

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	1 / 20

**1. Identification****1.1. Product identifier**

Trade name HYPROX® 350

CAS-No. 7722-84-1

**1.2. Recommended use of the chemical and restrictions on use**

Relevant applications identified For industrial use

Function For oxidation

**1.3. Details of the supplier of the safety data sheet**

Company Evonik Corporation USA  
299 Jefferson Road  
Parsippany, NJ 07054-0677  
USA

Telephone 973-929-8000

Telefax 973-929-8040

Email address Product-Regulatory-Services@Evonik.com

**1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:****CHEMTREC - US & CANADA:** 800-424-9300**CHEMTREC MEXICO:** 01-800-681-9531**CHEMTREC INTERNATIONAL:** +1 703-527-3887 (collect calls accepted)

Product Regulatory Services : 973-929-8060

**2. Hazards identification****2.1. Classification of the substance or mixture**

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Acute toxicity (Oral)	Category 4	H302
Skin irritation	Category 2	H315
Serious eye damage	Category 1	H318
Specific target organ toxicity - single exposure (Respiratory system)	Category 3	H335
Acute aquatic toxicity	Category 2	H401
Chronic aquatic toxicity	Category 3	H412

**2.2. Label elements**

Statutory basis Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

**hazard-defining component(s) (GHS)**

- hydrogen peroxide solution

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>2 / 20</b>

Symbol(s)



Signal word

Danger

Hazard statement

H302 - Harmful if swallowed.  
 H315 - Causes skin irritation.  
 H318 - Causes serious eye damage.  
 H335 - May cause respiratory irritation.  
 H401 - Toxic to aquatic life.  
 H412 - Harmful to aquatic life with long lasting effects.

Precautionary statement  
Prevention

P261 - Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  
 P264 - Wash skin thoroughly after handling.  
 P270 - Do not eat, drink or smoke when using this product.  
 P271 - Use only outdoors or in a well-ventilated area.  
 P273 - Avoid release to the environment.  
 P280 - Wear eye protection/ face protection.  
 P280 - Wear protective gloves.

Precautionary statement  
Reaction

P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.  
 P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.  
 P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.  
 P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.  
 P332 + P313 - If skin irritation occurs: Get medical advice/ attention.  
 P362 - Take off contaminated clothing and wash before reuse.

Precautionary statement  
Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.  
 P405 - Store locked up.

Precautionary statement  
Disposal

P501 - Dispose of contents/ container to an approved waste disposal plant.

Supplemental hazard information / Label elements

**2.3. Other hazards**

None known

**3. Composition/information on ingredients**

• hydrogen peroxide solution		>= 20% - <= 40%
CAS-No.	7722-84-1	
Oxidizing liquids		Category 1
Acute toxicity (Oral)		Category 4
Skin corrosion		Category 1A
Serious eye damage		Category 1
Specific target organ toxicity - single exposure (Respiratory system)		Category 3
Acute aquatic toxicity		Category 2
Chronic aquatic toxicity		Category 3

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	3 / 20

**4. First aid measures****4.1. Description of 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 mouth.

Immediately give large quantities of water to drink.

Obtain medical attention.

When dealing with caustic substances, notify emergency physician immediately.

**4.2. Most important symptoms and effects, both acute and delayed****Symptoms**

Irritation of skin and mucous membranes

Causes burns.

daze,

headache, dizziness, somnolence (drowsiness), nausea.

Health injuries may be delayed.

**Hazards**

Strongly irritating to corrosive.

Harmful in contact with skin and if swallowed.

Vapours may cause drowsiness and dizziness.

**4.3. Indication of any immediate medical attention and special treatment needed**

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.

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	4 / 20

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****5.1. Extinguishing media**

Suitable extinguishing media: water spray, Adapt fire-extinguishing measures to surroundings, Foam, dry powder, Carbon dioxide (CO<sub>2</sub>)

Unsuitable extinguishing media: organic compounds

**5.2. Special hazards arising from the substance or mixture**

Product is fire-stimulating.

Contact with the following substances may cause inflammation: flammable substances.

The product itself does not burn. 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. Strong oxidizer. Contact with combustible materials may cause a fire.

