

Safety Data Sheet

according to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Revision: December 11, 2020

1 Identification

- **Product identifier**
- **Trade name:** Carnoy's Solution
- **Product code:** CR3000
- **Recommended use and restriction on use**
- **Recommended use:** Laboratory chemicals
- **Restrictions on use:** No relevant information available.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
AquaPhoenix Scientific, Inc.
860 Gitts Run Road
Hanover, PA 17331 USA
Tel +1 (717)632-1291
Toll-Free: (866)632-1291
info@aquaphoenixsci.com
- **Distributor:**
AquaPhoenix Scientific
860 Gitts Run Road,
Hanover, PA 17331
(717) 632-1291
- **Emergency telephone number:**
ChemTel Inc.
(800)255-3924 (North America)
+1 (813)248-0585 (International)

2 Hazard(s) identification

- **Classification of the substance or mixture**
- Flam. Liq. 2 H225 Highly flammable liquid and vapor.
- Met. Corr.1 H290 May be corrosive to metals.
- Acute Tox. 3 H331 Toxic if inhaled.
- Skin Irrit. 2 H315 Causes skin irritation.
- Eye Irrit. 2A H319 Causes serious eye irritation.
- Carc. 2 H351 Suspected of causing cancer. Route of exposure: Oral, Inhalation.
- Repr. 2 H361 Suspected of damaging fertility or the unborn child.
- STOT SE 3 H336 May cause drowsiness or dizziness.
- STOT RE 1 H372 Causes damage to the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Oral and Inhalation.

- **Label elements**
- **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**



GHS02 GHS05 GHS06 GHS07 GHS08

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- **Signal word:** Danger
- **Hazard statements:**
 - H225 Highly flammable liquid and vapor.
 - H290 May be corrosive to metals.
 - H331 Toxic if inhaled.
 - H315 Causes skin irritation.
 - H319 Causes serious eye irritation.
 - H351 Suspected of causing cancer. Route of exposure: Oral, Inhalation.
 - H361 Suspected of damaging fertility or the unborn child.
 - H336 May cause drowsiness or dizziness.
 - H372 Causes damage to the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Oral and Inhalation.
- **Precautionary statements:**
 - P201 Obtain special instructions before use.
 - P202 Do not handle until all safety precautions have been read and understood.
 - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 - P233 Keep container tightly closed.
 - P234 Keep only in original container.
 - P240 Ground/bond container and receiving equipment.
 - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 - P242 Use only non-sparking tools.
 - P243 Take precautionary measures against static discharge.
 - P260 Do not breathe mist/vapors/spray.
 - P264 Wash thoroughly after handling.
 - P271 Use only outdoors or in a well-ventilated area.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P308+P313 IF exposed or concerned: Get medical advice/attention.
 - P314 Get medical advice/attention if you feel unwell.
 - P321 Specific treatment - See Section 4 of this Safety Data Sheet.
 - P332+P313 If skin irritation occurs: Get medical advice/attention.
 - P362+P364 Take off contaminated clothing and wash it before reuse.
 - P337+P313 If eye irritation persists: Get medical advice/attention.
 - P370+P378 In case of fire: Use foam, powder, or carbon dioxide for extinction.
 - P390 Absorb spillage to prevent material damage.
 - P403+P235 Store in a well-ventilated place. Keep cool.
 - P405 Store locked up.
 - P406 Store in corrosive resistant container with a resistant inner liner.
 - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Other hazards** There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

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Components:

64-17-5	Ethanol  Flam. Liq. 2, H225  Eye Irrit. 2A, H319	60%
67-66-3	Chloroform / Trichloromethane  Acute Tox. 3, H331  Carc. 2, H351; Repr. 2, H361; STOT RE 1, H372  Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H336	30%
64-19-7	Acetic acid  Flam. Liq. 3, H226  Met. Corr. 1, H290; Skin Corr. 1A, H314	10%
10025-77-1	Ferric chloride hexahydrate  Met. Corr. 1, H290; Eye Dam. 1, H318  Acute Tox. 4, H302; Skin Irrit. 2, H315	0.1%

Additional information:

For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.
 For the wording of the listed Hazard Statements, refer to section 16.

4 First-aid measures

Description of first aid measures

General information:

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation:

Supply fresh air.

Seek immediate medical advice.

Provide oxygen treatment if affected person has difficulty breathing.

If experiencing respiratory symptoms: Call a poison center/doctor.

