SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: Acetone

CAS 000067-64-1

REACH registration No.: 01-2119471330-49-0002

1.2 Relevant identified uses of the substance or mixture and uses advised against

General use: In addition to its application as a solvent, Acetone is an important intermediate product of the chemical industry e.g. for manufacturing Methylmethacrylate, Methyl Isobutyl Ketone and Bisphenol A.

Identified uses:

1. Manufacture, process and distribution of substances and mixtures *
2. Use in laboratories
3. Uses in coatings
4. Use as binders and release agents
5. Rubber production and processing
6. Polymer manufacturing
7. Polymer processing
8. Use in Cleaning Agents
9. Use in Oil and Gas Field drilling and production operations
10. Blowing agents
11. Mining chemicals

* Examples for processing:
Use as an intermediate; use as a monomer etc.; use as a solvent; use for the manufacturing of resins.

1.3 Details of the supplier of the safety data sheet

Company name: INEOS Phenol
Street Address: 7770 Rangeline Road
City/State/postal code: Theodore, Alabama 36582
World Wide Web: www.ineosphenol.com
Telephone: 251-443-3000
Fax: 251-443-3001

1.4 Emergency Telephone Numbers

24 Hour Emergency Number: 800-424-9300
24 Hour CHEMTREC Number: 800-424-9300 (USA)
703-527-3887 (International)

24 Hour Quantum Murray Number: 647-329-1054 (Canada)

...

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Global Harmonization System:

Physical Hazards: Flammable Liquid: Category 2 (Flash point <23°C and initial boiling point > 35°C)

Health Hazards:

Eye Irritant: Category 2A (causes serious eye irritation)

Skin Irritant: Category 2 (causes mild skin irritation)

Specific Target Organ Toxicity- Single exposure: Category 3 (vapors may cause drowsiness or dizziness)

Environmental Hazards:

None based on criteria of GHS

2.2 Label elements

Labeling (CLP)

Signal word	Danger	
Hazard statements	H225	Highly flammable liquid and vapor
	H319	Causes serious eye irritation
	H336	May cause drowsiness or dizziness
Precautions	P210	Keep away from flames and hot surfaces. No smoking
	P243	Take precautionary measures against static discharge
	P280	Wear protective gloves/protective clothing/eye protection/ face protection
	P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P403+P235	Store in well ventilated place. Keep cool.
	P405	Store locked up

...

SECTION 3: Composition/ information on ingredients

3.1 Substances

Chemical characterization (substance):

C3 H6 O = H3C-CO-CH3

Acetone, Dimethyl ketone, 2-Propanone, Methyl ketone

% (Wt/Wt)	100%
CAS-Number:	000067-64-1
EINECS-Number:	200-662-2
RTECS-Number:	AL3150000
EU-number:	606-001-00-8
Customs tariff number:	2914 11 00

SECTION 4: First aid measures

4.1 Description of first aid measures

General information:	Move patient to fresh air and keep them calm. Remove any contaminated clothing. Keep the patient warm and address any medical needs of the patient.
After inhalation:	Provide adequate fresh air. If breathing becomes irregular or difficult, give oxygen. If unconscious, immediately evaluate if artificial respiration is required. Get immediate medical attention.
In case of skin contact:	Remove all contaminated clothing. Immediately wash with soap and plenty of water. In case of skin irritation, seek immediately medical attention.
After eye contact:	Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently seek immediate medical attention.
After ingestion:	If swallowed, do not induce vomiting. Seek medical attention. Give activated carbon to reduce the absorption in the gastrointestinal tract.

4.2 Most important symptoms and effects, both acute and delayed

No data available.

4.3 Indication of any immediate medical attention and special treatment needed

Medical treatment should be based on acetone exposure symptoms. Note: risk of acetone entering lungs due to vomiting from ingestion.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:

Extinguishing powder, alcohol resistant foam, carbon dioxide, water fog

Extinguishing media that must not be used for safety reasons:

Full water jet

5.2 Special hazards arising from the substance or mixture

Highly flammable. Explosive mixtures with air may even form at ambient temperatures. Vapors can travel to source of ignition and flash back.

