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controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Respiratory protection	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Skin protection	
Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to

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avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.

9. Physical and chemical properties

Physical state	: Liquid.
Color	: Magenta
Odor	: Faint odor.
Odor threshold	: Not available.
pH	: 7.5 to 9
Melting Point	: 0°C (32°F)
Initial boiling point	: Not available.
Boiling range	: Not available.
Flash point	: [Product does not sustain combustion.]
Evaporation rate	: Not available
Flammability(solid/gas)	: Not available.
Upper/lower flammability	: Not available.
Explosive limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: Not available.
Solubility	: Miscible in water.
Partition coefficient	: Not available.
Auto ignition temp	: Not available.
Viscosity	: Not available.
Oxidizing properties	: Not available.

10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of Hazardous Reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.

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Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : No specific data.

Additional guidelines : None

11. Toxicological information

Information on toxicological effects

Acute toxicity :

Product/ingredient name	Result	Species	Dose	Exposure
1-(2-hydroxyethyl)pyrrolidin-2-one	LD50 Oral	Rat	14430 mg/kg	-
1,3-Propanediol	LD50 Oral	Rat	15800 mg/kg	-

Corrosion/irritation :

Product/ingredient name	Result	Species	Score	Exposure	Observation
1-(2-hydroxyethyl)pyrrolidin-2-one	Eyes - Mild irritant	Rabbit	-	100 milligrams	-

Sensitization : Not available.

Germ cell mutagenicity : Not available.

Carcinogenicity : Not available.

Reproductive toxicity : Not available.

Specific target organ toxicity – single exposure : Not available.

Specific target organ toxicity – repeated exposure : Not available.

Aspiration hazard : Not available.

Other information : Not available.

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12. Ecological information

Ecotoxicity	: Not available.
Persistence and degradability	: Not available.
Bio accumulative potential	: Not available.
Mobility in soil	: Not available.
PBT and vPvB assessment	: Not available.
Other information	: No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal	: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
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14. Transport information

UN number	: Not regulated.
Proper shipping name	: -
Transport hazard class	: -
Packing group	: -
Environmental hazards	: No.
Special precautions	: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Bulk transport Annex II of	: Not available.

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MARPOL 73/78 and IBC code

15. Regulatory information

United States

- TSCA (USA) : All ingredients are listed on the Toxic Substances Control Act (TSCA) inventory, have been registered, or are exempt.
- SARA / EPCRA (USA) : None of the ingredients in this product has a final reportable quantity (RQ) under Emergency Planning and Community Right-to Know Act (EPCRA)- Section 302: Extremely Hazardous Substances (EHS) or notification requirements for EHS under Section 304.
- California Proposition 65 : This product contains no known materials at levels which the State of California has found to cause cancer, birth defects or other reproductive harm - California Proposition 65.

International regulations lists

- EINECS (Europe) : All ingredients are listed on the European Inventory of Existing Commercial Substances (EINECS) list, have been registered on the European List of New Chemical Substances (ELINCS), or are exempt.
- REACH Status : EU (REACH): All components of the toner formulation are registered, pre-registered or exempt under REACH. Pre-registered chemicals will be registered between 2011 and 2018.
- ENCS (Japan) : All ingredients are listed on the Japanese Existing and New Chemical Substances (ENCS) list, have been registered, or are exempt.
- AICS (Australia) : All ingredients are listed in Australian Inventory of Chemical Substances (AICS), have been registered, or are exempt.
- Philippines inventory (PICCS) : All ingredients are listed on the Philippines Inventory (PICCS) or are exempt.
- Korea inventory (KECI) : All ingredients are listed on the Korean Existing Chemicals List (ECL), have been registered, or are exempt.
- China inventory (IECSC) : All ingredients are listed on the Chinese inventory (IECSC) or are exempt.
- Canada
WHMIS (Canada) : Not controlled under WHMIS (Canada).

