SAFETY DATA SHEET
Finished Product

NTE® ELECTRONICS, INC.

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Paste Flux
26-331770, 26-331930

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Brand Name	26-331770, 26-331930
Product Description:	Petroleum Based Soldering Flux
Product Code	26-331770, 26-331930
Marketer Contact Information:	NTE Electronics, Inc. 44 Farrand Street Bloomfield, NJ 07003 973-748-5089
Emergency Phone:	CHEMTREC 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Hazards Classification	Classified according to the criteria of the Globally harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and risks from Hazardous Chemicals in the Workplace.
Health Hazards	Skin Corrosion/Irritation Category 1 Serious Eye Damage/Eye Irritation Category 1
Environmental Hazards	Acute Hazards to the Aquatic Environment Category 1 Chronic Hazards to the Aquatic Environment Category 1

GHS Label Elements

Hazard Pictograms	
Single Word	Danger
Hazard Statements	Causes severe skin burns and eye damage. Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	Do not breathe dust/fume/gas/mist/vapors/spray. Wash face, hands and any exposed skin thoroughly after handling. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. IF IN SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water (or shower). Wash contaminated clothing before reuse. Specific treatment (see supplemental first aid instructions on this label). IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

SECTION 2. HAZARDS IDENTIFICATION (Cont'd)

Precautionary Statements (Cont'd)

Response (Cont'd)	Continue rinsing. Collect spillage
Storages	Store locked up.
Disposal	Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other Hazards Which Do Not Result In GHS Classification

Conclusion/Summary	Overexposure to fumes and gases from the solder and/or flux material can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and precautionary labels before using this product.

Substance(s) Formed Under the Conditions of Use

Conclusion/Summary	Fumes produced from use of this product may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles of other constituents from the solder, brazing consumable, flux material or base metal, or base metal coating not listed below.

Chemical Identity	**CAS-No.**
Carbon Dioxide	124-38-9
Carbon Monoxide	630-08-0
Nitrogen Dioxide	10102-44-0
Ozone	10028-15-6

SECTION 3. COMPOSITION / INFORMATION OF INGREDIENTS

Reportable Hazardous Ingredients Mixtures

Chemical Name	**CAS Number**	**Content in Percent (%) ***
Zinc Chloride	7646-85-7	25 - <50%
Ammonium Chloride	12125-02-9	1 - <5%

*All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments

Conclusion/Summary	The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

SECTION 4. FIRST-AID MEASURES

Ingestion	Avoid hand, clothing, food, and drink contact with fluxes, 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.
Inhalation	Move to fresh air if breathing is difficult If breathing has stopped, perform artificial respiration and obtain medical assistance at once..
Skin Contact	Remove contaminated clothing and wash skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.
Eye Contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately.

SECTION 4. FIRST-AID MEASURES (Cont'd)

Most Important Symptoms/Effects, Acute and Delayed

Symptoms	Short-term (acute) overexposure to fumes and gases from welding and allied processes 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 fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.
Hazards	The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of Immediate Medical Attention and Special Treatment Needed

Treatment	Treat symptomatically.

SECTION 5. FIRE FIGHTING MEASURES

General Fire Hazards	As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. 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.
Suitable Extinguishing Media:	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable Extinguishing Media:	Do not use water jet as an extinguisher, as this will spread the fire.
Specific Hazards Arising from the Chemical:	During fire, gases hazardous to heath may be formed.
Special Fire Fighting Procedures	Use standard firefighting procedures and consider the hazards of other involved materials.
Special Protective Equipment for Fire-Fighters	Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 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.
Methods and Materials for Containment and Cleaning Up	Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Dike far ahead of larger spill for later recovery and disposal.
Notification Procedures	Dike for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk.
Environmental Precautions	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling	Prevent abrading consumable materials or creating dust. Provide appropriate exhaust ventilation at places where fume or dust is formed. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Read and understand the manufacturer's instruction and the precautionary label on the product. 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. Do not get in eyes. Wash hands thoroughly after handling.
Conditions for Safe Storage, Including any Incompatibilities	Store in closed original container in a dry place. Store in accordance with local/regional/national regulations. Store away from incompatible materials..

