

SAFETY DATA SHEET RAMAPET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product Name	RAMAPET
Product Identification Name	N1(S), N180, R1, R180(S), R180, R182(C), R182(C) PlantPET, P184, S184, L1, W170, W176 and AH62
Name REACH	Polyethylene Terephthalate (Copolyester)
CAS number	Homopolymer 25038 - 59 - 9, Copolymer 24938 - 04 - 03
EC number	N/A
REACH number	N/A
Molecular Formula	(C ₁₀ H ₈ O ₄) _n

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

Polyethylene terephthalate (PET) is an intermediate plastic used for food and non - food contact packaging, bottles, films and fibers.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:	Indorama Ventures Europe BV Markweg 201, 3198 NB Europoort Rotterdam, The Netherlands
	UAB "Orion Global Pet" Metalo 16, LT-94102 Klaipeda Lithuania
	Indorama Ventures Poland Sp. z o.o. ul. Krzywa Góra 19, 87-805 Włocławek, Poland
	Indorama Ventures Química S.L.U. Poligono Industrial Guadarranque, S/N, 11360, San Roque, Cadiz, Spain.

1.4 Emergency telephone number 24h

For emergency health, safety and environmental information telephone:

Rotterdam	+31 181285472
Klaipeda	+37 046 300749 extension 273
Włocławek	+48 54 416 64 29
San Roque	+34 956671070

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Polyethylene terephthalate (PET) is a polymer is not classified as hazardous according to Regulation (EC) 1272/2008 (CLP).

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2.2 Label elements

Labeling not required according to Regulation (EC) No 1272/2008 (CLP).

2.3 Other hazards

PET is not categorized as persistent, bio-accumulative or toxic (PBT) according to Regulation (EC) No. 1907/2006, Annex XIII.

PET is not very persistent or very bio-accumulative (vPvB) according to Regulation (EC) No. 1907/2006, Annex XIII.

SECTION 3: Composition/information on ingredients

Substance Mono-constituent substance
Mixtures Not applicable

Product name	CAS No	REACH No	Content	Classification according to Regulation (EC) No. 1272/2008 (CLP)
Polyethylene terephthalate (PET)	25038-59-9	N/A	100 %	Not classified as hazardous

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

SECTION 4: First aid measures

4.1 Description of first aid measures

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.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

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.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

No known significant effects or critical hazards but if necessary treat symptomatically.

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4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable: In case of fire, use water spray (fog), foam, dry chemical or CO₂.

Not suitable: Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture: No specific fire or explosion hazard.

Hazardous thermal decomposition products: Decomposition products may include the following materials: carbon dioxide, carbon monoxide.

5.3 Advice for firefighters

Special protective actions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Fire-fighting measures

Use self-contained breathing apparatus if respirable dust and/or fumes occur. Use water spray to cool and disperse vapors and protect personnel.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

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.

For emergency responders

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 non-emergency personnel".

6.2 Environmental

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).

6.3 Methods and materials for containment and cleaning up

Small spill: Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill: Move containers from spill area. Prevent entry into sewers, water courses, basements or

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confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other

See Section 1 for emergency contact information.

See Section 8 for information on appropriate personal protective equipment.

See Section 13 for additional waste treatment information.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

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

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.

7.2 Conditions for safe storage, including any incompatibilities

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.

7.3 Specific end use(s)

Recommendations: Not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits: No exposure limit value known.

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

During processing of PET small amount of aldehydes are generated. The most well-known is acetaldehyde,

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AA (CAS 75-07-0), also small amounts of formaldehyde, FA (CAS 50-00-0) are formed. In its opinion, published in September 2016, the Committee for Risk Assessment (RAC) adopted a harmonized classification and labelling at EU level for acetaldehyde; ethanal, EC Number: 200-836-8, CAS Number: 75-07-0, as in their view, there is sufficient data to categorize acetaldehyde as carcinogen 1B. Customers are advised to check exposure to workers and apply current workplace exposure limits. There are workplace exposure limits for aldehydes and customers are advised to ensure they use the appropriate measures to their workplace. Customers should continue to monitor and record exposures on a regular basis and in addition take measures on ventilation if required. Exposure limits can be subjected to change following EU and National law. A considered risk assessment might be required when processing PET

Derived effect levels: No DELs available.

Predicted effect concentrations: No PECs available.

8.2 Exposure controls

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

Individual protection measures

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.

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 side-shields. Recommended: Goggles, face shield or other full-face protection should be worn if there is a risk of direct exposure to aerosols or splashes or when material is handled hot.

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: Wear work clothing with long sleeves. Protective/insulated gloves.

Other skin protection: Suitable protective footwear.

Respiratory protection: Dust-protection mask.

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.

SECTION 9: Physical and chemical properties

Physical state	Solid under normal conditions, cylindrical and spherical pellets.
Color	White in solid state and transparent in precursor state.
Odor	Odorless.
pH	Not available.
Melting point/freezing point	240 to 265°C

Initial boiling point and Not available

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boiling range	
Flammability (solid, gas)	Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat. Non-flammable in the presence of the following materials or conditions: shocks and mechanical impacts, oxidizing materials and reducing materials.
Burning time	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Density	1.39 – 1.4 g/cm ³
Solubility(ies)	Partially soluble in the following materials: acetone. Insoluble in the following materials: cold water and hot water.
Auto-ignition temperature	>500°C
Decomposition temperature	Not available.
Viscosity (intrinsic)	0.55 – 0.85 dl/g
Explosive properties	Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts, oxidizing materials and reducing materials.
Oxidizing properties	Not available.
<u>PET Dust Ignition Sensitivity & Explosion Severity:</u>	
MIE (minimum ignition Energy)	100 -200 mJ
MIT (minimum ignition temperature)	490°C
Explosion Indices	P _{max} = 6.2 bar @ 750 g.m-3 (dP/dt) _{max} = 241 bar.s-1 @ 4000 g.m-3 K _{st} value = 65 bar.m.s-1 St class = 1
Minimum Explosive Concentration	250 g.m-3

SECTION 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.

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

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SECTION 11: Toxicological information

Information on toxicological effects: Not available.
Skin irritation/corrosion: Not classified.
Eye damage/ irritation: Not classified.
Skin sensitization: Not classified.
Mutagenicity: Not classified.
Carcinogenicity: Not available.
Reproductive toxicity: No known significant effects or critical hazards.
Teratogenicity: Not applicable.
Specific target organ toxicity (single exposure): Not available.
Specific target organ toxicity (repeated exposure): Not available.
Aspiration hazard: Not available.

SECTION 12: Ecological information

Toxicity: Not available.
Persistence and degradability: Not available.
Bioaccumulative potential: Not available.
Mobility in soil: Not available.
Results of PBT and vPvB assessment: Not applicable. The substance is not PBT and vPvB.
Other adverse effects: Not applicable.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Waste treatment methods

Product

Methods of 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.

Hazardous waste: Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.

Packaging

Methods of disposal: The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions: 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

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soil, waterways, drains and sewers.

SECTION 14: Transport information

UN number: Not hazardous for transport.

UN proper shipping name: Not hazardous for transport.

Transport hazard class(es): Not hazardous for transport according ADR/RID, AND, IMDG, IATA.

Packing group: Not hazardous for transport according ADR/RID, AND, IMDG, IATA.

Packing group Environmental hazards: Not hazardous for transport according ADR/RID, AND, IMDG, IATA.

Special precautions for user: 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.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
EU Regulation (EC) No. 1907/2006 (REACH).

International Convention for the Prevention of Pollution From Ships, MARPOL 73 in its amended form.

International Maritime Dangerous Goods (Code IMDG) according to chapter VII of the International Convention for the Safety of Life at Sea, 1974.

Annex XIV - List of substances subject to authorization: None of the components are listed.

Substances of very high concern (SVHC) according to Article 59(10) the REACH Regulation: None of the components are listed.

Other EU regulations:

Seveso II Directive: Not controlled under the Seveso II Directive.

Chemical Weapon Convention List Schedules I, II & III Chemicals: Not listed.

Montreal Protocol (Annexes A, B, C, E): Not listed.

Stockholm Convention on Persistent Organic Pollutants: Not listed.

Rotterdam Convention on Prior Inform Consent (PIC): Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals: Not listed.

International lists:

National inventory

Australia: This material is listed or exempted.

Canada: This material is listed or exempted.

China: This material is listed or exempted.

Japan: This material is listed or exempted.

Malaysia: Not determined.

New Zealand: This material is listed or exempted.

Philippines: This material is listed or exempted.

Republic of Korea: This material is listed or exempted.

Taiwan: This material is listed or exempted.

United States: This material is listed or exempted.

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15.2 Chemical Safety Assessment: Not applicable

SECTION 16: Other information

Abbreviations and acronyms:

ATE = Acute Toxicity Estimate

CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No.1272/2008]

DNEL = Derived No Effect Level

EUH statement = CLP-specific Hazard statement

PNEC = Predicted No Effect Concentration

RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified as hazardous. Handle in accordance with good industrial hygiene and safety practice.

Revision date January 2021

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information. Users should make independent determinations of suitability and completeness of information from all sources to assume proper use and disposal of these materials, the safety and health of employees and customers and protection of the environment.

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1 PRODUCT AND SUPPLIER IDENTIFICATION

Product Name: Aluminum - shot, pellets, wire, rod, foil, sheet, target
Formula: Al
Supplier: Zhejiang Zhongjin Aluminum Co., Ltd
Cidong Industrial Zone, Cixi, 315300
Zhejiang, China
Telephone: 86-574-58583332
Fax: 86-574-58583301
Email: zhongjinalvye@zhongjinalu.com
Emergency: 86-574-58583314
Recommended Uses: Scientific Research

2 HAZARDS IDENTIFICATION

GHS Classification (29 CFR 1910.1200): Not classified as hazardous
GHS Label Elements:
Signal Word: N/A
Hazard Statements: N/A
Precautionary Statements: N/A

3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient: Aluminum
CAS#: 7429-90-5
%: 100
EC#: 231-072-3

4 FIRST AID MEASURES

General Measures: Under normal handling and use, exposure to solid forms of this material present few health hazards. Subsequent operations such as grinding, melting or welding may produce potentially hazardous dust or fumes which can be inhaled or come in contact with the skin or eyes.

INHALATION: Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

INGESTION: Rinse mouth with water. Do not induce vomiting. Seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN: Remove contaminated clothing, brush material off skin, wash affected area with soap and water. Seek medical attention if symptoms develop or persist.

EYES: Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms develop or persist.

Most Important Symptoms/Effects, Acute and Delayed: Inhalation of aluminum dust or powder may cause irritation to the respiratory system. See section 11 for more information.

Indication of Immediate Medical Attention and Special Treatment: No other relevant information available.

5 **FIREFIGHTING MEASURES**

Extinguishing Media: Use Class D or other metal extinguishing agent on fines, dusts or molten metal. Use coarse water spray on chips and turnings.

Unsuitable Extinguishing Media: Do not use water in fighting fires around molten metal. Do not use halogenated extinguishing agents on small chips/fines.

Specific Hazards Arising from the Material: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings and dust from processing may be readily ignitable. May emit toxic metal oxide fumes under fire conditions.

Special Protective Equipment and Precautions for Firefighters: Full face, self-contained breathing apparatus and full protective clothing when necessary.

6 **ACCIDENTAL RELEASE MEASURES**

Personal Precautions, Protective Equipment, and Emergency Procedures: Wear appropriate respiratory and protective equipment specified in section 8. Avoid dust formation.

Methods and Materials for Containment and Cleaning Up: Sweep or scoop up. Place in properly labeled closed containers. Scrap can be collected for recycling.

Environmental Precautions: Do not allow to enter drains or to be released to the environment.

7 **HANDLING AND STORAGE**

Precautions for Safe Handling: Keep material dry. Avoid creating dust. Avoid breathing dust or fumes. Provide adequate ventilation if dusts are created. See section 8 for information on personal protection equipment.

Conditions for Safe Storage: Keep material dry. Store in a sealed container. Store in a cool, dry area. Protect from moisture, acids and strong oxidizers. See section 10 for more information on incompatible materials.

8 **EXPOSURE CONTROLS AND PERSONAL PROTECTION**

Exposure Limits: Aluminum

OSHA/PEL: 15 mg/m³ total dust, 5 mg/m³ respirable fraction

ACGIH/TLV: 1 mg/m³ respirable

Engineering Controls: Whenever possible the use of local exhaust ventilation or other engineering

controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

Respiratory Protection: If permissible levels are exceeded, use NIOSH approved dust respirator.

Eye Protection: Safety glasses

Skin Protection: Wear impermeable gloves, protective work clothing as necessary.

9 **PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:

Form: Solid in various forms

Color: Silvery metallic

Odor: Odorless

Odor Threshold: Not determined

pH: N/A

Melting Point: 660 °C

Boiling Point: 2467 °C

Flash Point: N/A

Evaporation Rate: N/A

Flammability: N/A

Upper Flammable Limit: N/A

Lower Flammable Limit: N/A

Vapor Pressure: 1 mm Hg @ 1284

Vapor Density: N/A

Relative Density (Specific Gravity): 2.702 g/cc

Solubility in H₂O: Insoluble

Partition Coefficient (n-octanol/water): Not determined

Autoignition Temperature: No data

Decomposition Temperature: No data

Viscosity: N/A

10 **STABILITY AND REACTIVITY**

Reactivity: No data

Chemical Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: In the form of chips, fines or dust aluminum may react with water, acids, or alkalis to generate flammable hydrogen gas. Molten aluminum may have a violent reaction with water, strong oxidizers or metal oxides. Halogenated carbons, including halogenated fire extinguishing agents may react violently with finely divided or molten aluminum.

Conditions to Avoid: Avoid creating or accumulating fines or dusts.

Incompatible Materials: Oxidizing agents, acids, alkalis, halogenated compounds, iron oxide.

Reactions are more likely to occur when the metal is molten or in a finely divided state.

Hazardous Decomposition Products: Aluminum oxide fume, hydrogen.

11 TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, skin, eyes. Product as shipped does not present an inhalation hazard; however subsequent operations may create dusts or fumes which could be inhaled.

Symptoms of Exposure: May cause irritation if dusts or fumes are inhaled or swallowed. Fines/dusts may irritate skin and eyes.

Acute and Chronic Effects: There is strong evidence that aluminum (compounds) can cause irritation following exposure via either inhalation or injection. Modest evidence of an effect exists for reproductive toxicity following oral exposure, for neurological toxicity following either oral or injection exposure, and for bone toxicity following injection exposure. All other effects were judged to be supported by either limited evidence or no clear evidence at all.¹

Acute Toxicity: No data

Carcinogenicity: NTP: Not identified as carcinogenic IARC: Not identified as carcinogenic

To the best of our knowledge the chemical, physical and toxicological characteristics of the substance are not fully known.

12 ECOLOGICAL INFORMATION

Ecotoxicity: No data

Persistence and Degradability: No data

Bioaccumulative Potential: No data

Mobility in Soil: No data

Other Adverse Effects: Do not allow material to be released to the environment without proper governmental permits. No further relevant information available.

13 DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Product: Dispose of in accordance with Federal, State and Local regulations.

Packaging: Dispose of in accordance with Federal, State and Local regulations.

14 TRANSPORT INFORMATION

DOT/ADR/IATA/IMDG Regulations: Not regulated

UN Number: N/A

UN Proper Shipping Name: N/A

Transport Hazard Class: N/A

Packing Group: N/A

Marine Pollutant: No

Special Precautions: N/A

15 **REGULATORY INFORMATION**

TSCA Listed: All components are listed.

Regulation (EC) No 1272/2008 (CLP): N/A

Canada WHMIS Classification (CPR, SOR/88-66): N/A

HMIS Ratings: Health: 0 Flammability: 0 Reactivity: 0

NFPA Ratings: Health: 0 Flammability: 0 Reactivity: 0

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

16 **OTHER INFORMATION**

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. Sibbo Aluminum shall not be held liable for any damages resulting from handling or from contact with the above product.

Prepared by: Sibbo Aluminum

Revised/Reviewed: August 2014