



Safety Data Sheet

acc. to OSHA GHS (29 CFR 1910.1200)

Printing date 06/10/2015

Reviewed on 06/10/2015

1 Identification

- **Product identifier**
- **Trade name:** Lead-Free Solders, Stay Brite®, Stay Brite 8®, Stay Brite® Ultra
- **Product size:** Variable
- **Other means of identification**
- **SDS Number:** 0125
- **Recommended use and restriction on use**
- **Recommended use:** Metal soldering
- **Restrictions on use:** No further relevant information available.
- **Manufacturer/Importer/Supplier/Distributor information**
- **Manufacturer/Supplier:**
Harris Products Group
4501 Quality Place
Mason, Ohio 45040 US
513-754-2000
- **Distributed by:**
Radnor Welding Products
259 N. Radnor-Chester Road - Suite
100 Radnor, PA19087
Emergency number +1 (866)
734-3438
- **Safety Data Sheet Questions:** salesinfo@jwharris.com
- **Arc Welding Safety Information:** www.lincolnelectric.com/safety
- **24-Hour Emergency Response Telephone Numbers:**
1-866-519-4752 (USA, Canada, Mexico only)
- (+) 1-760-476-3962
- **3E Company Access Code:** 333895

2 Hazard(s) identification

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

- **Classification of the substance or mixture**
The product is not classified as hazardous according to the Globally Harmonized System (GHS).
- **Additional information:**
0 percent of the mixture consists of ingredient(s) of unknown toxicity.
There are no other hazards not otherwise classified that have been identified.
- **Label elements**
- **GHS label elements**
The product is not classified as hazardous according to OSHA GHS regulations within the United States.
- **Hazard pictograms** Not Regulated
- **Signal word** Not Regulated
- **Hazard-determining components of labeling:** None.
- **Hazard statements** Not Regulated

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- **Precautionary statements** Not Regulated
- **Additional information:**
- **Other hazards which do not result in GHS classification:**
Heat rays (infrared radiation) from flame or hot metal can injure eyes. Overexposure to soldering fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.
- **Hazard description:**
- **WHMIS-symbols:** Not hazardous under WHMIS.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

7440-31-5	tin	94-97%
7440-22-4	silver	3-6%

- **Additional information:**
For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.
- **Composition comments:**
The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a hazard. The product may contain additional nonhazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4 First-aid measures

- **Description of first aid measures**
- **General information:** No special measures required.
- **After inhalation:**
Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.
- **After skin contact:**
Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.
- **After eye contact:**
Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.
- **After swallowing:**
Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
No further relevant information available.

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- **Danger**

Soldering hazards are complex and may include physical and health hazards such as but not limited to infrared radiation from flame or hot metal, physical strains, thermal burns due to hot metal or spatter and potential health effects of overexposure to brazing fume or dust. Refer to Section 11 for more information.

- **Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

5 Fire-fighting measures

- **Extinguishing media**

- **Suitable extinguishing agents:**

As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

For metal fires: Use specific agents only.

- **For safety reasons unsuitable extinguishing agents:** For metal fires: Use specific agents only.

- **Special hazards arising from the substance or mixture**

Infrared radiation from flame or hot metal can ignite combustibles and flammable products.

- **Advice for firefighters**

- **Special fire fighting procedures:**

Use standard firefighting procedures and consider the hazards of other involved materials.

- **Protective equipment:**

Wear self-contained respiratory protective device.

Wear fully protective suit.

- **Additional information**

Read and understand American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" before using this product.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

- **Environmental precautions:**

Avoid release to the environment.

Prevent further leakage or spillage if safe to do so.

- **Methods and material for containment and cleaning up:**

Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources.

Pick up mechanically.

Send for recovery or disposal in suitable receptacles.

Dispose contaminated material as waste according to item 13.

