1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product information

Trade name	:	PERACLEAN® 5 .
Use of the Substance / Preparation	:	For industrial use
Function		Water treatment
Company	:	Evonik Corporation USA 299 Jefferson Road Parsippany,NJ 07054-0677 USA
Telephone	:	973-929-8000
Telefax	:	973-929-8040
US: CHEMTREC EMERGENCY NUMBER	:	800-424-9300
CANADA: CANUTEC EMERGENCY NUMBER	:	613-996-6666
Product Regulatory Services	:	973-929-8060

2. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW *****

***Form**-liquid* ***Color**-colourless, clear* **Odor**-*stinging*

Corrosive.
Causes skin and eye burns.
Toxic. Harmful if absorbed through the skin.
May be fatal if inhaled.
Harmful if swallowed.
Aspiration hazard if swallowed - can enter lungs and cause damage.
Oxidizer
Contact with combustible material may cause fire.
Risk of decomposition in contact with incompatible substances, impurities, metals, alkalis, reducing agents.
Risk of decomposition when exposed to heat.
see also section 10.

POTENTIAL HEALTH EFFECTS

Eye contact

Corrosive. May cause burns resulting in permanent damage.
Causes painful stinging or burning of eyes and lids, watering of eyes, conjunctivitis, opaqueness of cornea, possibly leading to loss of sight.

Skin Contact

Corrosive. Contact causes burning sensations, smarting, inflammation, burns, painful blisters.
Harmful if absorbed through skin.

Inhalation

Highly toxic. May be fatal if inhaled.
May cause irritation of nose, throat, and lungs with cough, difficulty breathing or shortness of breath; or pulmonary edea (fluid in the lungs) with cough, wheezing, abnormal lung sounds, possibly progressing to shortness of breath and bluish discoloration of the skin.

Ingestion

Harmful if swallowed.
Causes severe digestive tract burns.
Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Preparation of perethanoic acid, hydrogen peroxide, ethanoic acid and water in balance.

Information on ingredients / Hazardous components

Peracetic acid			
CAS-No.	79-21-0	Percent (Wt./ Wt.)	5 %
hydrogen peroxide solution ... %			
CAS-No.	7722-84-1	Percent (Wt./ Wt.)	20 - < 30 %
Acetic acid			
CAS-No.	64-19-7	Percent (Wt./ Wt.)	6 - < 10 %

Other information

This material is classified as hazardous under OSHA regulations.

4. FIRST AID MEASURES

General advice

Pay attention to self-protection.
Remove victims from hazardous area. Immediately remove soiled or soaked clothing and remove it to a safe distance. Keep victim warm, in a stabilized position and covered.
Do not leave victims unattended.
If the casualty is unconscious: Place the victim in the recovery position.

Inhalation

Potential for exposure by inhalation if aerosols or mists are generated.
Move victims into fresh air.
With labored breathing: Provide with oxygen. Consult a doctor.

If the casualty is not breathing: Perform mouth-to-mouth resuscitation, notify emergency physician immediately.

Skin contact

Wash off affected area immediately with plenty of water for at least 15 minutes.
If symptoms persist, consult a physician for treatment.

Eye contact

With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes.
Consult an ophthalmologist immediately if the symptoms persist.
When dealing with caustic substances, notify emergency physician immediately (key words: burns in eye).

Ingestion

Rinse out mouth.
Immediately give large quantities of water to drink.
Consult a physician immediately.
When dealing with caustic substances, notify emergency physician immediately.

Notes to physician

The initial focus is only on the local action, characterized by quickly progressing deep tissue damage.
In the eye, caustic/ irritating and harmful liquids cause, depending on the intensity of exposure, various levels of irritation, destruction, and ablation of the epithelium of the conjunctiva and cornea, corneal clouding, edema and ulcerations.
Danger! Possible loss of eyesight!
Superficial irritations and damage up to ulcerations and scarring develop on the skin.
After accidental absorption in the body, the pathology and clinical findings are dependent on the kinetics of the substance (quantity of absorbed substance, the absorption time, and the effectiveness of early elimination measures (first aid)/ excretion - metabolism).
A specific action of the substance is unknown.
In case of substances with high water solubility, irritations up to formation of necrosis in the upper respiratory tract may result after inhalation of caustic/ irritating aerosols and mists.
The initial focus is on the local action: signs of irritation of the respiratory tract such as coughing, burning behind the sternum, tears, burning in the eyes or nose.
There is a risk of pulmonary edema!