After skin contact:

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

If skin irritation continues, consult a doctor.

After eye contact:

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing:

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; immediately call for medical help.

Most important symptoms and effects, both acute and delayed:

Coughing

May cause drowsiness or dizziness.

Causes eye irritation.

Causes skin irritation.

Gastric or intestinal disorders when ingested.

Nausea

Disorientation

Profuse sweating

Unconsciousness

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- **Danger:**
 - May cause drowsiness or dizziness.
 - Suspected of causing cancer. Route of exposure: Oral, Inhalation.
 - May cause damage to organs through prolonged or repeated exposure. Route of exposure: Oral, Inhalation.
 - Suspected of damaging fertility or the unborn child.
- **Indication of any immediate medical attention and special treatment needed:**
 - If necessary oxygen respiration treatment.
 - If medical advice is needed, have product container or label at hand.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
 - Alcohol resistant foam
 - Water fog / haze
 - Carbon dioxide
 - Gaseous extinguishing agents
 - Fire-extinguishing powder
- **For safety reasons unsuitable extinguishing agents:**
 - Water spray
 - Water stream.
- **Special hazards arising from the substance or mixture**
 - Highly flammable liquid and vapor.
 - During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:**
 - Wear self-contained respiratory protective device.
 - Wear fully protective suit.
- **Additional information:**
 - Use large quantities of foam as it is partially destroyed by the product.
 - Cool endangered containers with water fog.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
 - Wear protective equipment. Keep unprotected persons away.
 - Ensure adequate ventilation.
 - Keep away from ignition sources.
 - For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
- **Environmental precautions**
 - Do not allow to enter sewers/ surface or ground water.
 - Inform respective authorities in case of seepage into water course or sewage system.
- **Methods and material for containment and cleaning up**
 - Absorb with non-combustible liquid-binding material (sand, diatomite, acid binders, universal binders).
 - Send for recovery or disposal in suitable receptacles.
- **Reference to other sections**
 - See Section 7 for information on safe handling.

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See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Precautions for safe handling:**
 - Prevent formation of aerosols.
 - Avoid splashes or spray in enclosed areas.
 - Use only in well ventilated areas.
- **Information about protection against explosions and fires:**
 - Highly flammable liquid and vapor.
 - Keep ignition sources away - Do not smoke.
 - Protect against electrostatic charges.
 - Flammable gas-air mixtures may be formed in empty containers/receptacles.
- **Conditions for safe storage, including any incompatibilities**
- **Requirements to be met by storerooms and receptacles:**
 - Store in a cool location.
 - Store only in the original receptacle.
 - Unsuitable material for receptacle: steel.
 - Unsuitable material for receptacle: aluminium.
 - Avoid storage near extreme heat, ignition sources or open flame.
- **Information about storage in one common storage facility:**
 - Store away from foodstuffs.
 - Store away from metals.
 - Store away from oxidizers, strong acids, strong bases.
- **Further information about storage conditions:** Keep containers tightly sealed.
- **Specific end use(s)** No relevant information available.

8 Exposure controls/personal protection

· Control parameters

· Components with limit values that require monitoring at the workplace:

64-17-5 Ethanol

PEL (USA)	Long-term value: 1900 mg/m ³ , 1000 ppm
REL (USA)	Long-term value: 1900 mg/m ³ , 1000 ppm
TLV (USA)	Short-term value: 1880 mg/m ³ , 1000 ppm
EL (Canada)	Short-term value: 1000 ppm
EV (Canada)	Long-term value: 1900 mg/m ³ , 1000 ppm
LMPE (Mexico)	Long-term value: 1000 ppm
	A3

67-66-3 Chloroform / Trichloromethane

PEL (USA)	Ceiling limit value: 240 mg/m ³ , 50 ppm
REL (USA)	Short-term value: 9.78* mg/m ³ , 2* ppm
	*60-min; See Pocket Guide App. A

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TLV (USA)	Long-term value: 49 mg/m ³ , 10 ppm
EL (Canada)	Long-term value: 2 ppm IARC 2B; R
EV (Canada)	Long-term value: 49 mg/m ³ , 10 ppm
LMPE (Mexico)	Long-term value: 10 ppm A3

64-19-7 Acetic acid

PEL (USA)	Long-term value: 25 mg/m ³ , 10 ppm
REL (USA)	Short-term value: 37 mg/m ³ , 15 ppm Long-term value: 25 mg/m ³ , 10 ppm
TLV (USA)	Short-term value: 37 mg/m ³ , 15 ppm Long-term value: 25 mg/m ³ , 10 ppm
EL (Canada)	Short-term value: 15 ppm Long-term value: 10 ppm
EV (Canada)	Short-term value: 37 mg/m ³ , 15 ppm Long-term value: 25 mg/m ³ , 10 ppm
LMPE (Mexico)	Short-term value: 15 ppm Long-term value: 10 ppm

· Exposure controls

· General protective and hygienic measures:

The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

· **Engineering controls:** Provide adequate ventilation.

