Safety Data Sheet

According to Canadian HPR - WHMIS 2015

1. Identification

1.1. Product identifier

Code: **ttpr1sp**

Product name **AXI THERM PROTECT 1 S**

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use **Antiscale and anticorrosive additive for heating system.**

Identified Uses	Industrial	Professional	Consumer
usi professionali	✓	✓	-

1.3. Details of the supplier of the safety data sheet

Company identification	Distribuited by	Manifactured by
Name	**AXIOM INDUSTRIES LIMITED**	**Foridra S.r.l.**
Full address	**3603 Burron Avenue**	**SS 16 Adriatica 17/A**
District and Country	**SASKATOON, SK S7P 0E4**	**60022 Castelfidardo (AN)**
	Canada	**Italia**
	Phone: (306) 651-1815	**Tel. 0717211048**
		Fax 0717819950
e-mail address of the competent person		
responsible for the Safety Data Sheet	**info@axiomind.com**	**ufficiotecnico@foridra.it**

1.4. Emergency telephone number

For urgent inquiries refer to **PERS 1-800-633-8253**

2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in Canada`s Hazardous Products Regulations (HPR) (WHMIS 2015). The product thus requires a safety datasheet.
Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Classification and Hazard Statement

Hazard pictograms:

Pressurised gas — Contains gas under pressure; may explode if heated.

Signal words:	Warning
Hazard statements:	
H280	Contains gas under pressure; may explode if heated.
Precautionary statements:	--
Response:	--
Storage:	
P410+P403	Protect from sunlight. Store in a well-ventilated place.
Disposal:	--

2.2. Other hazards

Information not available

3. Composition/information on ingredients

3.2. Mixtures

Contains:

Identification	**x = Conc. % (w/w)**	**Classification:**
SODIUM MOLYBDATE EC 231-551-7 CAS 7631-95-0 REACH Reg. 01-2119489495-21-XXXX	4.95	Eye irritation, category 2 H319, Skin irritation, category 2 H315, Specific target organ toxicity - single exposure, category 3 H335

The full wording of hazard (H) phrases is given in section 16 of the sheet.

The product is an aerosol containing propellants. For the purposes of calculation of the health hazards, propellants are not considered (unless they have health hazards). The percentages indicated are inclusive of the propellants.

Percentage of propellants: 1.00 %

4. First-aid measures

4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.

SKIN: Remove contaminated clothing. Wash immediately with plenty of water. If irritation persists, get medical advice/attention. Wash contaminated clothing before using it again.
INHALATION: Remove to open air. In the event of breathing difficulties, get medical advice/attention immediately.
INGESTION: Get medical advice/attention. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person, unless authorised by a doctor.

4.2. Most important symptoms and effects, both acute and delayed

Specific information on symptoms and effects caused by the product are unknown.

4.3. Indication of any immediate medical attention and special treatment needed

Information not available

5. Fire-fighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT
The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.
UNSUITABLE EXTINGUISHING EQUIPMENT
None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE
If overheated, aerosol cans can deform, explode and be propelled considerable distances. Put a protective helmet on before approaching the fire. Do not breathe combustion products.

5.3. Advice for firefighters

GENERAL INFORMATION
Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS
Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard.
Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

7. Handling and storage

7.1. Precautions for safe handling

Avoid bunching of electrostatic charges. Do not spray on flames or incandescent bodies. Vapours may catch fire and an explosion may occur; vapour accumulation is therefore to be avoided by leaving windows and doors open and ensuring good cross ventilation. Do not eat, drink or smoke during use. Do not breathe spray.

7.2. Conditions for safe storage, including any incompatibilities

Store in a place where adequate ventilation is ensured, away from direct sunlight at a temperature below 50°C / 122°F, away from any combustion sources.

