

A.T.S. ELECTRO-LUBE INTERNATIONAL INC.

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SAFETY DATA SHEET (Material Safety Data Sheet)
A.T.S. Electro-Lube Automatic Lubricant Dispenser

04 February 2016
ATS Type 1 Electro-Lyte

SECTION 1

IDENTIFICATION of PRODUCT and SUPPLIER

ATS Type 1 Electro-Lyte

Product name

ATS Type 1 Electro-Lyte

Micro-Luber (A.T.S. Electro-Lube international Inc.)

Mini-Luber (A.T.S. Electro-Lube international Inc.)

Budget-Luber (A.T.S. Electro-Lube international Inc.)

Jumbo-Luber (A.T.S. Electro-Lube international Inc.)

Intended use of product

This Safety Data Sheet is for the liquid ATS Type-1 Electro-Lyte.

The ATS Type 1 Electro-Lyte is a mixture of chemicals sealed inside A.T.S. Electro-Lube gas driven lubricant dispensers. In operation of the dispensers nitrogen gas is generated from the Electro-Lyte by an electrolysis reaction activated by switches in series with two 1.5 Volt alkaline batteries. In the event of puncture, overheating or tampering with the A.T.S. Electro-Lube unit, up to a few milliliters of the liquid ATS Type 1 Electro-Lyte may leak into the surroundings.

This Safety Data Sheet applies also in the A.T.S. Electro-Lube production facility where the ATS Type 1 Electro-Lyte is prepared and stored in bulk, and loaded into the A.T.S. lubers.

Manufacturer

A.T.S. Electro-Lube International Incorporated

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Emergency 'phone number

604 946 1308

Monday – Friday 7 am. to 4 pm. Eastern Canada standard time

SECTION 2	HAZARD(s) IDENTIFICATION	ATS Type 1 Electro-Lyte
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GHS classification	Acute toxicity 3.	Acute toxicity estimate (ATE) = 64 LD ₅₀ rat.
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Hazard category	3
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Signal word	Danger
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Hazard statements	H301+H311+H331. Toxic if swallowed, in contact with skin or if inhaled. H401. Toxic to aquatic life, with long lasting effects. Category 2.
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Hazard pictograms

TOXIC MIXTURE Sodium azide



Precautionary statements	<i>In the event of puncture, overheating or tampering with the A.T.S. Electro-Lube unit, up to a few milliliters of the liquid ATS Type 1 Electro-Lyte may leak into the surroundings.</i> Contact of ATS Type 1 Electro-Lyte with copper, lead, mercury, gold, silver, their alloys and compounds may form explosive metal azides. Contact of ATS Type 1 Electro-Lyte with acids liberates highly toxic hydrogen azide gas [Threshold Limit Value (TLV) = 0.1 ppm (vol)].
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Prevention

Avoid contact with skin.

P261. Avoid breathing mist and vapour.

P264. Wash exposed areas thoroughly after handling.

P270. Do not eat, drink or smoke when handling this product.

P273. Avoid release to the environment.

P280. Wear protective gloves (nitrile rubber) and eye protection (goggles).

Response

P301+P310. IF SWALLOWED. Immediately call a POISON CENTRE or doctor.

P330. IF SWALLOWED. Rinse mouth.

P302+P352. IF ON SKIN. Wash with plenty of water.

P304+P340. IF INHALED. Remove person to fresh air.

P361+P364. Take off immediately all contaminated clothing and wash it before reuse.

P391. Collect spillage.

Storage

P403. Store in a well-ventilated place.

Disposal

P501. Dispose according to local, regional, national and international regulations.

<u>SECTION 3</u>	COMPOSITION	Proprietary mixture	ATS Type 1 Electro-Lyte	
Component	CAS No.	Concentration	LD₅₀ Oral	Species
		wt%	mg/kg	
Sodium azide	26628-22-8	17	27	rat
Potassium thiocyanate	333-20-0	7	854	rat
Dimethyl sulphoxide	67-68-5	NS	14500	rat
Potassium iodide	7681-11-0	NS	4000	rat
Ethylene glycol	107-21-1	NS	4700	rat
Diethylene glycol	111-46-6	NS	12565	rat
Water	-----	NS		
Acute toxicity estimate of mixture (ATE)			64	rat

NS = Not specified. These ingredients have acute toxicity in or above the range of GHS Category 5 and may present a danger to vulnerable populations in some circumstances.