· **Breathing equipment:** Suitable respiratory protective device recommended.

· **Protection of hands:**



Protective gloves

· Material of gloves

A recommendation for a suitable glove material is not available. Testing will be required to determine the suitability of any potential glove materials.

· **Eye protection:**



Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.

· **Body protection:** Protective work clothing

· **Limitation and supervision of exposure into the environment**

No relevant information available.

· **Risk management measures** No relevant information available.

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9 Physical and chemical properties

· Information on basic physical and chemical properties

· Appearance:

· Form:	Liquid
· Color:	Colorless
· Odor:	Product specific
· Odor threshold:	Not determined.

· pH-value:	Not determined.
· Melting point/Melting range:	Not determined.
· Boiling point/Boiling range:	62 °C (143.6 °F)

· Flash point:	0 °C (32 °F)
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· Flammability (solid, gaseous):	Not applicable.
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· Auto-ignition temperature:	425 °C (797 °F)
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· Decomposition temperature:	Not determined.
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· Danger of explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
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· Explosion limits

· Lower:	3.5 Vol %
· Upper:	17 Vol %

· Oxidizing properties:	Non-oxidizing.
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· Vapor pressure at 20 °C (68 °F):	210 hPa (157.5 mm Hg)
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· Density at 20 °C (68 °F):	1.02 g/cm ³ (8.51 lbs/gal)
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· Relative density:	Not determined.
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· Vapor density:	Not determined.
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· Evaporation rate:	Not determined.
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· Solubility in / Miscibility with

· Water:	Partly miscible.
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· Partition coefficient (n-octanol/water):	Not determined.
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· Viscosity

· Dynamic:	Not determined.
· Kinematic:	Not determined.

· Other information	No relevant information available.
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10 Stability and reactivity

· **Reactivity:** No relevant information available.

· **Chemical stability:** Stable under normal temperatures and pressures.

· **Thermal decomposition / conditions to be avoided:**

No decomposition if used and stored according to specifications.

· **Possibility of hazardous reactions**

Used empty containers may contain product gases which form explosive mixtures with air.

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Highly flammable liquid and vapor.

· **Conditions to avoid** Keep ignition sources away - Do not smoke.

· **Incompatible materials**

Metals.

Oxidizers, strong bases, strong acids

· **Hazardous decomposition products**

Under fire conditions only:

Carbon monoxide and carbon dioxide

Chlorophosgene

11 Toxicological information

· **Information on toxicological effects**

· **Acute toxicity:** Based on available data, the classification criteria are not met.

· **LD/LC50 values that are relevant for classification:**

ATE (Acute Toxicity Estimate)

Oral	LD50	2468-5549 mg/kg (rat)
Dermal	LD50	>6667 mg/kg (rabbit)
Inhalative	LC50/4h	10 mg/l

64-17-5 Ethanol

Oral	LD50	7060 mg/kg (rat)
Inhalative	LC50/4h	20000 mg/l (rat)

67-66-3 Chloroform / Trichloromethane

Oral	LD50	800-2000 mg/kg (rat) (Estimate)
Dermal	LD50	>2000 mg/kg (rabbit) (Estimate)

· **Primary irritant effect:**

· **On the skin:** Irritant to skin and mucous membranes.

· **On the eye:** Causes eye irritation.

· **Sensitization:** Based on available data, the classification criteria are not met.

· **IARC (International Agency for Research on Cancer):**

64-17-5	Ethanol	1
67-66-3	Chloroform / Trichloromethane	2B

· **NTP (National Toxicology Program):**

67-66-3	Chloroform / Trichloromethane	R
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· **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

· **Probable route(s) of exposure:**

Ingestion.

Inhalation.

Eye contact.

Skin contact.