Contact with incompatible materials (e.g. metals, alkalis, and reducing agents) will cause hazardous decomposition resulting in the release of large quantities of heat, steam, and oxygen gas.

Danger of decomposition under influence of heat.

Lower Explosive Limit: Hydrogen Peroxide vapors >40% by weight (or 26% mol).

This product spontaneously decomposes above 150 degrees celcius. A severe detonation hazard may exist when mixed with organic liquids, e.g. kerosene or gasoline.

Hydrogen Peroxide itself is not flammable. Drying of product on clothing or combustible materials such as paper, fabrics, leather, and wood may cause fire. Mixtures of Hydrogen Peroxide with flammable liquids (solvents) may possess explosive properties. Contamination can cause rapid decomposition, release of oxygen and pressure.

Hydrogen Peroxide in the proximity of an ongoing fire must be diluted with large volumes of water.

**5.3. Advice for firefighters**

Evacuate personnel to safe areas.

Keep out unprotected persons.

Keep unauthorized persons away.

With large-scale fire, violent decomposition or even explosion is possible.

In the case of fire, cool the containers that are at risk with water or dilute with water (flooding).  
or

In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely.

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.

Water used to extinguish fire should not enter drainage systems, soil or stretches of water.

Evacuate area and fight fire from a safe distance.

Stay upwind; keep out of low areas.

Containers can build up pressure if exposed to heat (fire). Cool with water spray. As in any fire, wear self-contained, pressure-demand breathing apparatus (MSHA-NIOSH approved or equivalent) and full protective gear.

Use water spray or fog to knock down irritating vapor.

As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>5 / 20</b>

**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Product causes chemical burns. Evacuate personnel to safe areas. Keep out unprotected persons. Keep unauthorized persons away.

**6.2. Environmental precautions**

Observe regulations on prevention of water pollution (check, dam up, cover up)., Dam with sand or earth, Do not use: textiles, saw dust, combustible substances., Do not permit to enter into surface water, stretches of water, soil undiluted. Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

**6.3. Methods and material for containment and cleaning up**

In case of larger quantities: Collect product in suitable containers (e. g. made of plastic) using appropriate equipment (e. g. liquid pump). Keep away from flammable substances. Keep away from incompatible substances. Rinse away any residue with plenty of water. Dispose of absorbed material in accordance with the regulations. With small amounts: Dilute product with lots of water and rinse away. or Absorb with liquid-binding material, e. g.: diatomaceous earth or universal binder. Pick up mechanically. Collect in suitable containers. Clean contaminated surface thoroughly. Pack and label wastes like the pure substance. Do not detach label from the delivery containers prior to disposal.

**Additional advice**

Make safe or remove all sources of ignition.

Shut off leak, if possible and safe to do.

Isolate defective containers immediately, 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).

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

Never return spilled product into its original container. Never put spilled material into another container for disposal. Dilute with large amounts of water to a concentration of about 5% Hydrogen Peroxide; hold in diked area or pond until peroxide is completely decomposed or dispose of according to all relevant local, provincial, state, and federal laws and regulations. Ventilate area. Use personal protective equipment as described in section 8. If necessary, contact supplier for recommendations to decompose dilute peroxide (5%).

SPONTANEOUS COMBUSTION HAZARD: Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood, or other combustibles, can cause the material to ignite and result in a fire.

**7. Handling and storage****7.1. Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid impurities and heat effect. Ensure there is good room ventilation. Avoid contact with skin, eyes and clothing. Do not inhale vapour, aerosols, mist. Wear personal protective equipment. Immediately change moistened and saturated work clothes. Immediately rinse contaminated or saturated clothing with water. Provide for installation of emergency shower and eye bath. Set up safety and operation procedures. Never return spilled product into its original container for re-use. (Risk of decomposition.).

