1 - Product and Company Information

Product Name: HYDROGEN PEROXIDE, 30-32 WT. % SOLUTION IN WATER, SEMICONDUCTOR GRADE, 99.999% METALS BASIS
Product Number: 316989
Company: Sigma-Aldrich Korea Ltd., 698-84 Maeng-ri, Wonsam-myun, 449-871 Yongin-city, Kyunggi-do,
Technical Phone # +82-31-329-9000
Fax: +82-31-329-9090
E-mail Address: sakr@sial.com

2 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT
Harmful if swallowed. Risk of serious damage to eyes.

3 - Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Product Name</th>
<th>CAS #</th>
<th>EC no</th>
<th>Annex I Index Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROGEN PEROXIDE, 30% SOLUTION</td>
<td>7722-84-1</td>
<td>231-765-0</td>
<td>008-003-00-9</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>Percent</th>
<th>CAS #</th>
<th>EC no</th>
<th>Annex I Index Number</th>
</tr>
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<tr>
<td>HYDROGEN PEROXIDE</td>
<td>30</td>
<td>7722-84-1</td>
<td>231-765-0</td>
<td>008-003-00-9</td>
</tr>
</tbody>
</table>

Symbols: O-C
R-Phrases: 5-8-20/22-35
Heating may cause an explosion. Contact with combustible material may cause fire. Harmful by inhalation and if swallowed. Causes severe burns.

WATER 70 7732-18-5 231-791-2 None

Formula: H2O2
Synonyms: Albone 35 * Albone 50 * Albone 70 * Albone 35CG * Albone 50CG * Albone 70CG * Hydrogen peroxide, solution, 30% * Interox * Kastone * Perone 30 * Perone 35 * Perone 50

4 - First Aid Measures

AFTER INHALATION
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

AFTER SKIN CONTACT
In case of contact, immediately wash skin with soap and copious amounts of water.
AFTER EYE CONTACT
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

AFTER INGESTION
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

5 - Fire Fighting Measures

EXTINGUISHING MEDIA
Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

SPECIAL RISKS
Specific Hazard(s): Emits toxic fumes under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 - Accidental Release Measures

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING
Directions for Safe Handling: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE
Conditions of Storage: Keep tightly closed.
Store at 2-8°C

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS
Safety shower and eye bath. Mechanical exhaust required.

GENERAL HYGIENE MEASURES
Wash thoroughly after handling.

PERSONAL PROTECTIVE EQUIPMENT
Respiratory Protection: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole
means of protection, use a full-face supplied air respirator.
Hand Protection: Compatible chemical-resistant gloves.
Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
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</tr>
<tr>
<td>BP/BP Range</td>
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<tr>
<td>MP/MP Range</td>
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<tr>
<td>Flash Point</td>
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<tr>
<td>Flammability</td>
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<tr>
<td>Autoignition Temp</td>
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<td>Oxidizing Properties</td>
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<td>Explosive Properties</td>
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<tr>
<td>Explosion Limits</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>SG/Density</td>
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<tr>
<td>Partition Coefficient</td>
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<tr>
<td>Viscosity</td>
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<td>Vapor Density</td>
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<tr>
<td>Saturated Vapor Conc.</td>
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<tr>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Decomposition Temp.</td>
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<tr>
<td>Solvent Content</td>
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<td></td>
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<tr>
<td>Water Content</td>
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<td></td>
</tr>
<tr>
<td>Surface Tension</td>
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<td></td>
</tr>
<tr>
<td>Conductivity</td>
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<td></td>
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<tr>
<td>Miscellaneous Data</td>
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</tr>
<tr>
<td>Solubility</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

10 - Stability and Reactivity

STABILITY
Stable: Stable.
Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: .

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: MX0899000

ACUTE TOXICITY

LDLO
Oral
Woman
2.626 mg/kg
Oral
Man
1429 mg/kg

LD50
Skin
Rat
3000 mg/kg

LD50
Intravenous
Mouse
>50 GM/KG

LD50
Oral
Rabbit
820 mg/kg

SIGNS AND SYMPTOMS OF EXPOSURE
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ROUTE OF EXPOSURE
Skin Contact: May cause skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes severe eye irritation.
Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion: Harmful if swallowed.

TARGET ORGAN INFORMATION
Eyes. Respiratory system. Skin.

CHRONIC EXPOSURE - CARCINOGEN
Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Mouse
Route of Application: Oral
Exposure Time: 2Y
Result: Tumorigenic: Carcinogenic by RTECS criteria.
Gastrointestinal: Tumors.

Mouse
Route of Application: Oral
Exposure Time: 2Y
Result: Gastrointestinal: Tumors. Tumorigenic: Carcinogenic by RTECS criteria.

IARC CARCINOGEN LIST
Rating: Group 3

CHRONIC EXPOSURE - MUTAGEN
Human
9 UMOL/L
Cell Type: lymphocyte
DNA damage

Human
50 UMOL/L
Cell Type: Embryo
Other mutation test systems

Human
20 UMOL/L
Cell Type: Embryo
Cytogenetic analysis

Rat
50 UMOL/L
Cell Type: lymphocyte
DNA damage

Hamster
250 UMOL/L
Cell Type: ovary
DNA inhibition

Hamster
60 UMOL/L
Cell Type: ovary
Cytogenetic analysis

Hamster
40 UMOL/L
Cell Type: ovary
Sister chromatid exchange

Hamster
1 MMOL/L
Cell Type: lung
Mutation in mammalian somatic cells.

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL
Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR
UN#: 2014
Class: 5.1
PG: II
Subrisk: 8
Proper Shipping Name: Hydrogen peroxide, aqueous solution

IMDG
UN#: 2014  
Class: 5.1  
PG: II  
Subrisk: 8  
Proper Shipping Name: Hydrogen peroxide, aqueous solution  
Marine Pollutant: No  
Severe Marine Pollutant: No

IATA  
UN#: 2014  
Class: 5.1  
PG: II  
Subrisk: 8  
Proper Shipping Name: Hydrogen peroxide, aqueous solution  
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES  
ANNEX I INDEX NUMBER: 008-003-00-9  
INDICATION OF DANGER: Xn  
Harmful.  
R-PHRASES: 22-41  
Harmful if swallowed. Risk of serious damage to eyes.  
S-PHRASES: 26-39  
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection.

COUNTRY SPECIFIC INFORMATION

Germany  
WGK: 1  
Self-Classification

NORWAY  
Declaration Number: 68197

16 - Other Information

WARRANTY  
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2009 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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