5. FIRE-FIGHTING MEASURES

Flash point	not measureable (formation of foam) Method: ISO 2719
Lower explosion limit	no data available
Upper explosion limit	no data available
Autoignition temperature	395 °C Method: DIN 51 794

Suitable extinguishing media

water spray, foam, dry powder, carbon dioxide (CO2)

Extinguishing media which must not be used for safety reasons

organic compounds

Specific hazards during fire fighting

Contact with the following substances may cause inflammation: flammable substances.
Involved in fire, it may decompose yielding oxygen. Risk of overpressure and burst due to decomposition in confined spaces and pipes. Release of oxygen may support combustion.
In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely.
Keep away from heat. If necessary: In the case of fire, cool the containers that are at risk with water or dilute with water (flooding).

Special protective equipment for fire-fighters

In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit.

Further information

Evacuate personnel to safe areas. Keep out unprotected persons. Keep unauthorized persons away.
Water used to extinguish fire should not enter drainage systems, soil or stretches of water. Ensure there are sufficient retaining facilities for water used to extinguish fire. Contaminated fire-extinguishing water must be disposed of in accordance with the regulations issued by the appropriate local authorities. Fire residues should be disposed of in accordance with the regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Product causes chemical burns.

Evacuate personnel to safe areas.

Keep out unprotected persons.
Keep unauthorized persons away.

Environmental precautions

Observe regulations on prevention of water pollution (collect, dam up, cover up).
Do not allow to run into water channels, surface water, or into the ground.

Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, rivers, groundwater or soil.

Methods for cleaning up

Keep away from incompatible substances.
Keep away from flammable substances.
see section 10.
Clean contaminated surface thoroughly.
Recommended cleaning agent: water.
Dispose of absorbed material in accordance with the regulations.
see section 13.
With small amounts:
Dilute product with lots of water and rinse away.
see section 12.
or
Absorb with liquid-binding material, e. g.: chemisorption, diatomaceous earth, universal binder
Do not use: textiles, saw dust, combustible substances.
Pick up mechanically. Collect in suitable containers.

Additional advice

Make safe or remove all sources of ignition.
Isolate defective containers immediately, if possible and safe to do.
Shut off leak, if possible and safe to do.
Place defective containers in waste receptacle (waste packaging receptacle) made of plastic (not metal).
Do not seal defective containers or waste receptacles airtight (danger of bursting due to product decomposition).

Product taken out should not be returned into container.

Never return spilled product into its original container for re-use. (Risk of decomposition.).

7. HANDLING AND STORAGE

Handling

Safe handling advice

Avoid contact with skin, eyes and clothing.
Do not breathe in vapours, aerosols, sprays.
Wear personal protective equipment.

Handle in accordance with good industrial hygiene and safety practices.

Avoid impurities and heat effect.
Ensure there is good room ventilation.
Immediately change moistened and saturated work clothes.
Immediately rinse contaminated or saturated clothing with water.
Never return spilled product into its original container for re-use. (Risk of decomposition.).

Provide for installation of emergency shower and eye bath.

Set up safety and operation procedures.

Advice on protection against fire and explosion

Avoid sun rays, heat, heat effect.
Keep away from sources of ignition - No smoking.

Keep away from flammable substances.

Keep away from incompatible substances.
see section 10.

To cool, spray closed containers with water spray jet. In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely.

see section 5.

Storage

Requirements for storage areas and containers

cool, well ventilated, clean, lockable.
Recommendation: Acid-proof floor.
Use adequate venting devices on all packages, containers and tanks and check correct operation periodically.
Do not confine product in unvented vessels or between closed valves.
Risk of overpressure and burst due to decomposition in confined spaces and pipes.
Check containers and tanks at regular intervals to detect any special changes such as pressure build-up (distension), damage, leakage.
Transport and store container in upright position only.
Do not empty container by means of pressure.

Always close container tightly after removal of product.
Do not keep the container sealed.
Ensure tightness at all times. Avoid leackage.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Only use containers which are specially permitted for: Peracetic acid.
and/or
For transport, storage and tank installations only use suitable materials.