Total mass of ATS Type 1 Electro-Lyte per gas driven Electro-Lube unit.

Micro-Luber=13 gram. Mini-Luber=13 gram. Budget-Luber=27 gram. Jumbo-Luber=40 gram

<u>SECTION 4</u>	FIRST-AID MEASURES	ATS Type 1 Electro-Lyte
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Show this safety data sheet to medical personnel in attendance.

Treatment

Eye Contact.

Irrigate with water for at least 15 minutes. Get medical aid.
Remove contact lenses and continue irrigation with water for 15 minutes.

Skin Contact.

Wash thoroughly with water, then with soap and water. Get medical aid.
Remove contaminated clothing. Wash clothing before re-use.

Inhalation.

Remove to fresh air. If victim is unconscious give artificial respiration. Get medical aid.

Ingestion.

Get medical aid immediately. Call a poison centre.
Do not give anything by mouth to an unconscious person.
If victim is conscious, rinse the mouth with water.

First-aid responders

Personal protective equipment is recommended.

Symptoms

Eye contact.

Irritation, bloodshot eyes, blurred vision.

Skin contact

Irritation. Absorption through skin cause azide poisoning, which typically begins with bloodshot eyes, then leads progressively to headache, dizziness, nausea and collapse.
Vapour or mist may irritate respiratory tract. Continuous inhalation of vapour over several hours gives mild symptoms of azide poisoning. Inhalation of mist could have severe effects similar to ingestion.

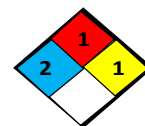
Inhalation

Immediate effects of azide poisoning. Headache, nausea, vomiting, convulsion, collapse.

Chronic effects.

Repeated small exposures to ATS Type 1 Electro-Lyte may have the chronic effects of its components, including dermatitis, headache, weakness, confusion and kidney problems.

SECTION 5	FIRE-FIGHTING MEASURES	ATS Type 1 Electro-Lyte
Extinguishing media.	Dry chemical, foam or Class D.	
Specific hazards.	<p>Temperature above 60 °C below ca. 150 °C – slow decomposition to nitrogen. Temperature above 150 °C - evaporation of water, dimethyl sulphoxide and ethylene glycol, then rapid smooth decomposition of dry material to give toxic fumes.</p> <p>Oxidative decomposition (burning) above 150 °C gives sulphur dioxide, nitrogen oxide, formaldehyde, methyl mercaptan, carbon monoxide, hydrogen cyanide, hydrogen iodide, sodium oxide and potassium oxide.</p>	
Fire-fighting procedures	In event of fire [sustained by external source] wear full protective clothing and NIOSH or EN approved self-contained breathing apparatus.	



SECTION 6	ACCIDENTAL RELEASE MEASURES	ATS Type 1 Electro-Lyte
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Protection	The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.	
Eyes	Chemical safety goggles or full face shield.	
Skin	Apron or coveralls, gloves - nitrile rubber, chemical-resistant foot-ware.	
Respiration	An air-purifying chemical cartridge respirator is adequate for most conditions. Maintain good ventilation.	
	<p>CAUTION. <i>In the event of acidification of the ATS Type 1 Electro-Lyte</i> a NIOSH or EN approved self-contained breathing apparatus is required to prevent poisoning by hydrogen azide gas [TLV = 0.1 ppm(vol)].</p>	
	In case of temperature above 100 °C [e.g. in a fire] see SECTIONS 5 and 10.	

Environmental precautions. Avoid discharge into drains, surface and ground water.

Cleanup. Wear appropriate protective equipment [see above].
 Use only non-metallic containers. Avoid contact with acids and with metals.
 Absorb in non-combustible porous medium [e.g. Vermiculite] with a mild alkali e.g. sodium bicarbonate or carbonate [i.e. baking or washing soda].
 Dispose of absorbed material as a hazardous waste, according to local regulations.