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Value	Source
Zinc Chloride - Fume	TWA	1 mg/m^3	US. ACGIH Threshold Limit Values (12 2010)
	STEL	2 mg/ m^3	US. ACGIH Threshold Limit Values (12 2010)
	REL	1 mg/m^3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	2 mg/ m^3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Zinc Chloride	IDLH	50 mg/ m^3	US. NIOSH, Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Zinc Chloride - Fume	PEL	1 mg/m^3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum Chloride - Fume	TWA	10 mg/ m^3	US. ACGIH Threshold Limit Values (12 2010)
	STEL	20 mg/ m^3	US. ACGIH Threshold Limit Values (12 2010)
	REL	10 mg/ m^3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	20 mg/ m^3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Ammonium Chloride – Total Dust	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Ammonium Chloride – Respirable Fraction	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
	TWA	5 mg/ m^3	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Ammonium Chloride – Total Dust	TWA	15 mg/ m^3	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Ammonium Chloride – Respirable Fraction	PEL	5 mg/ m^3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Ammonium Chloride – Total Dust	PEL	15 mg/ m^3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Value	Source
Zinc Chloride - Fume	STEL	2 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code Schedule 1, Table 2), as amended (07 2009)
	TWA	1 mg/ m^3	Canada. Alberta OELs (Occupational Health & Safety Code Schedule 1, Table 2), as amended (07 2009)
	TWA	1 mg/ m^3	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	2 mg/m^3	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	1 mg/ m^3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	STEL	2 mg/m^3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	TWA	1 mg/ m^3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	2 mg/m^3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	8 HR ACL	1 mg/ m^3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	1 mg/ m^3	Canada. Quebec OELs (Ministry of Labor – Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	2 mg/m^3	Canada. Quebec OELs (Ministry of Labor – Regulation respecting occupational health and safety), as amended (03 2020)
Ammonium Chloride - Fume	STEL	20 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	10 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	10 mg/m^3	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	20 mg/m^3	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Occupational Exposure Limits: Canada (Cont'd)

Chemical Identity	Type	Exposure Limit Value	Source
	TWA	10 mg/m^3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	STEL	20 mg/m^3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	TWA	10 mg/m^3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	20 mg/m^3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	20 mg/m^3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	10 mg/m^3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	STEL	20 mg/m^3	Canada. Quebec OELs (Ministry of Labor – Regulation respecting occupational health and safety), as amended (09 2017)
	TWA	10 mg/m^3	Canada. Quebec OELs (Ministry of Labor – Regulation respecting occupational health and safety), as amended (09 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Value	Source
Zinc Chloride - Fume	VLE-CT	2 mg/m^3	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	1 mg/m^3	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ammonium Chloride	VLE-CT	20 mg/m^3	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	10 mg/m^3	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Additional Exposure Limits Under the Conditions of Use: US

Chemical Identity	Type	Exposure Limit Value	Source
Carbon Dioxide	TWA	5,000 ppm	US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm 9,000 mg/m^3	US. OSHA table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Additional Exposure Limits Under the Conditions of Use: US (Cont'd)

Chemical Identity	Type	Exposure Limit Value	Source
Carbon Dioxide	STEL	30,000 ppm 54,000 mg/m^3	US. NIOSH; Pocket Guide to Chemical Hazards, as amended (2005)
	REL	5,000 ppm 9,000 mg/m^3	US. NIOSH; Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	40,000 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon Monoxide	TWA	25 ppm	US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm 55mg/m^3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm 40mg/m^3	US. NIOSH; Pocket Guide to Chemical Hazards, as amended (2005)
	Ceil_Time	200 ppm 229mg/m^3	US. NIOSH; Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	1200 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen Dioxide	TWA	0.2 ppm	US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm 9 mg/m^3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm 1.8 mg/m^3	US. NIOSH; Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	20 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm 0.2 mg/m^3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm 0.2 mg/m^3	US. NIOSH; Pocket Guide to Chemical Hazards, as amended (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm	US. ACGIH Threshold Limit Values (03 2014)
	IDLH	5 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	TWA	0.20 ppm	US. ACGIH Threshold Limit Values (02 2020)

Additional Exposure Limits Under the Conditions of Use: Canada

Chemical Identity	Type	Exposure Limit Value	Source
Carbon Dioxide	STEL	30,000 ppm 54,000 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm 9,000 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Additional Exposure Limits Under the Conditions of Use: Canada (Cont'd)

Chemical Identity	Type	Exposure Limit Value	Source
Carbon Dioxide	TWA	5,000 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	STEL	30,000 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	STEL	30,000 ppm	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	5,000 ppm	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	15 MIN ACL	30,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	TWA	5,000 ppm 9,000 mg/m^3	Canada. Quebec OELs (Ministry of Labor Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	30,000 ppm 54,000 mg/m^3	Canada. Quebec OELs (Ministry of Labor Regulation respecting occupational health and safety), as amended (09 2017)
Carbon Monoxide	TWA	25 ppm 29 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	25 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Additional Exposure Limits Under the Conditions of Use: Canada (Cont'd)