Suitable materials	stainless steel (1.4571)
Suitable materials	polyethylene, polypropylene, polyvinyl chloride (PVC),
Suitable materials	polytetrafluoroethylene, glass, ceramics.
Unsuitable materials	mild steel, iron, copper, brass, Bronze, aluminium, zinc.

Further information

Avoid sun rays, heat, heat effect.
Avoid impurities.
see also section 15.

Regularly verify the availability of water to deal with emergencies (for cooling, tank flooding, fire fighting) and check correct operation periodically.

For detailed information on design specifications for the construction of tank- and dosing installations ask the producer for advice.

Advice on common storage

Do not store together with: alkalis, reductants, metallic salts (risk of decomposition).

Do not store together with: inflammable substances (risk of fire).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component occupational exposure guidelines

- **hydrogen peroxide solution ... %**

CAS-No.	7722-84-1	
Control parameters	1 ppm	Time Weighted Average (TWA):(ACGIH)
	1 ppm	PEL:(OSHA Z1)
	1.4 mg/m3	
	1 ppm	Time Weighted Average (TWA)
	1.4 mg/m3 as H2O2	Permissible Exposure Limit (PEL):(US CA OEL)

- **Acetic acid**

CAS-No.	64-19-7	
	10 ppm	Time Weighted Average (TWA):(ACGIH)
	15 ppm	Short Term Exposure Limit (STEL):(ACGIH)
	10 ppm	PEL:(OSHA Z1)
	25 mg/m3	
	10 ppm	Time Weighted Average (TWA)
	25 mg/m3	Permissible Exposure Limit (PEL):(US CA OEL)
	40 ppm	Ceiling Limit Value:(US CA OEL)
	15 ppm	Short Term Exposure Limit (STEL):(US CA
	37 mg/m3	OEL)

Other information

Suitable measuring processes are:

Hydrogen peroxide

OSHA method ID 006
OSHA method VI-6

Acetic acid

NIOSH method 1603
OSHA method ID 186

Engineering measures

Ensure suitable suction/aeration at the work place and with operational machinery.
Provide for installation of emergency shower and eye bath.
see also section 7.

Personal protective equipment

Respiratory protection

Do not inhale vapour, aerosols, mist.
If workplace exposure limit is exceeded apply Respiratory protective equipment.
wear a self contained respiratory apparatus
If necessary: Local ventilation.
A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Note time limit for wearing respiratory protective equipment.

Hand protection

Glove material	Polychloroprene (PCP), for example: Camapren 720, Kächele-Cama Latex GmbH (KCL), Germany
Material thickness	0.65 mm
Break through time	> 480 min
Method	DIN EN 374

disposable gloves

Glove material	Natural Rubber/Natural latex (NR)
Material thickness	0.22 mm
Break through time	> 480 min
Method	DIN EN 374

The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.

Use impermeable gloves.
Personal protective equipment that provides a barrier to prevent dermal exposure to this substance is required.

Eye protection

Use chemical splash goggles or face shield.

Skin and body protection

Wear protective clothing, acid-proof.
Suitable materials are:
PVC, neoprene, nitrile rubber (NBR), rubber.
Rubber or plastic boots.

A safety shower and eye wash fountain should be readily available.

To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

Hygiene measures

Avoid contact with skin, eyes and clothing.
Do not inhale vapour, aerosols, mist.
Ensure there is good room ventilation.

Avoid contaminating clothes with product.

Immediately change moistened and saturated work clothes.
Immediately rinse contaminated or saturated clothing with water.
Any contaminated protective equipment is to be cleaned after use.

Protective measures

Handle in accordance with good industrial hygiene and safety practices.
The work-place related airborne concentrations have to be kept below of the indicated exposure limits.
If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used.

Wear suitable protective clothing, gloves and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Color	colourless, clear
Odor	stinging

Safety data

pH	ca. 0.6 (20 °C) Medium: Product
Melting point/range	ca. -28 °C
Boiling point/range	not applicable decomposition > 60 °C
Flash point	Method: ISO 2719 not measureable (formation of foam)
Flammability	No data available
Autoignition temperature:	395 °C Method: DIN 51 794