**7.2. Conditions for safe storage, including any incompatibilities**

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	6 / 20

**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.

**Storage**

cool, dry, clean.  
well ventilated  
Jointless smooth concrete floor.  
Recommendation: Acid-proof floor.  
Only use containers which are specially permitted for: hydrogen peroxide and/or  
For transport, storage and tank installations only use suitable materials.  
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.  
Packages, containers and tanks should regularly be checked by visual observation for any sign of abnormality, e.g. corrosion, exert pressure (bulging), temperature increase etc.  
Transport and store container in upright position only.  
Always close container tightly after removal of product.  
Do not keep the container sealed.  
Ensure tightness at all times. Avoid leakage.

Suitable materials	stainless steel 304L or 316L passivated
Suitable materials	aluminium 5254 or 1060: min. 99.5 % passivated
Suitable materials	aluminium magnesium alloys, passivated
Suitable materials	polyethylene, polypropylene, polyvinyl chloride (PVC),
Suitable materials	polytetrafluoroethylene
Suitable materials	glass, ceramics.
Unsuitable materials	Iron, Mild steel, Copper, Bronze, brass, Zinc, tin

Consult NFPA 400 for storage area guidance. Storage and handling designs should be arranged in consultation with a person experienced in these types of assessments.  
Keep away from heat. Store in a cool, dry place. Keep container closed when not in use.  
Do not store together with: combustible material

**Further information**

Measures for storing in tank installations. These should include at least:  
Compatible materials, adequate separation, adequate venting area, venting devices, temperature measurement, earthing (grounding), bund in case of leakage.  
Prior to the first filling and operation of a tank installation all parts of the facility including all pipes must be thoroughly cleaned and flushed through.  
Metal elements of the installation must first be pickled and passivated sufficiently.  
For detailed information on design specifications for the construction of tank- and dosing installations ask the producer for advice.  
Regularly verify the availability of water to deal with emergencies (for cooling, tank flooding, fire fighting) and check correct operation periodically.

**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).  
Do not store together with: organic solvents (risk of explosion).

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>7 / 20</b>

**8. Exposure controls/personal protection****8.1. Control parameters**

<b>• Hydrogen peroxide</b>		
CAS-No.	7722-84-1	
Control parameters	1 ppm	Time Weighted Average (TWA):(ACGIH)
Control parameters	1 ppm 1.4 mg/m3	Permissible exposure limit:(OSHA Z1)
Control parameters	1 ppm 1.4 mg/m3	Time Weighted Average (TWA) Permissible Exposure Limit (PEL):(US CAOEL)

**DNEL/DMEL values**

End Use	Worker
Routes of exposure	Inhalation
Possible health damage	Acute - local effects
Value	3 mg/m3
End Use	Worker
Routes of exposure	Inhalation
Possible health damage	Long-term - local effects
Value	1.4 mg/m3
End Use	Consumers
Routes of exposure	Inhalation
Possible health damage	Acute - local effects
Value	1.93 mg/m3
End Use	Consumers
Routes of exposure	Inhalation
Possible health damage	Long-term - local effects
Value	0.21 mg/m3

**PNEC values**

	<b>Freshwater</b>
Value	0.0126 mg/l
	<b>marine water</b>
Value	0.0126 mg/l
	<b>water - intermittent releases</b>
Value	0.0138 mg/l
	<b>sewage treatment plant</b>
Value	4.66 mg/l
	<b>Fresh water sediment</b>
Value	0.47 mg/kg (dry weight)
	<b>marine water sediment</b>
Value	0.47 mg/kg (dry weight)
	<b>soil</b>
Value	0.0023 mg/kg (dry weight)

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	8 / 20

**8.2. Exposure controls****Engineering measures**

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

**Personal protective equipment****Respiratory protection**

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.

3M recommends the 3M 6003 Organic Vapor/Acid Gas Cartridge, the 3M 6006 Multi-Gas/Vapor Cartridge, and equivalent cartridges or combination versions of these be used for H<sub>2</sub>O<sub>2</sub> for concentrations up to ~ 90ppm.

If workplace exposure limit is exceeded apply Respiratory protective equipment.

If open handling is unavoidable:

Wear respiratory protection.

Note time limit for wearing respiratory protective equipment.

