMPANY

MATERIAL SAFETY DATA SHEET

15. REGULATORY INFORMATION

Regulations vary from country to country. Anyone who uses, transports or stores this product, should refer to country specific regulations. Following are a few sample regulations for reference only.

SARA 311/312 Hazard Classification (s) : Immediate (acute) health hazard, fire hazard

SARA 313: None, unless listed below.

Carcinogenicity Classification (components present at 0.1% or more): none, unless listed below

TSCA (US Toxic Substances Control Act): This product is listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

EINECS (European Inventory of Existing Commercial Chemical Substances): This product is listed on EINECS or otherwise complies with EINECS requirements.
EINECS Number: 200-580-7

AICS/NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): This product is listed on AICS or otherwise complies with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): This product is listed in the Handbook or has been approved in Japan by new substance notification.

16. OTHER INFORMATION

The information and recommendation herein are taken from data contained in independent, industry recognized references. Although reasonable care has been taken in the preparation of the information herein, Sipchem and International Acetyls Company make no guarantee, warranty (express or implied) or other representation and assume no responsibility as to the accuracy or suitability of such information for application of the information, since conditions of its use are beyond control of these companies. Sipchem and International Acetyls Company shall not bear any liability whatsoever for any loss or damage incurred in connection with the use of this substance.