Products of combustion are carbon monoxide and carbon dioxide.

5.3 Advice for firefighters

Special protective equipment for firefighters:

Wear a self-contained breathing apparatus and chemical protective clothing.

Additional information:

Evacuate area and fight fire from a safe distance. Stay upwind and keep out of low areas. Containers can build up pressure if exposed to heat (fire). Cool with water spray. Fire water should be contained and disposed of in accordance with local, state, and federal regulatory requirements.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove persons not involved upwind.

Wear a self-contained breathing apparatus and chemical protective clothing. Solvent-resistant protective clothing is recommended.

6.2 Environmental precautions

Plug leaks if safely possible.
Do not allow to enter drains, surface water, basements, or pits.
When released into the environment, follow required regulatory and emergency response reporting.

6.3 Methods and material for containment and cleaning up

Collect spillage. Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents) and place in closed containers for disposal.
Collect the rinsing water when cleaning-down contaminated equipment and plant components.

Additional Information

Liquids and vapors are highly flammable and since the vapors are heavier than air, they may travel great distances and flash back.
Acetone is completely soluble in water.
Mixtures with 4% acetone with 96% water still have a flash point of 54°C (129.2°F).
Potentially explosive mixtures with air may form above water surfaces.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advices on safe handling

Provide adequate ventilation and local exhaust as needed.
Provide room air exhaust at ground level. Concentrated vapors are heavier than air.
Avoid the formation of aerosol. Do not breathe vapors.
Use only explosion-protected equipment/instruments. Do not use air pressure.

Precautions against fire and explosion:

Exposure to temperatures exceeding 50°C (122°F) will increase pressure resulting in danger of fire or explosion.
Keep away from sources of ignition – No smoking.
Take precautionary measures against static discharges.
Potentially explosive mixtures may form within partially empty containers.
Emergency cooling must be provided for in case of a fire in the vicinity.
Do not weld on equipment containing acetone.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storerooms and containers:

Keep container tightly closed and dry in a cool, well ventilated place. Protect from sun light.
Steel, stainless steel, and aluminum are stable container materials. Copper may be attacked.
Unsuitable container/equipment material: May attack plastics.

Hints on joint storage

Do not store together with combustible or self igniting materials or any highly flammable solids.

Peroxide may form when product is exposed to light and air.

Further details: Reserved for industrial and professional use.

7.3 Specific end use(s)

Solvent

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Type	Limit	value
OSHA:	TWA/PEL	1000 ppm or 2420 mg/m^3
ACGIH	TWA	500 ppm or 1210 mg/m^3
ACGIH	STEL	750 ppm or 1815 mg/m^3

Additional information: The IDLH is 2500 ppm.

8.2 Exposure controls

Explosion protection required. Provide good ventilation and/or an exhaust system in the work area.

Occupational exposure controls

Respiratory protection: Respiratory protection must be worn whenever the permissible exposure limits have been exceeded.

NIOSH recommendations:

Up to 2500 ppm: air purifying respirator with organic vapor cartridge or supplied air.

Above 2500 ppm: supplied air respirator or powered air purifying respirator with organic vapor cartridge.

Hand protection: Protective gloves according to ASTM F 739 Permeation tests:
Glove material:
Neoprene - acceptable
Natural Latex – best
Butyl - best
Nitrile – not recommended
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Eye protection: Goggles or face protection shield.

Body protection: Wear suitable protective clothing and chemical resistant safety shoes/boots.

General protection and hygiene measures:

Take off immediately all contaminated clothing. When using, do not eat, drink or smoke.
Have eye wash bottle or eye rinse ready at work place.

Alternatives to the following personal protective measures can only be determined in agreement with responsible safety experts.