7.3. Specific end use(s)

Information not available

8. Exposure controls/personal protection

8.1. Control parameters

Regulatory References:

ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81

SODIUM MOLYBDATE

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations	
		mg/m3	ppm	mg/m3	ppm		
VLEP	ITA	10				INHAL	estratto da banca dati GESTIS
VLEP	ITA	3				RESP	estratto da banca dati GESTIS

Predicted no-effect concentration - PNEC		
Normal value in fresh water	12,7	mg/l
Normal value in marine water	1,9	mg/l
Normal value for fresh water sediment	22,6	g/kg
Normal value for marine water sediment	1,98	g/kg
Normal value of STP microorganisms	21,7	mg/l
Normal value for the terrestrial compartment	11,8	mg/kg

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic

Inhalation	5,0 mg/m3 8h	11,17 mg/m3

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified ; LOW = low hazard ; MED = medium hazard ; HIGH = high hazard.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

HAND PROTECTION
None required.

SKIN PROTECTION
Wear category I professional long-sleeved overalls and safety footwear. Wash body with soap and water after removing protective clothing.

EYE PROTECTION
Wear airtight protective goggles (OSHA 29 CFR 1910.133, CSA Standard CAN/CSA-Z94.3-92).

RESPIRATORY PROTECTION
If the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, a mask with a NIOSH certified combined filter should be worn (NIOSH 42 CFR 84, OSHA 29 CFR 1910.134, CSA Standard Z94.4-02).
Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.

ENVIRONMENTAL EXPOSURE CONTROLS
The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	liquid	
Colour	Pale yellow	
Odour	mild	
Odour threshold	not available	
pH	8.4	
Melting point / freezing point	not available	
Initial boiling point	100 °C (212 °F)	
Boiling range	not available	
Flash point	180 °C	
Evaporation rate	not available	
Flammability	not available	
Lower inflammability limit	not available	
Upper inflammability limit	not available	

Lower explosive limit	not available
Upper explosive limit	not available
Vapour pressure	23 hPa
Vapour density	not available
Relative density	1.08
Solubility	soluble in water
Partition coefficient: n-octanol/water	not available
Auto-ignition temperature	305 °C
Decomposition temperature	not available
Viscosity	not available
Explosive properties	not applicable
Oxidising properties	not available

9.2. Other information

Information not available

10. Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

10.4. Conditions to avoid

Avoid overheating.

10.5. Incompatible materials

Strong reducing or oxidising agents, strong acids or alkalis, hot material.

10.6. Hazardous decomposition products

Information not available

11. Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.
It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

SODIUM MOLYBDATE Nota 4: Baldrick, P. & Healing, G. (1990). Acute oral toxicity to rats of sodium molybdate. Testing laboratory: Huntingdon Research Centre Ltd., P. O. Box 2, Huntingdon, Cambridgeshire, PE18 6ES, England. Report no.: 90934D/IMA 1/AC. Owner: International Molybdenum Association, UK. Report date: 1990-11-02.
Nota 5: Baldrick, P. & Healing, G. (1990). Acute dermal toxicity to rats of sodium molybdate. Testing laboratory: Huntingdon Research Centre Ltd., P. O. Box 2, Huntingdon, Cambridgeshire, PE18 6ES, England. Report no.: 90800D/IMA 2/AC. Owner: International Molybdenum Association, UK. Report date: 1990-11-06.
Nota 6: Jackson, G.C. et al. (1991). Sodium molybdate acute inhalation toxicity study in rats 4-hour exposure. Testing laboratory: Huntingdon Research Centre Ltd., P.O. Box 2, Huntingdon, Cambridgeshire, PE18 6ES, England. Report no.: IMA 7/901486. Owner: International Molybdenum Association, UK. Report date: 1991-04-08.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

SODIUM MOLYBDATE Molybdenum is an essential element. Sodium molybdate consumed dissolves and mainly exists in the form of molybdate ion (moO42-).
Absorption by ingestion: rapid and almost complete absorption through the digestive system.
Absorption by inhalation: well absorbed based on animal data. Absorption of the human being depends on the particle size, deposit / released quantity.
Skin absorption: mild to negligible.
Metabolism: no metabolism. Molybdenum compounds rapidly transform into molybdate anions (MoO42-) al moment of dissolution.
Excretion: rapidly eliminated from plasma mainly via urine (> 80%) and faeces (<10%).