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DSL/NDSL : All ingredients are listed on the Canadian Domestic Substances List (DSL), have been registered on the Non-Domestic Substances List (NDSL), or are exempt.
Mexico Classification : Health: 1 Flammability: 1 Reactivity: 0

16. Other information

Revision comments : No significant revisions to health and safety information.

References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. -29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" – Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Official Mexican Standards NOM-018-STPS-2000 and NOM-004-SCT2-1994.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user.

All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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4. First-aid measures

Description of first aid measures

Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
Ingestion	: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed

Inhalation	: No known significant effects or critical hazards.
Skin contact	: No known significant effects or critical hazards.
Eye contact	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.
Chronic Effects	: No known significant effects or critical hazards.

Indication of any immediate attention and special treatment needed

: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

No specific treatment.

5. Fire-fighting measures

Flash point	: No data.
Auto-ignition temperature	: No data.
Flammable limits	: No data.
Extinguishing media	
Suitable media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable media	: None known.

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Hazardous combustion products	: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides
Specific hazards arising from the chemical	: In a fire or if heated, a pressure increase will occur and the container may burst.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautionary	: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment. If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Environmental precautions	: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Procedure for cleaning/ Absorption	
Small spill	: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Large spill	: Stop leak if without risk. Move containers from spill area.

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Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Storage

: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Occupational exposure limits : None.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

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Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
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Skin protection	
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Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

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Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with sideshields.

9. Physical and chemical properties

Physical state	: Liquid.
Color	: Yellow.
Odor	: Faint odor.
Odor threshold	: Not available.
pH	: 7.5 to 9
Melting Point	: 0°C (32°F)
Initial boiling point	: Not available.
Boiling range	: Not available.
Flash point	: [Product does not sustain combustion.]
Evaporation rate	: Not available
Flammability(solid/gas)	: Not available.
Upper/lower flammability	: Not available.
Explosive limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: Not available.
Solubility	: Miscible in water.
Partition coefficient	: Not available.
Auto ignition temp	: Not available.
Viscosity	: Not available.
Oxidizing properties	: Not available.

10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of Hazardous Reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.

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Conditions to avoid : No specific data.
 Incompatible materials : No specific data.
 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
 Hazardous polymerization : No specific data.
 Additional guidelines : None

11. Toxicological information

Information on toxicological effects

Acute toxicity :

Product/ingredient name	Result	Species	Dose	Exposure
1-(2-hydroxyethyl)pyrrolidin-2-one	LD50 Oral	Rat	14430 mg/kg	-
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Corrosion/irritation :

Product/ingredient name	Result	Species	Score	Exposure	Observation
1-(2-hydroxyethyl)pyrrolidin-2-one	Eyes - Mild irritant	Rabbit	-	100 milligrams	-

Sensitization : Not available.
 Germ cell mutagenicity : Not available.
 Carcinogenicity : Not available.
 Reproductive toxicity : Not available.
 Specific target organ toxicity – single exposure : Not available.
 Specific target organ toxicity – repeated exposure : Not available.
 Aspiration hazard : Not available.
 Other information : Not available.

12. Ecological information

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Ecotoxicity	: Not available.
Persistence and degradability	: Not available.
Bio accumulative potential	: Not available.
Mobility in soil	: Not available.
PBT and vPvB assessment	: Not available.
Other information	: No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal	: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
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14. Transport information

UN number	: Not regulated.
Proper shipping name	: -
Transport hazard class	: -
Packing group	: -
Environmental hazards	: No.
Special precautions	: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Bulk transport Annex II of MARPOL 73/78 and IBC code	: Not available.

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15. Regulatory information

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International regulations lists

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Canada

WHMIS (Canada) : Not controlled under WHMIS (Canada).

DSL/NDSL : All ingredients are listed on the Canadian Domestic Substances List (DSL), have been registered on the Non-Domestic Substances List (NDSL), or are exempt.

Mexico Classification : Health: 1 Flammability: 1 Reactivity: 0

16. Other information

Revision comments : No significant revisions to health and safety information.

References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. -29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" – Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - Official Mexican Standards NOM-018-STPS-2000 and NOM-004-SCT2-1994.

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