Environmental exposure controls

Operational conditions and risk management measures should focus on containment and prevention of exposure to air, land or water. Although acetone is biodegradable and bioaccumulation potential is low, EPA has set regulatory limits for protection of human health. OSHA has set regulatory limits to protect workers from inhalation exposure.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state:	liquid
Color	colorless, clear
Odor:	Sweet aromatic Odor threshold: 20 ppm
Boiling temperature / boiling point	56°C (133°F)
Melting temperature / melting point	-94.7 °C (-138.4°F)
Flash point- Closed cup	-17°C (1.4°F)
Ignition temperature	465°C (869°F)
Flammable limits:	LEL (Lower Explosion Limit): 2.50 Vol-% UEL (Upper Explosive Limit): 14.30 Vol-%
Vapor pressure:	at 20°C: 240hPa at 50°C: 800hPa
Density:	at 20°C: 0.79 g/ml
pH value:	at 10 g/L: neutral; 50% in water: 5-6
Solubility:	at 20°C in organic solvent: 100%
Water Solubility	at 20 °C: Multimiscible
Partition coefficient n-octanol /water:	0.24 log P(o/w) Bio-accumulation is not to be expected (log P (o/w) <1).
Viscosity, dynamic:	at 20°C: 0.32 mPa*s

9.2 Other information

Molecular weight: 58.09 g/mol
Relative vapor density at 20°C (air=1): 2.1
Disassociation constant: pKa = 24.2 at 25°C
Evaporation rate: 2.0 (ether =1)
Saturation concentration at 20°C: 550g/m^3

SECTION 10: Stability and reactivity

10.1 Reactivity

Acetone reacts in the presence of bases.

10.2 Chemical stability

Vapors form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may back flash over great distances when ignited. May become electrostatically charged.

10.3 Possibility of hazardous reactions

No hazardous reactions are known.

10.4 Conditions to avoid

Highly flammable material. Concentrated vapors are heavier than air. Forms explosive mixtures with air, including inside empty uncleaned containers. May produce strongly irritating chloric acetone when mixed with chloridized hydrocarbons and exposed to light.

10.5 Incompatible materials

Attacks many plastics and rubbers. On contact with barium hydroxide, sodium hydroxide and many other alkaline materials, condensation may occur.
Avoid contact with strong oxidizing agents, alkalis, and amines.

10.6 Hazardous decomposition products

In case of fire: carbon monoxide and carbon dioxide may be liberated.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

LD50 Rat, oral: 5800 mg/kg body weight (OECD 401)
LD50 Rat, dermal: >15800 mg/kg body weight
LC50 Rat, inhalative: 76 mg/L/4h

After inhalation: Vapors may cause drowsiness and dizziness. For the development of any overt signs of toxicity in humans, accidental exposures to extreme large amounts of acetone from inhalation of vapors or ingestion of liquid are necessary (e.g. several thousand ppm of acetone vapors).

After swallowing: Gastric and intestinal problems.

In case of skin contact: Irritant. Repeated exposure may cause skin dryness or cracking due to defatting properties.

After eye contact: Irritant

Carcinogenic, germ cell mutagen and reproduction effects

Mutagenicity:
Not mutagenic in bacterial mutagenicity (OECD 471)
Chromosomal aberrations, in vetro (OECD 473): negative
Gene- mutations mammalian cells, in vetro (OECD476): negative
Micronucleus test in- vivo Mouse/hamster (non-Guideline): negative

Carcinogenicity:
Not a carcinogen over long term exposure (Mouse, dermal).

Reproductive toxicity:
- Effects on fertility:
  No impairment of reproductive performance in animal experiments.
- Developmental toxicity
  No developmental toxicity (inhalation at rat, mouse) OECD 414

Symptoms

Burning of eyes and skin. Fatigue, nausea, unconsciousness.

General remarks

No known chronic effects. Mild skin re-sorption.

Short term effects: 1000 ppm was well tolerated. No symptoms appeared after 30-60 minutes.

SECTION 12: Ecological information

12.1 Toxicity

Material is not considered toxic to aquatic organisms on an acute basis (LC50/EC50 above 100 mg/L in most species tested).