SECTION 7

HANDLING AND STORAGE

A.T.S. Electro-Lube units

Handling precautions. Do not puncture or tamper with the ATS luber units.
 In the event of a leak of the ATS Type 1 Electro-Lyte gel or liquid:
 Wear protective clothing (gloves, coveralls, goggles).
 Avoid personal contact with the Electro-Lyte.
 Avoid contact of the Electro-Lyte with acids, heavy metals and their salts.
 Absorb into a non-combustible material with a mild alkali (e.g. baking soda).
 Dispose as a hazardous waste.
 Do not eat, drink or smoke in work areas.
 Wash hands after use.
 Remove contaminated clothing and protective equipment before entering eating areas.

Storage and incompatibilities.

Store the ATS luber units in general warehouse at temperature below 40 °C.
 Store away from acids and heavy metal (copper, gold, lead, mercury, silver) salts, in case of breakage and contamination of the ATS Type 1 Electro-Lyte.
 Avoid storage with incompatible substances such as those listed in Section 10.

Special handling precautions for A.T.S. Electro-Lube units None.

SECTION 8

EXPOSURE CONTROLS/PERSONAL PROTECTION

ATS Type 1 Electro-Lyte

In its intended use the A.T.S. Electro-Lube unit does not need special exposure controls. *Puncture, overheating or tampering with the unit may release up to a few millilitres of ATS Type 1 Electro-Lyte*, with the following control parameters and protective measures.

Control parameters. Threshold limit and biological limit values of the toxic components.

Component	CAS No.	TLV (mg/m ³)	LD ₅₀ (mg/kg)
Sodium azide	26628-22-8	0.29	27
Potassium thiocyanate	333-20-0	11	854
Total Mixture (ATE)			64

Engineering controls. Maintain good ventilation (e.g. 10 turnovers/hour).
 Avoid formation of mist or dust.

Personal protection. Avoid contact with skin and eyes and breathing vapours.

Eyes. Chemical safety goggles or full face shield.

Skin. Apron or coveralls, gloves - nitrile rubber, chemical-resistant foot-ware.

Respiration. An air-purifying chemical cartridge respirator is adequate for most conditions.

CAUTION. In the event of acidification of the ATS Type 1 Electro-Lyte a NIOSH or EN approved self-contained breathing apparatus is required to prevent poisoning by toxic hydrogen azide gas [TLV = 0.1 ppm(vol)].
In case of temperature above 100 °C [e.g. a fire] see SECTIONS 5 and 10.

<u>SECTION 9</u>	PHYSICAL AND CHEMICAL PROPERTIES	ATS Type 1 Electro-Lyte
Appearance	Clear, greenish liquid.	
Odour	Faint sulphur smell	
pH	9 @ 20 °C	
Freezing point	-35 °C (approx).	
Initial boiling point	104 °C @ 100 kPa(abs)	
Boiling range	104 to 200 °C @ 100 kPa(abs)	
Flash point	Above 85 °C	
Flammability	Not flammable	
Explosion limits	Not applicable	
Vapour pressure	2 kPa @ 20 °C	
Vapour specific gravity	2 (Air = 1)	
Liquid specific gravity	1.14 (Water = 1)	
Volatiles	80 volume %	
Solubility in water	Infinite	
Evaporation rate	As for water (approximate)	
Partition coefficient (octanol/water)	$\log(K_{ow}) = -2$ @ 20 oC (approximate)	
Auto-ignition temperature	Not applicable	
Decomposition temperature	150 °C (approximate)	
Viscosity	10 cP @ 20 oC (approximate)	
<u>SECTION 10</u>	STABILITY AND REACTIVITY	ATS Type 1 Electro-Lyte
Reactivity	<p>Reacts with acids to form toxic hydrogen azide gas (TLV = 0.1 ppmV)</p> <p>Reacts with heavy metals (Cu,Pb,Hg,Ag,Au) and their salts to form explosive metal azides.</p> <p>Reacts with strong oxidants, hypochlorites, chlorinated solvents, carbon disulphide, acyl/aryl halides and metal alkoxides.</p>	
Chemical stability.	Stable under normal ambient conditions	
Hazardous reactions.	<p>Reacts with acids to form toxic hydrogen azide gas (TLV = 0.1 ppmV).</p> <p>Hydrogen azide is rapidly released at pH below about 5 at 20 °C.</p> <p>Reacts slowly with heavy metals (Cu,Pb,Hg,Ag,Au) and rapidly their salts at 20 °C to form explosive metal azides.</p> <p>Reaction with strong oxidants may produce violent gas evolution.</p> <p>Reactions with hypochlorites, chlorinated solvents, carbon disulphide, acyl/aryl halides and metal alkoxides can produce dangerously unstable products.</p>	