· **Acute effects (acute toxicity, irritation and corrosivity):**

Irritating to eyes and skin.

Vapors have narcotic effect.

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- Toxic if inhaled.
- **Repeated dose toxicity:** Danger of serious damage to health by prolonged exposure.
- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Suspected of causing cancer. Route of exposure: Oral, Inhalation.
- **Reproductive toxicity:** Suspected of damaging fertility or the unborn child.
- **STOT-single exposure:** May cause drowsiness or dizziness.
- **STOT-repeated exposure:**
May cause damage to organs through prolonged or repeated exposure. Route of exposure: Oral, Inhalation.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity** No relevant information available.
- **Persistence and degradability** No relevant information available.
- **Bioaccumulative potential:** No relevant information available.
- **Mobility in soil:** No relevant information available.
- **Additional ecological information**
- **General notes:** Avoid transfer into the environment.
- **Other adverse effects** No relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.
- **Uncleaned packagings**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- | | |
|---------------------------------------|--|
| · UN-Number | |
| · DOT, ADR/RID/ADN, IMDG, IATA | UN3286 |
| · UN proper shipping name | |
| · DOT | Flammable liquid, toxic, corrosive, n.o.s. (Ethanol, Acetic acid, glacial, Chloroform) |
| · ADR/RID/ADN | FLAMMABLE LIQUID, TOXIC, N.O.S. (ETHANOL (ETHYL ALCOHOL), ACETIC ACID, GLACIAL, CHLOROFORM) |
| · IMDG | FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S. (ETHANOL (ETHYL ALCOHOL), ACETIC ACID, GLACIAL, CHLOROFORM) |

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· IATA FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.
(ETHANOL, ACETIC ACID, GLACIAL, CHLOROFORM)

· Transport hazard class(es)

· DOT



· Class 3
· Label 3, 6.1, 8

· ADR/RID/ADN



· Class 3 (FTC)
· Label 3+6.1+8

· IMDG



· Class 3
· Label 3/6.1/8

· IATA



· Class 3
· Label 3 (6.1, 8)

· Packing group

· DOT, ADR/RID/ADN, IMDG, IATA II

· Environmental hazards Not applicable.

· Special precautions for user Warning: Flammable liquids

· Hazard identification number (Kemler code): 368

· EMS Number: F-E,S-E

· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture (Cont'd. on page 11)

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- **United States (USA)**
- **SARA**

· **Section 302 (extremely hazardous substances):**

None of the ingredients are listed.

· **Section 313 (Specific toxic chemical listings):**

67-66-3 Chloroform / Trichloromethane

· **TSCA (Toxic Substances Control Act)**

All ingredients are listed or exempt.

· **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):**

67-66-3 Chloroform / Trichloromethane 20000

· **Proposition 65 (California)**· **Chemicals known to cause cancer:**

Ethanol - listing refers specifically to alcoholic beverage consumption and is not applicable for product.

64-17-5 Ethanol

67-66-3 Chloroform / Trichloromethane

· **Chemicals known to cause developmental toxicity for females:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity for males:**

None of the ingredients are listed.

· **Chemicals known to cause developmental toxicity:**

Ethanol - listing refers specifically to alcoholic beverage consumption and is not applicable for product.

64-17-5 Ethanol

67-66-3 Chloroform / Trichloromethane

· **EPA (Environmental Protection Agency):**

67-66-3 Chloroform / Trichloromethane B2, L, NL

· **IARC (International Agency for Research on Cancer):**

64-17-5 Ethanol 1

67-66-3 Chloroform / Trichloromethane 2B

· **Canadian Domestic Substances List (DSL):**

All ingredients listed on DSL or NDSL.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Abbreviations and acronyms:**

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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OSHA: Occupational Safety & Health Administration
Flam. Liq. 2: Flammable liquids – Category 2
Flam. Liq. 3: Flammable liquids – Category 3
Met. Corr. 1: Corrosive to metals – Category 1
Acute Tox. 4: Acute toxicity – Category 4
Acute Tox. 3: Acute toxicity – Category 3
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Carc. 2: Carcinogenicity – Category 2
Repr. 2: Reproductive toxicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

Sources

Website, European Chemicals Agency (echa.europa.eu)
Website, US EPA Substance Registry Services (ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do)
Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6
Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaassen, Curtis D., ed., ISBN: 978-0-07-176923-5.
Safety Data Sheets, Individual Manufacturers