Aquatic toxicity: Fish toxicity:

- freshwater species: 96h LC50 (oncorhynchus mykiss): 5540 mg/L
- marine species: 96h LC50 (Alburnus (laburnum)): 11000 mg/L

Invertebrate toxicity:

- Freshwater species: 48h EC50 (Daphis pulex (water flea)): 8800 mg/L
- Marine specices: 24h EC50 (Artemsia aeruginosa): 2100 mg/L

Algae toxicity:
- freshwater species: 8h NOEC (Microcycstis aeruginosa): 530 mg/L/8 d.
- Marine species: 96h NOEC (Prorocentrum minimum): 430 mg/L

Bacterial toxcity:

...

- EC 12: (30 min; activated sludge); OECD 209: 1000mg/L

Long term toxicity to aquatic invertebrates:
- 28 days NOEC (daphnia pulex (water flea); reproduction: 2212 mg/L
- No information on long term effects of fish and algae available.
- Long term effects on aquatic organisms are not relevant due to the rapid elimination in water.

Water Hazard Class: Acetone is not a priority pollutant under the U.S. EPA Clean Water Act

12.2. Persistence and degradability

Further details: Abiotic degradation:

DT50, 19-114 d (Air, indirect photo degradation by reaction with OH radicals)

Abiotic degradation: none (Water, hydrolysis)

Biodegradation: 91% / 28 d (OECD 301B)

ThOD 84% / 5 d. (BOD5, APHA 219)

COD: 2.21 gO2 /g

Acetone is readily biodegradable.

Persistence in sewage plants: In activated sludge: 100% / 4 d (anaerobic conditions).

12.3 Bioaccumulative potential

Low bioaccumulation potential.

Bioconcentration factor (BCF)

3

12.4 Mobility in soil

Adsorption coefficient soil (Kd): 1.5L/kg at 20°C.
The soil adsorption coefficient indicates that acetone is mobile in soil and may be transported by ground water.
Volatility:

Henry constant: 2.929-3.070 Pa* m^3/mol (25°C water).

Henry constant: 3.311 Pa* m^3/mol (25°C marine water).

Experimentally determined Henry's Law constants indicate a moderate volatility in water.

12.5 Other adverse effects

General information: Terrestrial toxicity:

48h LD50 (Eisenia fetida): 0.1-1µg/cm^3

48h LD50 (Ambystoma mexicanum): 20,000 mg/L

48h LD50 (Xenopus laevis): 24,000 mg/L

In a study conducted according to OECD Guideline 207 (Earthworm, Acute Toxicity Tests: filter paper contact test), acetone showed a moderate toxicity to Eisenia fetida. In further short term toxicity studies, Ambystoma mexicanum and Xenopus laevis larvae exposed to acetone under static conditions in covered glass basins showed 48h LD50 values of 20,000 mg/L and 24,000 mg/L respectively.

Do not allow to enter into ground water, surface water or drains.

SECTION 13: Disposal Considerations

13.1 Waste Disposal Information

Product

RCRA Waste Code: U002 (commercial chemical product or off-spec commercial chemical product)
Recommendation: Dispose in accordance with all Federal, State, and local regulations or requirements.

Contaminated packaging

Recommendation: Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transportation Information

14.1 UN Number and Proper Shipping Name

UN 1090, Acetone

14.2 Department of Transportation – Acetone

Proper shipping name: ACETONE
UN 1090
Hazard class: 3
Packing group: PGII
Label codes: 3
Special provision: IB2, T4, TP1
Packaging exemptions: 150; Non-bulk: 202; Bulk: 242
Quality Limitations: Passenger aircraft/rail: 5L; Cargo aircraft only: 60L
Vessel stowage location: B

14.3 IMDG

Proper shipping name: ACETONE
UN 1090
Hazard class: 3
Packing group: PGII
Quantity Limitations: limited quantities 1L; excepted quantities E2
Packing Instructions and provisions: P001; IBC02
Portable tank and bulk containers: Instructions T4; provisions TP1
EMS number: F-E, S-D
Stowage and segregation: Category E
Marine pollutant: No