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available
ACUTE TOXICITY
SODIO MOLIBDATO

LD50 (Oral):	2733 mg/kg ratto [nota 4]
LD50 (Dermal):	2000 mg/kg ratto [nota 5]
LC50 (Inhalation mists/powders):	1.93 mg/l/4h ratto [nota 6]

SKIN CORROSION / IRRITATION

Does not meet the classification criteria for this hazard class

SERIOUS EYE DAMAGE / IRRITATION

Does not meet the classification criteria for this hazard class

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

Carcinogenicity Assessment:

REPRODUCTIVE TOXICITY

Does not meet the classification criteria for this hazard class

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

12. Ecological information

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation.

SODIUM MOLYBDATE
1) Reliable results of acute aquatic toxicity tests: (Tests carried out with sodium molybdate; UV spectra of aqueous solutions of sodium molybdate dihydrate have shown that the only dissolved molybdenum species, coming directly from sodium molybdate dihydrate, is molybdate ; the critical values for classification are also expressed in mg Na2MoO4 - 2H2O)
Note 1: Oncorhynchus mykiss (fresh water) [note: Huntingdon Research Center, 1994a. The acute toxicity of Sodium molybdate dihydrate to rainbow trout (Oncorhynchus mykiss). Testing Laboratory: Huntington Research Center ltd. Report no .: IMA 13 (b) / 920163. Owner: international Molybdenum Association, 280 Earls Court, London, SW5 9AS, England. Report date: 1994-06-09
Note 2: Pseudokirchneriella subcapitata (algae) De Schamphelaere KAC, Janssen CR (2008). MOLYTOX -
Ecotoxicity of molybdate ion (MoO4 (2-)) to the freshwater green alga Pseudokirchneriella subcapitata. Final report, prepared for the International Molybdenum Association. Testing laboratory: Laboratory of Enviromental Toxicology and Acquatic Ecology. Owner: international Molybdenum Association
Note 3: Rodriguez PH (2008). Sodium Molybdate: Toxicity to Pseudokirchneriella subcapitata, comparative testing using CIMM and University of Gent Algae and OECD media. Final Report to the International Molybdenum Association. Testing laboratory: Chilean Mining and Metallurgy Research Center. Owner: International Molybdenum Association. Report date: 2008-05-01

12.1. Toxicity

SODIUM MOLYBDATE

LC50 - for Fish	7800 mg/l/96h Oncorhynchus mykiss (acque dolci) [nota 1]
EC50 - for Algae / Aquatic Plants	333.1 mg/l/72h ErC (riduzione di crescita) valore medio su Pseudokirchneriella subcapitata [nota 2] [nota 3]

12.2. Persistence and degradability

SODIUM MOLYBDATE
Sodium Molybdate - Sodium Molybdate - when released into the environment - dissolves rapidly and remains present as molybdate species under normal environmental conditions

SODIO MOLIBDATO

Rapidly degradable

12.3. Bioaccumulative potential

SODIUM MOLYBDATE
The FBC (bioconcentration factor) / FBA (bioaccumulation factor) data available for the aquatic environment show a distinct inverse relationship with exposure concentration. This result proves what molybdenum is homeostatically controlled by these organisms and up to the order of milligrams of exposure. The information available on the transfer of molybdenum into the food chain indicate that molybdenum does not biomagnify in the food chain aquatic. Although it is not homeostatically controlled in terrestrial plants and invertebrates, molybdenum does not concentrate in large quantities in the soil for plants or in the soil for invertebrates. There is no significant increase in concentration in the feeding of mammals or birds. It is concluded that biomagnification is not significant in the terrestrial food chain.

12.4. Mobility in soil

SODIUM MOLYBDATE
The molybdate from sodium molybdate dihydrate is soluble in water and with its relatively low Kd value, the ionymolybdates glide through normal soil and are mobile in sediments. Typical values, log Kd = 3.25 and 2.94, were determined for sediment and soil respectively

12.5. Results of PBT and vPvB assessment

SODIUM MOLYBDATE
The PBT and vPvB criteria of annex XIII of the REACH Regulation do not apply to inorganic substances, such as molybdate sodium. Consequently, a PBT and vPvB assessment is not required.On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

12.6. Endocrine disrupting properties

SODIUM MOLYBDATE
Molybdate derived from sodium molybdate dihydrate may contribute to the occurrence of molybdenosis (which is a deficiency of copper induced by molybdenum) on ruminants such as cattle, deer and sheep. The level and bioavailability of copper in the diet animal are essential factors for the onset of molybdenosis. The minimum Cu: Mo mass ratio threshold in the diet recommended to prevent molybdenum is 1.30, i.e. there should be 30% more copper than molybdenum in the diet (note: mass ratio, not molar ratio). The Cu and Mo content in the diet can be monitored, and if the ratio is <1.3 then provide additional amounts of copper such that food enriched in copper sulphate or salt blocks enriched in copper sulphate for ruminants, to be used ad libitum. If there are ruminants in the vicinity of the site production identified the direct and indirect sources of air emission and prepare the measures to minimize the emissions. With an animal health monitoring program (eg blood test for copper) to verify that the measures are effective. Sodium molybdate is not expected to contribute to ozone depletion, formation ozone, global warming or acidification. Sodium molybdate is believed to be neutral to the environment.
Other adverse effects:
Otherwise, a lack of molybdenum in the diet of the human population can increase the incidence of gastrointestinal or esophageal cancer.

12.7. Other adverse effects

Information not available

13. Disposal considerations

13.1. Waste treatment methods
Reuse, when possible. Neat product residues should be considered special non-hazardous waste.
Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING
Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

14. Transport information

14.1. UN number

ADR / RID, IMDG, IATA: UN 1950

14.2. UN proper shipping name

ADR / RID: AEROSOLS, NON-FLAMMABLE
IMDG: AEROSOLS, NON-FLAMMABLE
IATA: AEROSOLS, NON-FLAMMABLE

14.3. Transport hazard class(es)

ADR / RID: Class: 2 Label: 2.2
IMDG: Class: 2 Label: 2.2
IATA: Class: 2 Label: 2.2

14.4. Packing group

ADR / RID, IMDG, IATA: -

14.5. Environmental hazards

ADR / RID: NO
IMDG: NO
IATA: NO

14.6. Special precautions for user

ADR / RID:	HIN - Kemler: --	Limited Quantities: 1 L	Tunnel restriction code: (E)
	Special provision: 190, 327, 344, 625		
IMDG:	EMS: F-D, S-U	Limited Quantities: 1 L	
IATA:	Cargo:	Maximum quantity: 150 Kg	Packaging instructions: 203
	Passengers:	Maximum quantity: 75 Kg	Packaging instructions: 203
	Special provision:	A98, A145, A167, A802	

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Information not relevant

15. Regulatory information

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

Substances subject to the Rotterdam Convention:

None

Canadian Regulatory Information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR).

Safety Data Sheet according to WHMIS 2015.

Inventory Status of the contained substance/s.

16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

H280	Contains gas under pressure; may explode if heated.
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H335	May cause respiratory irritation.

LEGEND:
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CLP: Regulation (EC) 1272/2008
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PEL: Predicted exposure level
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- WHMIS: Workplace Hazardous Materials Information System.

GENERAL BIBLIOGRAPHY:
- GHS rev. 5
- The Merck Index. 10th Edition
- Handling Chemical Safety
- Niosh - Registry of Toxic Effects of Chemical Substances
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy
- Hazard Products Regulation (HPR)
- WHMIS 2015
- ONTARIO R.R.O. 1990, Regulation 883 (version July 2016)
- IARC website
- NTP. 2011. Report on Carcinogens, 12th Edition.
- OSHA website
- Cal/OSHA website
- California Safe Drinking Water and Toxic Enforcement Act

Note for users:
The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.
This document must not be regarded as a guarantee on any specific product property.
The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.
Provide appointed staff with adequate training on how to use chemical products.
CALCULATION METHODS FOR CLASSIFICATION
Product classification derives from criteria established by the Canada`s Hazardous Products Regulations (HPR) (WHMIS 2015), unless determined otherwise in Section 11 and 12. The data for evaluation of chemical-physical properties are reported in section 9.

Changes to previous review:
The following sections were modified:
01 / 02.