- **Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

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7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Prevent formation of dust.
Ensure good ventilation/exhaustion at the workplace.
Any deposit of dust which cannot be avoided must be regularly removed.
Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, <http://pubs.aws.org> and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.
- **Information about storage in one common storage facility:** No special requirements.
- **Further information about storage conditions:** No special requirements.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Exposure Guidelines:**
Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Sections 2, 3, 8, 10, and 11 for information on potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.
- **Components with limit values that require monitoring at the workplace:**
These components may be present

7440-31-5 tin

PEL (USA)	Long-term value: 2 mg/m ³ metal
REL (USA)	Long-term value: 2 mg/m ³
TLV (USA)	Long-term value: 2 mg/m ³ metal
EL (Canada)	Long-term value: 2 mg/m ³ metal
EV (Canada)	Long-term value: 2* 0.1** mg/m ³ *metal, oxide, inorg. compds.; **org. compds.: Skin

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LMPE (Mexico)	Long-term value: 2* mg/m ³ *metal
7440-22-4 silver	
PEL (USA)	Long-term value: 0.01 mg/m ³
REL (USA)	Long-term value: 0.01 mg/m ³
TLV (USA)	Long-term value: 0.1 mg/m ³ metal: dust and fume
EL (Canada)	Short-term value: 0.03 mg/m ³ Long-term value: 0.01 mg/m ³ as Ag
EV (Canada)	Long-term value: 0.1* 0.01** mg/m ³ *metal;**water-soluble compounds (as silver)
LMPE (Mexico)	Long-term value: 0.1 mg/m ³ Metal, polvos y humos

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

Keep away from foodstuffs, beverages and feed.

· **Engineering controls:** No further relevant information available.

· **Ventilation**

Use enough ventilation, local exhaust at the the flame or heat source, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep his head out of the fumes. Keep exposure as low as possible.

· **Breathing equipment:**

Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

· **Protection of hands:**



Thermally-protective gloves.

Suitable gloves can be recommended by the glove supplier.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

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· **Eye protection:**



Wear glasses or face shield with appropriate shading for brazing operations.

· **Body protection:** Protective work clothing

· **Limitation and supervision of exposure into the environment** No special requirements.

· **Risk management measures** No special requirements.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Solid material
 Color: According to product specification

· **Odor:** Odorless

· **Odor threshold:** Not determined.

· **pH-value:** Not applicable.

· **Change in condition**

Melting point/Melting range: Undetermined.

Boiling point/Boiling range: Undetermined.

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not determined.

· **Auto-ignition temperature:** Not determined.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not self-igniting.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Explosion limits:**

Lower: Not determined.

Upper: Not determined.

· **Vapor pressure:** Not applicable.

· **Density:** Not determined.

· **Relative density** Not determined.

· **Vapour density** Not applicable.

· **Evaporation rate** Not applicable.

· **Solubility in / Miscibility with**

Water: Insoluble.

· **Partition coefficient (n-octanol/water):** Not determined.

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- | | |
|---|---|
| <ul style="list-style-type: none"> · Viscosity: Dynamic: Kinematic: · Other information | <p>Not applicable.</p> <p>Not applicable.</p> <p>No further relevant information available.</p> |
|---|---|

10 Stability and reactivity

- **Reactivity** The product is non-reactive under normal conditions of use, storage and transport.
- **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**
Reacts with strong acids and alkali.
Reacts with strong oxidizing agents.
- **Conditions to avoid** Avoid heat or contamination.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:**
Soldering fumes and gases cannot be classified simply. The composition and products: quantity of both are dependent upon the metal being joined, the process, procedure and filler metals and flux used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being joined (such as paint, plating, or galvanizing), the number of operators and the volume of the worker area, the quality and amount of ventilation, the position of the operator's head with respect to the fume and fumes from chemical fluxes used in some soldering operations.
When the wire or rod is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above.

11 Toxicological information

- **Information on likely routes of exposure**
- **Ingestion:**
Unlikely route of exposure.
Health injuries from ingestion are not known or expected under normal use.
- **Inhalation:**
Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure.
- **Skin Contact:** Heat rays can burn skin.
- **Eye Contact:** Heat rays (infrared radiation from flame) or hot metal can injure eyes.
- **Information on toxicological effects**
- **Inhalation**
Short-term (acute) overexposure to soldering fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to brazing fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

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- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:** None.
- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritating effect.
- **in the respiratory system:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**

Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

- **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

· NTP (National Toxicology Program)
--

None of the ingredients is listed.

· OSHA-Ca (Occupational Safety & Health Administration)
--

None of the ingredients is listed.

- **Other information relevant to carcinogenicity**

Cancerous lesions have been reported in persons exposed to arc rays.

- **Germ cell mutagenicity**

- **In vitro:** Not classified

- **In vivo:** Not classified

- **Reproductive toxicity:** Not classified

- **Specific target organ toxicity - single exposure:** Not classified

- **Specific target organ toxicity - repeated exposure:** Not classified

- **Aspiration hazard:** Not classified

12 Ecological information

- **Persistence and degradability**

Inorganic product, is not eliminable from water by means of biological cleaning processes.

- **Behavior in environmental systems:**

- **Bioaccumulative potential:** No further relevant information available.

- **Mobility in soil:** No further relevant information available.

- **Additional ecological information:**

- **General notes:**

Negative ecological effects are, according to the current state of knowledge, not expected.

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- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.
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.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- | | |
|--|-----------------|
| · UN-Number | |
| · DOT, ADR, ADN, IMDG, IATA | Not Regulated |
| · UN proper shipping name | |
| · DOT, ADR, ADN, IMDG, IATA | Not Regulated |
| · Transport hazard class(es) | |
| · DOT, ADR, ADN, IMDG, IATA | |
| · Class | Not Regulated |
| · Packing group | |
| · DOT, ADR, IMDG, IATA | Not Regulated |
| · Environmental hazards: | |
| · Marine pollutant: | No |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation": | - |

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15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **US Federal Regulations**

None of the ingredients is listed.

· **US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

· **SARA**

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

None of the ingredients is listed.

· **Section 304 (emergency release notification)**

None of the ingredients is listed.

· **Sections 311/312 (hazardous chemical threshold planning quantity in pounds)**

None of the ingredients is listed.

· **Section 313 (TRI reporting)**

7440-22-4 | silver

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **CERCLA Hazardous Substance List (40 CFR 302.4):**

7440-22-4 | silver

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

All ingredients are listed.

· **Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

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

None present or none present in regulated quantities.

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**

None of the ingredients are listed.

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

None of the ingredients are listed.

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

7440-22-4 | silver

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· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

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· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **State Right to Know Listings**

· **US. New Jersey Worker and Community Right-to-Know Act**

tin

silver

· **US. Massachusetts RTK - Substance List**

tin

silver

· **US. Pennsylvania RTK - Hazardous Substances**

tin

silver

· **US. Rhode Island RTK**

tin

silver

· **Canada**

· **Canadian Controlled Products Regulations:** Not hazardous under WHMIS.

· **Canadian substance listings:**

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

All ingredients are listed.

· **Canada Non-Domestic Substances List (NDSL)**

None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 1%)**

All ingredients are listed.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

· **Date of preparation / last revision** 06/10/2015 / -

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (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

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

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

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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Sources

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

Disclaimer:

We urge each end user and recipient of this SDS to study it carefully. If necessary consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product.

Harris Products Group cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for use, handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.



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1 Identification

- **Product identifier**
- **Trade name: Stay Clean® Aluminum Soldering Flux**
(also a component of Alsolder™ flux & solder kit)
- **Other means of identification**
- **SDS Number:** 0138
- **Recommended use and restriction on use**
- **Recommended use:** Metal Soldering
- **Restrictions on use:** No relevant information available.
- **Manufacturer/Importer/Supplier/Distributor information**
- **Manufacturer/Supplier:**
Harris Products Group
4501 Quality Place
Mason, Ohio 45040 US
513-754-2000
- **Safety Data Sheet Questions:** salesinfo@jwharris.com
- **Arc Welding Safety Information:** www.lincolnelectric.com/safety
- **24-Hour Emergency Response Telephone Numbers:**
1-866-519-4752 (USA, Canada, Mexico only)
- (+) 1-760-476-3962
- **3E Company Access Code:** 333895

Distributed by:

Radnor Welding Products
259 N. Radnor-Chester Road -
Suite 100 Radnor, PA19087
Emergency number +1 (866)
734-3438

2 Hazard(s) identification

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

- **Classification of the substance or mixture**



GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer.
Repr. 1B H360 May damage fertility or the unborn child.
STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

Met. Corr.1 H290 May be corrosive to metals.
Skin Corr. 1B H314 Causes severe skin burns and eye damage.

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Trade name: Stay Clean® Aluminum Soldering Flux
(also a component of Alsolder™ flux & solder kit)

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GHS07

Skin Sens. 1 H317 May cause an allergic skin reaction.

· **Additional information:**

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

0 % of the mixture consists of component(s) of unknown toxicity.

· **Label elements**

· **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms:**



GHS05

GHS07

GHS08

· **Signal word: Danger**

· **Hazard-determining components of labeling:**

2-(2-aminoethylamino)ethanol

2,2'-iminodiethanol

ammonium tetrafluoroborate

fluoroboric acid

zinc oxide

2,2',2''-nitrilotriethanol

· **Hazard statements:**

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H360 May damage fertility or the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements:**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe mist/vapors/spray.

P264 Wash thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection.

P234 Keep only in original container.

P272 Contaminated work clothing must not be allowed out of the workplace.

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P363 Wash contaminated clothing before reuse.

P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.

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(also a component of **Alsolder™ flux & solder kit**)

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P308+P313 IF exposed or concerned: Get medical advice/attention.
 P390 Absorb spillage to prevent material damage.
 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.

· **Additional information:**

· **Other hazards which do not result in GHS classification:**

Heat rays (infrared radiation) from flame or hot metal can injure eyes. Overexposure to soldering fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

111-41-1	2-(2-aminoethylamino)ethanol	25-35%
102-71-6	2,2',2''-nitrioltriethanol	20-30%
13826-83-0	ammonium tetrafluoroborate	10-20%
111-42-2	2,2'-iminodiethanol	0-10%
1314-13-2	zinc oxide	0-10%
16872-11-0	fluoroboric acid	0-10%
13826-88-5	zinc bis(tetrafluoroborate)	0-10%
13814-97-6	tin bis(tetrafluoroborate)	0-5%

· **Additional information:**

For the listed ingredient(s), the identity and exact percentage(s) are being withheld as a trade secret.

· **Composition comments:**

The term "Dangerous components" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a hazard. The product may contain additional nonhazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4 First-aid measures

· **Description of first aid measures**

· **General information:** No special measures required.

· **After inhalation:**

Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

· **After skin contact:**

Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

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- **After eye contact:**
Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.
- **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
- **Information for doctor**
- **Most important symptoms and effects, both acute and delayed:**
Gastric or intestinal disorders when ingested.
Breathing difficulty
Coughing
Caustic effect on skin and mucous membranes.
Strong irritant with the danger of severe eye injury.
Allergic reactions
- **Danger:**
Suspected of damaging fertility or the unborn child.
Soldering hazards are complex and may include physical and health hazards such as but not limited to infrared radiation from flame or hot metal, physical strains, thermal burns due to hot metal or spatter and potential health effects of overexposure to soldering fume or dust. Refer to Section 11 for more information.
- **Indication of any immediate medical attention and special treatment needed:** Treat symptomatically.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.
- **For safety reasons unsuitable extinguishing agents:** For metal fires: Use specific agents only.
- **Special hazards arising from the substance or mixture**
Infrared radiation from flame or hot metal can ignite combustibles and flammable products.
- **Advice for firefighters**
- **Special fire fighting procedures:**
Use standard firefighting procedures and consider the hazards of other involved materials.
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information:**
Read and understand American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" before using this product.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures:**
If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

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- **Environmental precautions:**
Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
- **Methods and material for containment and cleaning up:**
Clean up spills immediately, observing precautions in the personal protective equipment in Section 8.
Avoid generating dust. Prevent product from entering any drains, sewers or water sources.
Send for recovery or disposal in suitable receptacles.
Dispose contaminated material as waste according to item 13.
- **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Precautions for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, <http://pubs.aws.org> and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.
- **Information about storage in one common storage facility:** No special requirements.
- **Further information about storage conditions:** No special requirements.
- **Specific end use(s):** No relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Exposure Guidelines:**
Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Sections 2, 3, 8, 10, and 11 for information on potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.
- **Components with limit values that require monitoring at the workplace:**
These components may be present

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102-71-6 2,2',2''-nitrioltriethanol

TLV (USA)	Long-term value: 5 mg/m ³
EL (Canada)	Long-term value: 5 mg/m ³
EV (Canada)	Long-term value: 3.1 mg/m ³ , 0.5 ppm
LMPE (Mexico)	Long-term value: 5 mg/m ³

111-42-2 2,2'-iminodiethanol

REL (USA)	Long-term value: 15 mg/m ³ , 3 ppm
TLV (USA)	Long-term value: 1* mg/m ³ , 0.2* ppm Skin; *inhalable fraction and vapor
EL (Canada)	Long-term value: 2 mg/m ³ Skin, IARC 2B
EV (Canada)	Long-term value: 2 mg/m ³
LMPE (Mexico)	Long-term value: 2 mg/m ³ A3, PIEL

13814-97-6 tin bis(tetrafluoroborate)

PEL (USA)	Long-term value: 2 mg/m ³ as Sn
REL (USA)	Long-term value: 2 mg/m ³ as Sn
TLV (USA)	Long-term value: 2 mg/m ³ as Sn
EL (Canada)	Long-term value: 2 mg/m ³ as Sn
EV (Canada)	Long-term value: 2 mg/m ³ as Sn
LMPE (Mexico)	Long-term value: 2 mg/m ³ como Sn

· **Exposure controls**· **Personal protective equipment:**· **General protective and hygienic measures:**

The usual precautionary measures for handling chemicals should be followed.

Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

Keep away from foodstuffs, beverages and feed.

Avoid contact with the eyes and skin.

Pregnant women should strictly avoid inhalation or skin contact.

· **Engineering controls:** No relevant information available.

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- **Ventilation**

Use enough ventilation, local exhaust at the the flame or heat source, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep his head out of the fumes. Keep exposure as low as possible.

- **Breathing equipment:**

Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

- **Protection of hands:**



Thermally-protective gloves.

Suitable gloves can be recommended by the glove supplier.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

- **Eye protection:**



Wear glasses or face shield with appropriate shading for soldering operations.

- **Body protection:** Protective work clothing

- **Limitation and supervision of exposure into the environment** No special requirements.

- **Risk management measures** No special requirements.

9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General information**

- **Appearance:**

Form:	Liquid
Color:	Amber colored
Odor:	Ammonia-like
Odor threshold:	Not determined.

- **pH-value:** 10-11

- **Change in condition:**

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Not determined.

- **Flash point:** >135 °C (>275 °F)

- **Flammability (solid, gaseous):** Not determined.

- **Auto-ignition temperature:** Not determined.

- **Decomposition temperature:** Not determined.

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· Auto igniting:	Product is not self-igniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure:	Not applicable.
· Density:	1.30
· Relative density:	Not determined.
· Vapor density:	Not applicable.
· Evaporation rate:	Not applicable.
· Solubility in / Miscibility with:	
Water:	Soluble.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· Other information	No relevant information available.

10 Stability and reactivity

- **Reactivity:** The product is non-reactive under normal conditions of use, storage and transport.
- **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:**
Exothermic reaction with acids.
Reacts with strong oxidizing agents.
- **Conditions to avoid:** No relevant information available.
- **Incompatible materials:** No relevant information available.
- **Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Nitrogen oxides (NO_x)
Toxic metal oxide smoke
Soldering fumes and gases cannot be classified simply. The composition and products: quantity of both are dependent upon the metal being joined, the process, procedure and filler metals and flux used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being joined (such as paint, plating, or galvanizing), the number of operators and the volume of the worker area, the quality and amount of ventilation, the position of the operator's head with respect to the fume and fumes from chemical fluxes used in some soldering operations.

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11 Toxicological information

- **Information on likely routes of exposure**

- **Ingestion:** Unlikely route of exposure.

- **Inhalation:**

Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure.

- **Skin Contact:** Heat rays can burn skin.

- **Eye Contact:** Heat rays (infrared radiation from flame) or hot metal can injure eyes.

- **Information on toxicological effects**

- **Inhalation**

Short-term (acute) overexposure to soldering fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to brazing fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

- **Acute toxicity:**

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

7646-85-7 zinc chloride

Oral	LD50	350 mg/kg (rat)
------	------	-----------------

107-21-1 ethanediol

Oral	LD50	5840 mg/kg (rat)
Dermal	LD50	9530 mg/kg (rabbit)

12125-02-9 ammonium chloride

Oral	LD50	1650 mg/kg (rat)
------	------	------------------

- **Primary irritant effect:**

- **on the skin:** Caustic effect on skin and mucous membranes.

- **on the eye:** Strong caustic effect.

- **Sensitization:** Sensitization possible through skin contact.

- **Additional toxicological information:**

Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

111-42-2	2,2'-iminodiethanol	2B
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- **NTP (National Toxicology Program):**

None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration):**

None of the ingredients are listed.

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- **Other information relevant to carcinogenicity**
Cancerous lesions have been reported in persons exposed to arc rays.
- **Acute effects (acute toxicity, irritation and corrosivity):** Causes severe skin burns and eye damage.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
Carc. 2, Repr. 1B
- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Suspected of causing cancer.
- **Reproductive toxicity:** May damage fertility or the unborn child.
- **STOT-single exposure:** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure:** May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.

12 Ecological information

- **Persistence and degradability:** No relevant information available.
- **Behavior in environmental systems**
- **Bioaccumulative potential:** No relevant information available.
- **Mobility in soil:** No relevant information available.
- **Additional ecological information**
- **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Toxic for aquatic organisms
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects:** No relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Contact manufacturer for recycling information.
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.
- **Uncleaned packagings**
- **Recommendation:** Disposal in accordance with official regulations.

14 Transport information

- **UN-Number**
 - **DOT**
- UN1760
Product is additionally classified as a MARINE POLLUTANT based on MARPOL and DOT rules. Labeling as a MARINE

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· **ADR, IMDG, IATA** POLLUTANT is not required for non-bulk single package shipments by motor vehicle, rail car or aircraft. Bulk packaging consists of a maximum capacity of greater than 450L (119 gallons) for a liquid and a maximum net mass greater than 400kg (882 pounds) for a solid.
 UN1760

· **UN proper shipping name**



Limited Quantity for packages less than 30 kg (66 lb) and inner packagings less than 5 L (1.3 gal).

· **DOT** Corrosive liquids, n.o.s. (2-(2-aminoethylamino)ethanol mixture)
 · **ADR** 1760 CORROSIVE LIQUID, N.O.S. (2-(2-aminoethylamino) ethanol mixture), ENVIRONMENTALLY HAZARDOUS
 · **IMDG** CORROSIVE LIQUID, N.O.S. (2-(2-aminoethylamino) ethanol mixture), MARINE POLLUTANT
 · **IATA** CORROSIVE LIQUID, N.O.S. (2-(2-aminoethylamino) ethanol mixture)

· **Transport hazard class(es)**

· **DOT**



· **Class** 8 Corrosive substances
 · **Label** 8

· **ADR**



· **Class** 8 (C9) Corrosive substances
 · **Label** 8

· **IMDG**



· **Class** 8 Corrosive substances

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· Label	8
· IATA	
	
· Class	8 Corrosive substances
· Label	8
· Packing group	
· DOT, ADR, IMDG, IATA	II
· Environmental hazards	Product contains environmentally hazardous substances: zinc oxide
· Marine pollutant:	Yes (DOT) Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)
· Special precautions for user	Warning: Corrosive substances
· Danger code (Kemler):	80
· EMS Number:	F-A,S-B
· Segregation groups	Acids
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· DOT	
· Quantity limitations	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L
· Remarks:	Special marking with the symbol (fish and tree).
· UN "Model Regulation"	UN 1760 CORROSIVE LIQUIDS, N.O.S. (2-(2-AMINOETHYLAMINO)ETHANOL MIXTURE), 8, II

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture

· US Federal Regulations

None of the ingredients are listed.

· SARA

· Section 302 (extremely hazardous substances):

None of the ingredients are listed.

· Section 304 (emergency release notification):

None of the ingredients are listed.

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· **Sections 311/312 (hazardous chemical threshold planning quantity in pounds):**

None of the ingredients are listed.

· **Section 313 (TRI reporting)**

111-42-2 | 2,2'-iminodiethanol

· **Section 355 (extremely hazardous substances):**

None of the ingredients are listed.

· **CERCLA Hazardous Substance List (40 CFR 302.4):**

13826-83-0 | ammonium tetrafluoroborate

111-42-2 | 2,2'-iminodiethanol

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

All ingredients are listed.

· **Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)**

None present or none present in regulated quantities.

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

None present or none present in regulated quantities.

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**

111-42-2 | 2,2'-iminodiethanol

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

None of the ingredients are listed.

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

None of the ingredients are listed.

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

None of the ingredients are listed.

· **Carcinogenic categories**

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

13826-83-0 | ammonium tetrafluoroborate | I (oral)

1314-13-2 | zinc oxide | D, I, II

16872-11-0 | fluoroboric acid | I (oral)

13826-88-5 | zinc bis(tetrafluoroborate) | I (oral)

13814-97-6 | tin bis(tetrafluoroborate) | I (oral)

· **TLV (Threshold Limit Value established by ACGIH):**

111-42-2 | 2,2'-iminodiethanol | A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health):**

None of the ingredients are listed.

· **State Right to Know Listings**

· **US. New Jersey Worker and Community Right-to-Know Act**

ammonium tetrafluoroborate

fluoroboric acid

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zinc oxide

2,2'-iminodiethanol

2-(2-aminoethylamino)ethanol

2,2',2''-nitrilotriethanol

· **US. Massachusetts RTK - Substance List**

ammonium tetrafluoroborate

fluoroboric acid

zinc oxide

2,2'-iminodiethanol

2-(2-aminoethylamino)ethanol

2,2',2''-nitrilotriethanol

· **US. Pennsylvania RTK - Hazardous Substances**

ammonium tetrafluoroborate

fluoroboric acid

zinc oxide

2,2',2''-nitrilotriethanol

2-(2-aminoethylamino)ethanol

2,2'-iminodiethanol

· **US. Rhode Island RTK**

ammonium tetrafluoroborate

fluoroboric acid

zinc oxide

2,2'-iminodiethanol

2-(2-aminoethylamino)ethanol

2,2',2''-nitrilotriethanol

· **Canada**

· **Canadian substance listings**

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

All ingredients are listed.

· **Canada Non-Domestic Substances List (NDSL)**

None of the ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%):**

111-41-1 | 2-(2-aminoethylamino)ethanol

· **Canadian Ingredient Disclosure list (limit 1%):**

102-71-6 | 2,2',2''-nitrilotriethanol

111-42-2 | 2,2'-iminodiethanol

1314-13-2 | zinc oxide

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- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

- **Date of preparation / last revision** 09/11/2015 / -
- **Abbreviations and acronyms:**
 - Met. Corr. 1: Corrosive to metals, Hazard Category 1
 - Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
 - Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
 - Carc. 2: Carcinogenicity, Hazard Category 2
 - Repr. 1B: Reproductive toxicity, Hazard Category 1B
 - STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
- **Sources**
 - Website, European Chemicals Agency ([http://http://echa.europa.eu/](http://echa.europa.eu/))
 - Website, US EPA Substance Registry Services ([http://http://ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do](http://ofmpub.epa.gov/sorinternet/registry/substreg/home/overview/home.do))
 - Website, Chemical Abstracts Registry, American Chemical Society (<https://www.cas.org>)
 - Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: ISBN: 978-0-470-07488-6
 - Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaasen, Curtis D., ed., ISBN: 978-0-07-176923-5.
 - Safety Data Sheets, Individual Manufacturers
 - SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com
- *** Data compared to the previous version altered.**
- **Disclaimer:**

We urge each end user and recipient of this SDS to study it carefully. If necessary consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product.

Harris Products Group cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for use, handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.