Autoinflammability	not spontaneously flammable
Oxidizing properties	oxidizing Method: (according to EC Directive 67/548/EEC)
Explosiveness	No data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapor pressure	ca. 27 hPa (20 °C)
Density	ca. 1.12 g/cm3 (20 °C)
Relative density	No data available
Bulk density	not applicable
Water solubility	completely miscible
Partition coefficient (n-octanol/water)	log Pow: -1.25 (calculated)
Viscosity, dynamic	not determined
Viscosity, kinematic	ca. 1.19 mm2/s (20 °C) Method: DIN 51 562
Vapour density	No data available

Further information

Miscibility in water	completely miscible
Surface tension	ca. 53 mN/m (20 °C) Method: ISO 3696
Other information	oxidising agent

10. STABILITY AND REACTIVITY

Conditions to avoid	sun rays, heat, heat effect
Materials to avoid	Impurities, decomposition catalysts, metal salts, alkalis, reducing substances., metals, nonferrous heavy metal, aluminium, zinc., Possible hazardous reaction: decomposition. flammable materials, Possible hazardous reaction: Spontaneous ignition. organic solvents, Possible hazardous reaction: Danger of explosion.

Hazardous decomposition products	decomposition products Under conditions of thermal decomposition: steam, oxygen, Acetic acid
Thermal decomposition	>= 60 °C self-accelerating decomposition
Hazardous reactions	When coming in contact with the product, impurities, decomposition catalysts, metallic salts, alkalis, reducing agents may lead to self-accelerated, exothermic decomposition and the formation of oxygen. Risk of overpressure and burst due to decomposition in confined spaces and pipes. Release of oxygen may support combustion.

11. TOXICOLOGICAL INFORMATION

Product Acute oral toxicity	LD50 Rat(female): 1859 mg/kg Method: literature Test substance: peracetic acid 5 %
Product Acute inhalation toxicity	Approximate lethal concentration Rat: 0.49 mg/lVapour as peracetic acid literature
Product Acute dermal toxicity	LD50 rat(male/female): 1147 mg/kg Method: literature Test substance: peracetic acid 5 %
Product Skin irritation	Rabbit / 0.75 h corrosive Method: OECD Test Guideline 404 Test substance: peracetic acid 5 %
Product Eye irritation	Rabbit corrosive Method: literature Test substance: peracetic acid 5 %
Product Sensitization	Buehler Test guinea pig: negative Method: literature Test substance: peracetic acid 5 %
Product Repeated dose toxicity	Oral Rat Testing period: 90 d NOEL: 5 mg/kg target organ/effect: Local irritant effect Method: OECD TG 408 Test substance: peracetic acid 5 %
Product Gentoxicity in vitro	Ames test predominantly negative Metabolic activation: with or without literature

Unscheduled DNA synthesis -test (UDS)
negative
Metabolic activation: without
literature

chromosomal aberration V 79 cells
negative
Metabolic activation: with or without
Method: OECD TG 473

HGPRT-Test V 79 cells
negative
Metabolic activation: with or without
Method: OECD TG 476

Product Gentoxicity in vivo

Micronucleus test mouse Oral
negative
Method: literature

Unscheduled DNA synthesis -test (UDS) Rat Oral
negative
Method: literature

Product Carcinogenicity

No data available

Product Toxicity to reproduction

No data available

Component Teratogenicity

Peracetic acid
79-21-0
Rat
NOAEL (No Observed Adverse Effect Level) teratogenesis: 30.4 mg/kg NOAEL maternal (No Observed Adverse Effect Level):12.5 mg/kg
Method: OECD TG 414
Low body weight
Disturbed ossification
No evidence of developmental toxicity of non-maternal toxic doses.
Related to substance: Peracetic acid 15 %

Product Human experience

Caustic / irritant effect on skin, eyes and mucous membranes (respiratory tract)

Also in dilute solutions

Onset of effects within seconds or minutes depending on the concentration.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability

Readily biodegradable

Exposure time: 28 d
Method: OECD TG 301 E
At non-bacteriotoxic concentrations

Physico-chemical removability

Hydrolyzes after 7 days by approx. 50 %.
pH 4

Hydrolyzes after 1 day to approx. 50 %.
pH 7 and pH 9

Further Information

Under ambient conditions quick hydrolysis, Reduction or decomposition occurs.
The following substances are formed: oxygen, water, acetic acid.
Acetic acid is easily biodegradable