**Hand protection**

Glove material butyl-rubber, for example: Butoject 898, Kächele-Cama Latex GmbH (KCL), Germany

Material thickness 0.7 mm

Break through time > 480 min

Method DIN EN 374

Glove material Natural rubber (NR), for example: Combi-Latex 395, Kächele-Cama Latex GmbH (KCL), Germany

Material thickness 1 mm

Break through time > 480 min

Method DIN EN 374

Glove material Nitrile, for example: Camatril 731, Kächele-Cama Latex GmbH (KCL), Germany

Material thickness 0.33 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.

**Eye protection**

Safety glasses with side-shields conforming to EN166

or

When handling larger quantities: basket-shaped glasses

Use chemical splash goggles and face shield.

**Skin and body protection**

Wear protective clothing, acid-proof.

Suitable materials are:

PVC, neoprene, nitrile rubber (NBR), rubber.

Rubber or plastic boots

Gore Tex, Tyvek, or PVC full chemical splash suit.

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.



**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	9 / 20

**Hygiene measures**

Do not inhale vapour, aerosols, mist.

Avoid contact with skin, eyes and clothing.

Ensure there is good room ventilation.

The work-place related airborne concentrations have to be kept below of the indicated exposure limits. If the limits at the workplace are exceeded and/or larger amounts are released (leakage, spilling, etc.) the indicated respiratory protection should be used.

No eating, drinking, smoking, or snuffing tobacco at work.

Wash face and/or hands before break and end of work.

Preventive skin protection

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 practice.

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

Avoid protective gloves, clothes and shoes made from the following materials:

Leather

Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying.

Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

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**9. Physical and chemical properties****9.1. Information on basic physical and chemical properties**

physical state	liquid
Colour	colourless, clear
Form	liquid
Odour	slightly pungent
Odour Threshold	No data available
pH	<= 3.5 (20 °C)
Melting point/range	-33 °C
Boiling point/range	ca. 108 °C
Flash point	does not flash
Evaporation rate	No data available
Flammability (solid, gas)	not flammable
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapour pressure	2.99 hPa (25 °C) tested substance: hydrogen peroxide 100 %
Vapour density	No data available

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	10 / 20

Relative vapour density	no data available
Relative density	1.1282 (25 °C)
Density	1.132 g/cm <sup>3</sup> (20 °C)
Water solubility	miscible
Partition coefficient: n-octanol/water	log Pow: -1.57 Method: (calculated) tested substance: hydrogen peroxide 100 %
Autoignition temperature	No data available
Thermal decomposition	No data available
Viscosity, dynamic	1.11 mPa.s (20 °C)

**9.2. Other information**

Explosiveness	Not explosive
Oxidizing properties	oxidizing
Surface tension	ca. 74.67 mN/m (20 °C)
Metal corrosion	no data available
Molecular Weight	34.02 g/Mol
Other information	oxidising agent

**10. Stability and reactivity****10.1. Reactivity**

No further information available

**10.2. Chemical stability**

No further information available

**10.3. Possibility of hazardous reactions**

Stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Product is a strong oxidizing agent and reactive. Commercial products are stabilised to reduce risk of decomposition due to contamination. Danger of decomposition if exposed to heat

When coming in contact with the product, impurities, decomposition catalysts, incompatible substances, combustible substances, 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.

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>11 / 20</b>

Release of oxygen may support combustion.

Mixtures with organic materials (e.g. solvents) can display explosive properties.

A severe detonation hazard may exist when mixed with organic liquids, e.g. kerosene or gasoline.

**SPONTANEOUS COMBUSTION HAZARD:** Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood, or other combustibles, can cause the material to ignite and result in a fire.

**10.4. Conditions to avoid**

sun rays, heat, heat effect

**10.5. Incompatible materials**

impurities, decomposition catalysts, metals, metallic salts, alkalis, hydrochloric acid, reducing agents., (Risk of decomposition.).

flammable substances (Danger of fire).

organic solvents (danger of explosion)

**10.6. Hazardous decomposition products**

decomposition products Under conditions of thermal decomposition:

Steam, Oxygen

Under NFPA 400 - Hazardous Materials Code - 2013 Edition, Hydrogen Peroxide solutions are categorized in Appendix G as follows:

Solutions greater than 8% up to 27.5% are Class 1 Oxidizers.