Chemical Identity	Type	Exposure Limit Value	Source
Carbon Monoxide	TWA	25 ppm	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	25 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	15 MIN ACL	190 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	TWA	35 ppm 40 mg/m^3	Canada. Quebec OELs (Ministry of Labor Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	200 ppm 230 mg/m^3	Canada. Quebec OELs (Ministry of Labor Regulation respecting occupational health and safety), as amended (09 2017)
Nitrogen Dioxide	STEL	5 ppm 9.4 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	3 ppm 5.6 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	CEILING	1 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2011)
	STEL	5 ppm	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	3 ppm	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	3 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	15 MIN ACL	5 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	TWA	3 ppm 5.6 mg/m^3	Canada. Quebec OELs (Ministry of Labor Regulation respecting occupational health and safety), as amended (09 2017)
Ozone	STEL	0.3 ppm 0.6 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.1 ppm 0.2 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Additional Exposure Limits Under the Conditions of Use: Canada (Cont'd)

Chemical Identity	Type	Exposure Limit Value	Source
Ozone	TWA	0.1 ppm 0.2 mg/m^3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm	Canada. British Columbia OELs (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm 0.2 mg/m^3	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	0.3 ppm 0.6 mg/m^3	Canada. Ontario OELs (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	0.15 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	8 HR ACL	0.05 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996 Table 21), as amended (05 2009)
	CEILING	0.1 ppm 0.2 mg/m^3	Canada. Quebec OELs (Ministry of Labor Regulation respecting occupational health and safety), as amended (12 2008)
	TWA	0.05 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2014)
	TWA	0.08 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2014)
	TWA	0.10 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (03 2014)
	TWA	0.20 ppm	Canada. Manitoba OELs (reg. 217/2006, The Workplace Safety and Health Act), as amended (02 2020)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)

CONTROL PARAMETERS

Additional Exposure Limits Under the Conditions of Use: Mexico

Chemical Identity	Type	Exposure Limit Value	Source
Carbon Dioxide	VLE-CT	30,000 ppm	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Carbon Monoxide	VLE-PPT	25 ppm	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nitrogen Dioxide	VLE-PPT	0.2 ppm	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Appropriate Engineering Controls

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

Individual Protection Measures, such as Personal Protective Equipment

General Information	**Exposure Guidelines:** To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further 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 Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2008, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (Cont'd)
CONTROL PARAMETERS
Individual Protection Measures, such as Personal Protective Equipment (Cont'd)

	from 50 micrograms per cubic meter of air (50 $\mu g/m^3$) to 0.2 $\mu g/m^3$.At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessment must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.
Eye/Face Protection	Wear helmet, face shield or eye protection with filter lens shade number 2 for torch soldering and 3-4 for torch brazing, and follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process details. Shield others by providing appropriate screens and eye protection. Wear a full-face respirator, if needed. Wear safety glasses with side shields (or goggles) and a face shield.
Skin/Hand Protection	Wear protective gloves. Suitable gloves can be recommended by the glove supplier.
Protective Clothing	Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.
Respiratory Protection	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.
Hygiene Measures	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. Do not get in eyes. Observe good industrial hygiene practices.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Soldering Flux
Physical State	Paste
Form	Paste
Color	Black
Odor	No Data Available
Odor Threshold	No Data Available
pH	1.7
Melting Point/Freezing Point	No Data Available
Initial Boiling Point and Boiling Range	No Data Available.
Flash Point	No Data Available
Evaporation Rate	No Data Available.
Flammability (Solid, Gas)	No Data Available.
Flammability Limit – Upper (%)	No Data Available.
Flammability Limit – Lower (%)	No Data Available.
Explosive Limit - Upper	No Data Available
Explosive Limit - Lower	No Data Available
Vapor Pressure	No Data Available.
Vapor Density	No Data Applicable.
Density	0.9500 g/cm3
Relative Density	No Data Available
Solubility in Water	No Data Available
Solubility (Other)	No Data Available
Partition Coefficient: n-octanol/water	No Data Available.
Auto-Ignition Temperature	No Data Available.
Decomposition Temperature	No Data Available.
Viscosity	No Data Available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	The product is non-reactive under normal conditions of use, storage and transport.
Chemical Stability	Material is stable under normal conditions.
Possibility of Hazardous Reactions	None under normal conditions.
Conditions to Avoid	Avoid heat or contamination.
Incompatible Materials	Strong acids. Strong oxidizing substances. Strong bases...
Hazardous Decomposition Products	Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quality of both are dependent upon metal to which the joining or hot work is applied, the process, procedure – and where applicable – the electrode or consumable 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 welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.) In cases where an electrode or other applied material 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. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding

SECTION 10. STABILITY AND REACTIVITY (Cont'd)

	consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or bas metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

SECTION 11. TOXICOLOGICAL INFORMATION

General Information	The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also, according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on Likely Routes of Exposure

Inhalation	Inhalation is the primary route of exposure. In high concentrations, dust, vapors, fumes or mists may irritate nose, throat and mucus membranes.
Skin Contact	Moderately irritating to skin with prolonged exposure.
Eye Contact	Causes serious eye damage. HEAT RAYS (INFRARED RADIATION) from flame or hot metal can injure eyes.
Ingestion	Avoid ingestion – wear gloves and other appropriate personal protection – wash hands thoroughly following use or handling.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics

Inhalation	Short term (acute) overexposure to fumes and gases from brazing and soldering 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 fumes and gases from brazing and soldering can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Products which contain lead or cadmium have additional specific health hazards – refer to Sections 2, 8, and 11 of this SDS. Depending on specific product composition, some products may produce hazardous concentrations of airborne oxides of cadmium, lead, zinc or fluoride compounds. Use adequate ventilation and respiratory protection during use. Avoid breathing fumes. Avoid ingestion – wear gloves and other appropriate personal protection – wash hands thoroughly following use or handling. Inhalation of fumes may cause upper respiratory tract irritation and systemic poisoning with early symptoms including headache, coughing, and a metallic taste as well as metal fume fever. Chronic cadmium exposure causes lung and kidney damage. Chronic exposure to lead causes damage to lungs, liver, kidney, nervous system as well as blood and musculoskeletal disorders. Exposure to high levels of cadmium or lead dust or fume may be immediately dangerous to life or health and can cause delayed pneumonitis with fever and chest pain, and pulmonary edema resulting in death.

SECTION 11. TOXICOLOGICAL INFORMATION (Cont'd)

Information on Toxicological Effects

Acute Toxicity (List All Possible Routes of Exposure)

Oral

Product	ATEmix: 4,267.24 mg/kg
Specified Substance(s)	Zinc Chloride LD 50 (Mouse): 1,260 mg/kg Ammonium Chloride LD 50 (Rat): 1,650 mg/kg

Dermal

Product	Not classified for acute toxicity based on available data.

Inhalation

Product	Not classified for acute toxicity based on available data.

Repeated Dose Toxicity

Product	No data available.

Skin Corrosion/Irritation

Product	No data available.

Serious Eye Damage/Eye Irritation

Product	Causes serious eye damage.

Respiratory or Skin Sensitization

Respiratory Sensitization	Not classified.
Skin Sensitization	Not classified.

Carcinogenicity

Product	Not classified.

IARC monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified.

US. National Toxicity Program (NTP) Report on Carcinogens:

No carcinogenic components identified.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

No carcinogenic components identified.

Germ Cell Mutagenicity

In Vitro	Not classified.
In Vivo	Not classified.
Product Toxicity	Not classified.

Specific Target Organ Toxicity

Single Exposure	Not classified.
Repeated Exposure	Not classified.

Aspiration Hazard

Product	No data available.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics under the Conditions of Use

Additional Toxicological Information under the Conditions of Use:

Acute Toxicity

Inhalation

Specified Substance(s)	Carbon Dioxide LC Lo (Human, 5 min): 90000 ppm Carbon Monoxide LC 50 (Rat, 4 h): 1300 ppm Nitrogen Dioxide LC 50 (Rat, 4 h): 88 ppm Ozone LC Lo (Human, 30 min): 50 ppm

SECTION 11. TOXICOLOGICAL INFORMATION (Cont'd)

Acute Toxicity (Cont'd)

Other Effects

Specified Substance(s)	Carbon Dioxide	Asphyxia
	Carbon Monoxide	Carboxyhemoglobinemia
	Nitrogen Dioxide	Lower Respiratory Tract Irritation

SECTION 12. ECOLOGICAL INFORMATION

General Information	Contains a substance which causes risk of hazardous effects to the environment.

Ecotoxicity

Acute Hazards to the Aquatic Environment:

Fish

Product	Very toxic to aquatic organisms.	
Specified Substance(s)	Zinc Chloride	LC 50 (Rainbow trout, Donaldson trout (Oncorhynchus mykiss), 96 h): 1.85 – 2.55 mg/l
	Ammonium Chloride	LC 50 (Oncorhynchus mykiss, 96 h): 34.6 mg/l

Aquatic Invertebrates

Product	Very toxic to aquatic organisms.	
Specified Substance(s)	Zinc Chloride	LC 50 (Daphnia magna, 48 h): 100 µg/l
	Ammonium Chloride	EC 50 (Daphnia magna, 96 h): 139 mg/l

Chronic Hazards to the Aquatic Environment:

Fish

Product	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic Invertebrates

Product	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxicity to Aquatic Plants

Product	No data available.