Behaviour in environmental compartments

Bioaccumulation

low
log Pow: see chapter 9

Mobility

No data available

Ecotoxicity effects

Toxicity to fish

LC50 Pleuronectes platessa: 11 mg/l / 96 h
Method: literature
As peracetic acid

LC50 Oncorhynchus mykiss: 1 - 2 mg/l / 96 h
Method: literature
As peracetic acid

NOEC Daphnia magna: 1 mg/l / 48 h
Test substance: PAA solution (ca. 15% PAA, ca. 15% H202, ca. 25% HOAc)
Method: OECD TG 202

EC50 Daphnia magna: 3.3 mg/l / 48 h
Test substance: PAA solution (ca. 15% PAA, ca. 15% H202, ca. 25% HOAc)
Method: OECD TG 202

Toxicity to daphnia

EC50 Daphnia magna: 0.5 - 1.1 mg/l / 48 h
Method: OECD TG 202
As peracetic acid
literature

Toxicity to algae

IC 50 selenastrum capricornutum: ca. 0.18 mg/l / 120 h
Method: US-EPA-method
chronic
As peracetic acid
literature

Toxicity to bacteria

EC50 Activated sludge: 5.1 mg/l / 3 h
Method: OECD TG 209
As peracetic acid

chronic toxicity in daphnia	NOEC Daphnia magna: 0.05 mg/l / 21 d Method: OECD 211 As peracetic acid

Further information on ecology

AOX	The product does not contain any organically bonded halogen.
General Ecological Information	Does not contain any heavy metals and compounds from EC directive 76/464 e.g. arsenic-, lead cadmium Mercury organic halogen compounds organic compounds

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Advice on disposal	Waste must be disposed of in accordance with local, state, provincial and federal laws and regulations. Empty containers must be handled with care due to product residue.

14. TRANSPORT INFORMATION

D.O.T. Road/Rail

Class	5.1
UN-No	3149
Packing group	II
Subsidiary risk	8
Proper shipping name	Hydrogen peroxide and peroxyacetic acid mixtures, stabilized

Sea transport IMDG-Code

Class	5.1
UN-No	3149
Packing group	II
Subsidiary risk	8
EmS	F-H, S-Q

Proper technical name (Proper shipping name)
HYDROGEN PEROXIDE AND PEROXYACETIC ACID MIXTURE, STABILIZED

Air transport ICAO-TI/IATA-DGR

Class	5.1
UN-No	3149
Packing group	II
Subsidiary risk	8

Proper technical name (Proper shipping name)
Hydrogen peroxide and peroxyacetic acid mixture, stabilized

Loading instructions/Remarks

IATA_C	ERG-Code 5C
IATA_P	ERG-Code 5C
IMDG	Protect from heat. Separate from metal powders and permangan ates.
IMDG	"Separated from" permanganates and class 4.1.

Transport/further information
Protect from thermal radiation.

15. REGULATORY INFORMATION

Information on ingredients / Non-hazardous components

This product contains the following non-hazardous components

Water
CAS-No. 7732-18-5 Percent (Wt./ Wt.) 61 %

US Federal Regulations

OSHA
If listed below, chemical specific standards apply to the product or components:

- None listed

Clean Air Act Section (112)
If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

CERCLA Reportable Quantities
If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- Acetic acid
  CAS-No. 64-19-7
  Reportable Quantity 73529 lbs

SARA Title III Section 311/312 Hazard Categories
The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard

SARA Title III Section 313 Reportable Substances
If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- Peracetic acid

CAS-No. 79-21-0

Toxic Substances Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

State Regulations

California Proposition 65

A warning under the California Drinking Water Act is required only if listed below:

- None listed

International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries shown below. For information on listing for countries not shown, contact the Product Regulatory Services Department.

• Europe (EINECS/ELINCS)	Listed/registered
• USA (TSCA)	Listed/registered
• Canada (DSL)	Listed/registered
• Australia (AICS)	Listed/registered
• Japan (MITI)	Listed/registered
• Korea (TCCL)	Not listed/Not registered
• Philippines (PICCS)	Listed/registered
• China	Listed/registered
• New Zealand	Listed/registered

16. OTHER INFORMATION

HMIS Ratings

Health :	3
Flammability :	1
Physical Hazard :	2

Further information

Data for the production of the safety data sheet from the studies available and from the literature. Further information about the characteristics of the product can be found in the product code of practice or in the Product-Brochure .

Further information about the characteristics of the product can be found in the product code of practice or in the Product-Brochure .

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.