Conditions to avoid.	Temperatures above 100 °C Contact with acids. Contamination by heavy metals (Cu,Pb,Hg,Ag,Au) or their salts. Contact with strong oxidants, hypochlorites, chlorinated solvents, carbon disulphide, acyl/aryl halides and metal alkoxides.		
Incompatible materials.	Acids, heavy metals (Cu,Pb,Hg,Ag,Au) and their compounds, strong oxidants, chlorinated solvents, carbon disulphide, acyl/aryl halides and metal alkoxides.		
Hazardous decomposition products	Oxidative decomposition above about 150 °C gives sulphur dioxide, nitrogen oxide, formaldehyde, methyl mercaptan, carbon monoxide, hydrogen cyanide, hydrogen iodide, sodium and potassium oxides.		
Hazardous polymerization products	None		
Sensitivity to impact	None	Sensitivity to static	None
Rate of burning	None	Explosive power	None

SECTION 11**TOXOLOGICAL INFORMATION**

ATS Type 1 Electro-Lyte

The ATS Type 1 Electro-Lyte is absorbed in a sponge which is enclosed in a sealed unit. *Puncture, overheating or tampering with the unit* presents the following health hazards from gel or liquid ATS Type 1 Electro-Lyte. This toxological information applies to the components of the mixture for which data are available.

Exposure Effects.

Acute toxicity	GHS Category 3. Acute toxicity estimate of mixture (ATE): LD ₅₀ = 64 mg/kg
Skin irritation	Sodium azide, potassium iodide. May cause skin irritation.
Eye damage	Causes eye irritation.
Respiratory/skin sensitization	Irritating to skin and upper respiratory tract. Liquid mixture is easily absorbed through the skin. Prolonged or repeated exposure may cause allergic reactions.
Carcinogenicity	IARC. No component of this product present at levels greater than or equal to 0.1 wt% is identified as a probable, possible or confirmed human carcinogen.
Reproductive toxicity	Reproductive, mutagenic and/or teratogenic effects in rats and in humans have been reported from contact with sodium azide, potassium iodide, potassium thiocyanate, ethylene glycol and dimethyl sulfoxide.
Germ cell mutagenicity	
Teratogenicity	
Specific target organ (STOT)	- <i>single exposure</i> . Nerves, heart, brain, thyroid, eye, liver, kidney.
Specific target organ (STOT)	- <i>repeated exposure</i> . No data available
Aspiration hazard	No data available
Likely routes of exposure	Absorption through the skin, breathing vapour in confined spaces.

Symptoms of exposure

- Eye Contact.** Irritation, redness, blurred vision.
Bloodshot eyes are a common first symptom of azide exposure.
- Skin Contact.** Irritation. Absorption through skin by continuous contact causes azide poisoning, which typically begins with bloodshot eyes, then leads progressively to headache, dizziness, nausea and collapse.
- Inhalation.** Vapours or mist may irritate respiratory tract. Continuous inhalation of ambient vapours over several hours gives mild symptoms of azide poisoning. Inhalation of mist could have severe consequences similar to azide poisoning by ingestion.
- Ingestion.** Immediate effects of azide poisoning. Nausea, vomiting, convulsion, collapse. Probable minimum lethal adult oral dose is about 10 milliliters (ml).

Repeated small exposures to ATS Type 1 Electro-Lyte may have the chronic effects of its components, including dermatitis, headache, weakness, confusion and kidney problems.

SECTION 12

ECOLOGICAL INFORMATION

ATS Type 1 Electro-Lyte

Hazardous to the environment. GHS Category 2.

Acute toxicity Mixture acute toxicity estimate (ATE): LC₅₀ = 7 mg/L (rainbow trout, 96 hour)
Mixture acute toxicity estimate (ATE): EC₅₀ = 4 mg/L (daphnia, 24 hour)



Persistence and degradability. Persistent in the environment
 Bioaccumulation potential. Not bioaccumulative
 Mobility in soil. Expected to migrate through soil
 Biological oxygen demand at 10 ppm 1 mg/L

Hazardous to the environment. Mixture LC₅₀ = 7 mg/L GHS Category 2.
 Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.
 When released into the soil, this material is expected to leach into groundwater and not to bio-degrade.