Solutions greater than 27.5% up to 52% are Class 2 Oxidizers.

Solutions greater than 52% up to 91% are Class 3 Oxidizers.

No further information available

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**11. Toxicological information****11.1. Information on toxicological effects**

Acute oral toxicity

Acute toxicity estimate : 500 mg/kg

Method: Expert judgement

Acute inhalation toxicity

Assessment: The substance or mixture has no acute inhalation toxicity  
An Expert Judgment stated that no classification is necessary based on present knowledge.

Skin irritation

Skin irritation

Eye irritation

Irreversible effects on the eye

Assessment of STOT single exposure

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

**SAFETY DATA SHEET****HYPROX® 350**

Material no.  
Specification **129994**  
Order Number

Version **2.0 / US**  
Revision date **05/21/2015**  
Print Date **06/01/2015**  
Page **12 / 20**

**Toxicological information on components****Hydrogen peroxide**

Acute oral toxicity	LD50 Rat(male): 1193 mg/kg
	Method: EPA Methode Test substance: hydrogen peroxide, 35 %
	LD50 Rat(female): 1270 mg/kg
	Method: EPA Methode Test substance: hydrogen peroxide, 35 %
Acute inhalation toxicity	LC50 Rat(male/female): > 0.17 mg/l / 4 h Method: US-EPA-method Test substance: hydrogen peroxide, 50 % the maximum dose attainable under experimental conditions no fatalities
Acute dermal toxicity	LD50 Rabbit(male/female): > 2000 mg/kg Method: US-EPA-method Test substance: hydrogen peroxide, 35 %
Skin irritation	Rabbit / 4 h irritating Test substance: hydrogen peroxide, 35 %
Eye irritation	Rabbit irritating Method: OECD Test Guideline 405 Test substance: hydrogen peroxide 10 % literature
Sensitization	Sensitization test guinea pig: Does not cause skin sensitisation. Method: (Magnusson-Kligman test) literature
Repeated dose toxicity	Oral Mouse(female) / 90-day Subsequent observation period: 6 weeks NOEL: 37 mg/kg target organ/effect: Changes of parameters of the blood, body weight development negative, Irritative effect:, Gastrointestinal tract Method: OECD TG 408 Test substance: hydrogen peroxide, 35 % drinking water analysis
	Oral Mouse(male) / 90-day Subsequent observation period: 6 weeks NOEL: 26 mg/kg target organ/effect: Changes of parameters of the blood, body weight development negative, Irritative effect:, Gastrointestinal tract Method: OECD TG 408 Test substance: hydrogen peroxide, 35 % drinking water analysis

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	13 / 20

Assessment of STOT single exposure	No data available
Assessment of STOT repeat exposure	No data available
Risk of aspiration toxicity	No data available
Gentoxicity in vitro	<p>Bacterial reverse mutation assay <i>S. typhimurium</i> / <i>E. coli</i> positive and negative Metabolic activation: with or without literature</p> <p>chromosomal aberration mammalian cells positive Metabolic activation: without Method: OECD TG 473 literature</p> <p>Genetic mutation in mammal cells positive Metabolic activation: without Method: OECD TG 476 literature</p>
Gentoxicity in vivo	<p>Micronucleus test Mouse intraperitoneal (i.p.) negative Method: OECD TG 474 Test substance: hydrogen peroxide, 35 % literature</p>
Carcinogenicity	No data available
carcinogenicity assessment	<p>Clues to possible carcinogenic effects in animal experiments:</p> <p>Up to date there is no evidence of increased tumour risk.</p> <p>Hydrogen peroxide is not a carcinogenic substance according to MAK, IARC, NTP, OSHA, ACGIH.</p>
Toxicity to reproduction	No data available
Human experience	<p>Effect on the skin: Causes caustic burns. With increasing contact length, local erythema or extreme irritation (whitening) up to blistering (caustic burn) can occur.</p> <p>Effect on the eyes: Extreme irritation up to cauterisation. Can cause severe conjunctivitis, cornea damage or irreversible eye damage. Symptoms may occur with delay.</p> <p>Effect when swallowed: Swallowing can lead to bleeding of the mucosa in the mouth, oesophagus and stomach. The rapid releasing of oxygen can cause distension and bleeding of the mucosa in the stomach and lead to severe damage of the internal organs, especially in the event of greater intake of the product.</p>

**SAFETY DATA SHEET****HYPROX® 350**

Material no.  
Specification **129994**  
Order Number

Version **2.0 / US**  
Revision date **05/21/2015**  
Print Date **06/01/2015**  
Page **14 / 20**

**Effect when inhaled:**

Inhalation of vapour/aerosols can lead to irritation of the respiratory tract and cause inflammation of the respiratory tract and pulmonary oedema. Symptoms may occur with delay.

**Toxicology Assessment****Acute effects**

Harmful if swallowed.  
Causes skin irritation.  
Causes serious eye damage.  
May cause respiratory irritation.

**Sensitization**

Due to the data available, the classification criteria for all further toxicological end points are not fulfilled

**Repeated dose toxicity**

Due to the data available, the classification criteria for all further toxicological end points are not fulfilled

**CMR assessment****Mutagenicity**

The classification criteria are not met based on the available data.

**12. Ecological information****12.1. Toxicity****Toxicity to fish**

LC50 semi-static test Pimephales promelas: 16.4 mg/l / 96 h  
Test substance: hydrogen peroxide 100 %

**Toxicity in aquatic invertebrates**

EC50 semi-static test Daphnia pulex: 2.4 mg/l / 48 h  
Test substance: hydrogen peroxide 100 %

**Toxicity to algae**

NOEC static test Skeletonema costatum: 0.63 mg/l / 72 h  
End point: growth rate  
Test substance: hydrogen peroxide 100 %

**Toxicity to bacteria**

EC50 static test Activated sludge: 466 mg/l / 30 min  
Test substance: hydrogen peroxide 100 %  
Method: OECD TG 209

EC50 static test Activated sludge: > 1000 mg/l / 3 h  
Test substance: hydrogen peroxide 100 %  
Method: OECD TG 209

**chronic toxicity in daphnia**

NOEC flow-through test Daphnia magna: 0.63 mg/l / 21 d  
Test substance: hydrogen peroxide 100 %  
literature

**12.2. Persistence and degradability****photo-decomposition**

50 % degradation within approx. 20 hours; medium: air

**Biodegradability**

Result: Readily biodegradable.  
Test substance: hydrogen peroxide 100 %  
Semiquantitative measurement of concentration over time.

**AOX**

The product does not contain any organically bonded halogen.

**Further Information**

Under ambient conditions quick hydrolysis, Reduction or decomposition

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	15 / 20

occurs.

The following substances are formed: oxygen and water.

**12.3. Bioaccumulative potential**

Bioaccumulation

None.

Hydrogen peroxide quickly decomposes to oxygen and water.

**12.4. Mobility in soil**

Mobility

No data available

**12.5. Other adverse effects****Ecotoxicology Assessment**

Acute aquatic toxicity

Toxic to aquatic life.

Chronic aquatic toxicity

Harmful to aquatic life with long lasting effects.

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**13. Disposal considerations****13.1. Waste treatment methods****Product**

Disposal according to local authority regulations.

If necessary:

Because of recycling/disposal contact the relevant authorities.

Offer surplus and non-recyclable solutions to a licensed disposal company. **Product**

With small amounts:

May be disposed of as sewage water in accordance with local legal regulations by previously diluting with plenty of water. (drainage systems, sewage treatment plant **Product**

The appropriate regulatory agencies should be contacted prior to disposal.

A possible method of disposal is to dilute with large amounts of water to a concentration of about 5% hydrogen peroxide; hold in diked area or pond until peroxide is completely decomposed or dispose of according to all relevant local, provincial, state, and federal laws and regulations. Use personal protective equipment as described in section 8. Do not contaminate any lakes, streams, ponds, groundwater or soil. If necessary, contact supplier for recommendations to decompose dilute peroxide (5%)

**Uncleaned packaging**

Rinse empty containers before disposal; recommended cleaning agent: water.

Offer rinsed packaging material to local recycling facilities.

Do not reuse empty containers and dispose of in accordance with the regulations issued by the appropriate local authorities.

Dispose of containers that have not been emptied completely and/or cleaned like of substance.

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**14. Transport information****D.O.T. Road/Rail**

14.1. UN number:

UN 2014

14.2. UN proper shipping name:

Hydrogen peroxide, aqueous solutions

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>16 / 20</b>

- 14.3. Transport hazard class(es): 5.1 (8)  
14.4. Packing group: II  
14.5. Environmental hazards (Marine pollutant): --  
14.6. Special precautions for user: Yes  
RAIL: DOT-SP 14532 allows visual examination without removal of the rupture disc. This special  
(CFR) approval applies on tank car shipments only

**Air transport ICAO-TI/IATA-DGR**

- 14.1. UN number: UN 2014  
14.2. UN proper shipping name: Hydrogen peroxide, aqueous solution  
14.3. Transport hazard class(es): 5.1 (8)  
14.4. Packing group: II  
14.5. Environmental hazards: --  
14.6. Special precautions for user: Yes  
IATA-C: ERG-Code 5C  
IATA-P: ERG-Code 5C

**Sea transport IMDG-Code/GGVSee (Germany)**

- 14.1. UN number: UN 2014  
14.2. UN proper shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION  
14.3. Transport hazard class(es): 5.1 (8)  
14.4. Packing group: II  
14.5. Environmental hazards (Marine pollutant): --  
14.6. Special precautions for user: Yes  
EmS: F-H,S-Q  
Protect from heat. On deck only. Product-specific regulations on storing substances separately.  
"Separated from" permanganates and class 4.1.  
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:  
for transport approval see regulatory information

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**15. Regulatory information****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:

- None listed



**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	17 / 20

**SARA Title III Section 311/312 Hazard Categories**

The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard
- Reactivity 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:

- None listed

**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)	listed/registered
Philippines (PICCS)	listed/registered
China	listed/registered
New Zealand	listed/registered

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

**HMIS Ratings**

Health :	3
Flammability :	0
Physical Hazard :	1

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>18 / 20</b>

**NFPA Ratings**

Health :	3
Flammability :	0
Reactivity :	1

**16. Other information****Further information**

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 .

Revision date                              05/21/2015

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

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**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	2.0 / US
Specification	129994	Revision date	05/21/2015
Order Number		Print Date	06/01/2015
		Page	19 / 20

**Legend**

ACC	American Chemistry Council
ACGIH	American Conference of Governmental Industrial Hygienists
ACS	Advisory Committee on Sustainability
ADI	Acceptable Daily Intake
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration factor
BOD	Biochemical oxygen demand
c.c.	closed cup
CAO	Cargo Aircraft Only
Carc	Carcinogen
CAS	Chemical Abstract Services
CDN	Canada
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response – Compensation and Liability Act
CFR	Code of Federal Regulations
CMR	carcinogenic-mutagenic-toxic for reproduction
COD	Chemical oxygen demand
DIN	German Institute for Standardization
DM EL	Derived minimum effect level
DNEL	Derived no effect level
DOT	Department of Transportation
EC50	half maximal effective concentration
EPA	Environmental Protection Agency
ErC50	Reduction of Growth Rate
ERG	Emergency Response Guide Book
FDA	Food and Drug Administration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(EC50	LC50 or EC50
LOAEL	Low est observed adverse effect level
LOEL	Low est observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative, toxic
PEC	Predicted effect concentration
PNEC	Predicted no effect concentration
RQ	Reportable Quantity
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative

**SAFETY DATA SHEET****HYPROX® 350**

Material no.		Version	<b>2.0 / US</b>
Specification	<b>129994</b>	Revision date	<b>05/21/2015</b>
Order Number		Print Date	<b>06/01/2015</b>
		Page	<b>20 / 20</b>

<b>voc</b>	volatile organic compounds
<b>WHMIS</b>	Workplace Hazardous Materials Information System
<b>WHO</b>	World Health Organization