14.5 IATA

Proper shipping name: ACETONE
UN 1090
Hazard class: 3
Packing group: PGII
Label: Flammable Liquid
Quantity Limitations: limited quantities Y341 1L; excepted quantities E2
Cargo Packing Instructions: 364
Passenger Packing Instructions: 353
Additional Information: RQ 5000 lbs

SECTION 15: Regulatory information

15.1 U.S. Federal Regulations

OSHA:
This document has been prepared in accordance with the Safety Data Sheet (SDS) requirements of the OSHA Hazard Communications Standard and Global and Global Harmonization System (GHS).

EPA:
TSCA:
- TSCA Inventory: listed
- TSCA Section 12(b): Subject to export notification (Reportable one time)
- TSCA HPV: listed

Clean Air Act
- Affected by provisions of 40 CFR Part 60: VV; III, NNN, and RRR

Clean Water Act:
- Listed on the Safe Drinking Water Act

SARA:
- Section 302: Not Listed
- Section 311/312: Hazard classifications: Immediate (acute), Fire
- Section 313: Not subject to Toxic Release Inventory (TRI) reporting

CERCLA:
- RQ 5000 lbs

RCRA:
- Listed as hazardous waste; classified as toxic waste and subject to the small quantity exclusion
- U listed hazardous waste.

EPA Pesticides
- Listed as active ingredients
- Listed as inert ingredients

Other:
Carcinogen Status:
- IARC Rating: Not listed
- OSHA Carcinogen: Not listed
- NTP Rating: Not listed

NIOSH Recommendations:
- NIOSH publication No. 92-100
- REL: 250 ppm (590 mg/m3) TWA
- Health effects: Narcosis; CNS depression; eye, nose, throat, and skin irritation

15.2 U.S. State Regulations

Illinois

State of Illinois Right-to-know Toxic Substances List.: Illinois Register, Section 205, Table A:, Toxic Substances list.

New Jersey:

New Jersey Right-to-Know legislation: Acetone is listed on the New Jersey Environmental Hazardous Substances list.

Pennsylvania:

Pennsylvania Right-To-Know: Listed as hazardous substance by Pennsylvania department of Labor and Industry.

Massachusetts:

Listed on Massachusetts Substance List for Right-to-know.

Minnesota Right-To-Know

Listed on the Minnesota hazardous Substances List.

New York Substance Release and Bulk Storage

List of hazardous substances.

Rhode Island

Listed on hazardous substances list.

15.3 International Regulations

Canada

Listed on National Pollutant Release Inventory.
On Workplace Hazardous Material Information System (WHMIS) ingredient list.

European Union

Listed of REACH Substances.
EINECS list

China

IECSC Inventory of existing chemicals

Singapore

List of Controlled Hazardous Substances

Japan

List of Priority Assessment Chemicals (PAC)

Hong Kong

Hazardous Chemicals Control Ordinance – Dangerous Goods list

Turkey

List of Priority Chemicals

India

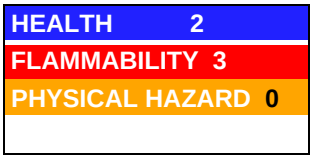
List of Hazardous Chemicals

SECTION 16: Other Information

16.1 NFPA

NFPA Hazard Rating
Health: 1 (Slight)
Fire: 3 (Serious)
Reactivity: 0 (Minimum)
Special Warnings: None

16.2 HMIS



HMIS Rating:
Health: 2 (Moderate)
Flammability: 3 (Serious)
Physical Hazard: 0 (Minimum)

16.3 Disclaimer

INEOS Phenol provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. INEOS Phenol makes no representations or warranties, either expressed or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product which the information refers. Accordingly, INEOS Phenol will not be responsible for damages resulting from the use of or reliance upon this information.