SECTION 13

DISPOSAL CONSIDERATIONS

ATS Type 1 Electro-Lyte

Cleanup. Wear appropriate protective equipment [coverall, goggles/mask, gloves, foot-ware].
 Use non-metallic containers. Avoid contact with acid and with metals.
 Avoid discharge into drains
 Absorb in a non-combustible porous medium [e.g. Vermiculite] with a mild alkali e.g. sodium bicarbonate or carbonate (i.e. baking or washing soda).

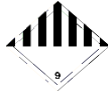
Disposal. Treat as a hazardous waste. Comply with local disposal regulations.

SECTION 14

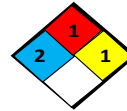
TRANSPORT INFORMATION

A.T.S Electro-Lube units

A.T.S. Electro-Lube units containing the ATS Type 1 Electro-Lyte are classified as:
“Dangerous goods in apparatus DGR-CLASS 9”.



Labelling: Dangerous goods in apparatus Class 9. UN 3363
A.T.S. Electro-Lube International Inc.
7388 Wilson Avenue
Delta B.C. Canada 'ph. 604-946-1308



Declaration: Dangerous goods in apparatus Class 9 UN 3363
Stow “away from” heavy metals and their compounds “separated from” acids.
Packed in accordance with the TDG, DOT, ICAO and IATA transport regulations.
Only classified as Dangerous Goods when shipped by Air.

Transport is in proper containment (e.g. divided fibre carton) with up to {Units per package}:

Land

Sea and Air

Passenger: Micro{100} Mini{100} Budget{100} Jumbo{100}
Cargo: Micro{100} Mini{100} Budget{100} Jumbo{100}

Micro{40} Mini{40} Budget{20} Jumbo{14}
Micro{40} Mini{40} Budget{20} Jumbo{14}

SECTION 15

REGULATORY INFORMATION

A.T.S. Electro-Lube units

A.T.S. Electro-Lube units containing ATS Type 1 Electro-Lyte are packed and transported in compliance with the Canadian Transportation, the US Department of Transport Dangerous Goods, ICAO and IATA Regulations.

The A.T.S. Electro-Lube units are UL and cUL certified as intrinsically safe for Class 1, Groups A to G.

SECTION 16

OTHER INFORMATION

Prepared by:

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Signature

Title Professor Emeritus of Chemical Engineering
Professional Engineer
Consultant to A.T.S. Electro-Lube International Inc.

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Date 25 November 2015

Sources used.

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2. Safety Information Resources Inc. MSDS Index and Toxicology Reports. www.siri.org 2007.
3. International Programme of Chemical Safety (IPCS). Chemical assessment documents variously dated from 2001-2005. www.inchem.org 2007.
4. Sigma-Aldrich Material Safety Data Sheets (MSDS), 2013. www.sigmaaldrich.com 2013.
5. MSDS forms for individual Electro-Lyte components from chemical suppliers to ATS Electro-Lube International Inc. variously dated from 2004 to 2015.
6. MSDS forms for individual Electro-Lyte components from Canadian Centre for Occupational Health and Safety, 1998.
7. "Hazardous Chemicals Data Book". G.Weiss. Ed. Noyes Data Corp. Park Ridge, 1980.
8. American Conference of Government Hygienists Inc. "Documentation of Threshold Limit Values". Fourth Edition. Cincinnati Ohio, 1980.
9. Laboratory experience and tests with ATS Type 1 Electro-Lyte.
10. Regulations. Transport Canada (2013), US DOT (2013), ICAO & IATA (2015), OSHA (2013).

CAS = Chemical Abstract Service number. **NA** = Not Applicable. **NE** = Not Established.

TLV = Threshold Limit Value. **LD50** = Lethal Dose, causing death of 50% of population.

The information contained here is provided in good faith and is believed correct. A.T.S. Electro-Lube International Inc. makes no representations as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgement in determining its appropriateness for a particular purpose.

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END of SDS