Persistence and Degradability

Biodegradation

Product	No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

Product	No data available.

Mobility in Soil:

Product	No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

General Information	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.
Disposal Instructions	Discharge, treatment, or disposal may be subject to national, state, or local laws. Do not allow to enter drains, sewers or watercourses.

SECTION 13. DISPOSAL CONSIDERATIONS (Cont'd)

Contaminated Packaging	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

SECTION 14. TRANSPORT INFORMATION

	DOT Classification	**IMDG**	**IATA**	**TDG**
UN Number	UN1760	UN1760	UN1760	UN1760
UN Proper Shipping Name	Corrosive liquids, n.o.s (Zinc Chloride)	Corrosive liquids, n.o.s (Zinc Chloride)	Corrosive liquids, n.o.s (Zinc Chloride)	Corrosive liquids, n.o.s (Zinc Chloride)
Transport Hazard Class(es)	8 	8 EmS No.: ERG 154 	8 	8 
Packing Group	III	III	III	III
Limited Quantity	-	5.00L	-	-
Excepted Quantity	-	E1	E1	E1
Marine Pollutant	No	No	No	No
Cargo Aircraft Only	-	-	Allowed	-

SECTION 15. REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	None present or none present in regulated quantities.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended	None present or none present in regulated quantities.
CERCLA Hazardous Substance List (40 CFR 302.4)	**Chemical Identity** — **Reportable Quantity** Zinc Chloride — 1000 lbs. Ammonium Chloride — 5000 lbs

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard Categories	Immediate (Acute) Health Hazard Skin Corrosion or Irritation Serious Eye Damage or Eye Irritation

SARA 302 Extremely Hazardous Substance

Classification	None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Classification	None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical

Chemical Identity	**Threshold Planning Quantity**

SARA 313 (TRI Reporting)

Chemical Identity	**Reporting Threshold For Other Users**	**Reporting Threshold for Manufacturing and Processing**
Zinc Chloride	10000 lbs.	25000 lbs.

SECTION 15. REGULATORY INFORMATION (Cont'd)

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

Chemical Identity	Reportable Quantity
Zinc Chloride	1000 lbs.
Ammonium Chloride	5000 lbs.

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

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65	None present or none present in regulated quantities.

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 252149.5 et seq.)
WARNING: Cancer and reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act	**Chemical Identity** Petrolatum Zinc Chloride Ammonium Chloride
US. Massachusetts RTK – Substance List	**Chemical Identity** Zinc Chloride Ammonium Chloride
US Pennsylvania RTK – Hazardous Substances	**Chemical Identity** Zinc Chloride Ammonium Chloride
US. Rhode Island RTK	**Chemical Identity** Zinc Chloride Ammonium Chloride

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)	Not Regulated.
Export Control List (CEPA 1999, Schedule 3)	Not Regulated.

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, part 5, VOCs with Additional Reporting Requirements

NPRI PT5 Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI Not Regulated

Greenhouse Gases

Classification	Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Classification	Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not Applicable

SECTION 15. REGULATORY INFORMATION (Cont'd)

Inventory Status:

Country(s) or Region	Inventory Name	On Inventory
Australia	AICS	One or more components are not listed or are exempt from listing.
Canada	DSL Inventory List	On or in compliance with the inventory.
Canada	NDSL Inventory	One or more components are not listed or are exempt from listing.
Canada	EINECS, ELINCS or NLP	On or in compliance with the inventory.
Canada	Ontario Inventory	On or in compliance with the inventory.
China	IECSC	On or in compliance with the inventory.
Japan	ISHL Listing	One or more components are not listed or are exempt from listing.
Japan	Pharmacopoeia Listing	One or more components are not listed or are exempt from listing.
Japan	ENCS List	One or more components are not listed or are exempt from listing.
Korea	KECI	On or in compliance with the inventory.
Mexico	INSQ	On or in compliance with the inventory.
New Zealand	Inventory of Chemicals	On or in compliance with the inventory.
Philippines	PICCS	On or in compliance with the inventory.
Taiwan	Chemical Substance Inventory	On or in compliance with the inventory.
United States	TSCA Inventory	On or in compliance with the inventory.

SECTION 16. OTHER INFORMATION

Further Information

This information above is believed to be accurate and represents the best information currently available to us. However, neither NTE nor any of its subsidiaries make no warranty of merchantability or any other warranty, expressed or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes.