Safety Data Sheet

Issue Date: 09-Oct-2013 **Revision Date**: 01-July-2020 **Version** 2

1. IDENTIFICATION

Product Identifier

Product Name Nuon Lithium Manganese Dioxide (Cylindrical)

Other means of identification

SDS # GLI-002

Synonyms Lithium (CR) Primary Battery (non-rechargeable).

Recommended use of the chemical and restrictions on use

Recommended Use Battery.

Details of the supplier of the safety data sheet

Distributor
GlobTek, Inc.
186 Veterans Drive, Northvale, NJ 07647 USA +1-201-784-1000

Emergency Telephone Number

Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Emergency Overview Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees. Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard, hence an SDS is not required. However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product.

Appearance Geometric, solid object **Physical state** Solid

Classification

The chemicals listed in section 3 are contained in a sealed container. Risk of exposure only occurs if battery is mechanically, thermally, or electrically abused.

Other hazards

Harmful to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Lithium (CR) Primary Battery (non-rechargeable).

Chemical Name	CAS No	Weight-%
Propylene carbonate	108-32-7	Proprietary
1,3-Dioxolane	646-06-0	Proprietary
Manganese dioxide	1313-13-9	12-42
Lithium Perchlorate	7791-03-9	10-20
PVC Resin	9002-86-2	5-10
Carbon Black	1333-86-4	1-5
Aluminum	7429-90-5	1-5

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures

General Advice The following information applies if the battery is mechanically, thermally, or electrically abused.

Eye Contact Immediately flush eyes with water for 30 minutes while lifting the upper and lower lids. Get medical attention.

Skin Contact Flush affected area with lukewarm water for at least 30 minutes. If skin irritation persists, call a physician.

Inhalation If symptoms are experienced, remove source of contamination or move victim to fresh air. Get medical attention.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center. National battery ingestion hotline: 202-625-3333.

Most important symptoms and effects

Symptoms May cause irritation to the eyes, skin, gastrointestinal, and respiratory systems. A shorted lithium battery can cause thermal and chemical burns upon contact with the skin.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Electrolyte is immobilized and completely secured within battery. If battery is opened, acute and chronic-electrolyte (DME) is slightly to moderately toxic.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
For burning battery in bulk quantities of unpacked cells, use Class D extinguishers; Lith-X, Powdered

Unsuitable Extinguishing Media Do not use halogenated extinguishing agents or foam. Water. Sand. Carbon dioxide (CO_2). Soda ash.

Specific Hazards Arising from the Chemical
Cells may rupture when exposed to excessive heat. This could result in the release of flammable or corrosive materials.

Hazardous Combustion Products Carbon monoxide. Carbon dioxide (CO_2). Lithium oxides.

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Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Use personal protective equipment as required. Ventilate affected area.
Other Information	The material contained within the batteries is only expelled under abusive conditions.
For Emergency Responders	If the battery material is released, remove personnel from the area until fumes dissipate.

Environmental precautions

Environmental precautions	See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Clean-Up	Avoid contact with electrolyte. Wear protective gloves, and place in container filled with oil and wrap tightly in a polyethylene bag. For waste disposal, see section 13 of the SDS.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture battery. Avoid mechanical or electrical abuse. Do not short circuit.

Conditions for safe storage, including any incompatibilities

Storage Conditions	Insulate positive and negative terminals to avoid short circuit. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Protect from direct sunlight. Prevent condensation on cells or battery terminals. Elevated temperatures may result in reduced battery life.
Incompatible Materials	If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons. Water with internal contents of battery.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
1,3-Dioxolane 646-06-0	TWA: 20 ppm	-	-
Manganese dioxide 1313-13-9	TWA: 0.02 mg/m^3 Mn respirable fraction TWA: 0.1 mg/m^3 Mn inhalable fraction	(vacated) Ceiling: 5 mg/m^3 Ceiling: 5 mg/m^3 Mn	IDLH: 500 mg/m^3 Mn TWA: 1 mg/m^3 Mn STEL: 3 mg/m^3 Mn
PVC Resin 9002-86-2	TWA: 1 mg/m^3 respirable fraction	-	-

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Carbon Black 1333-86-4	TWA: 3 mg/m^3 inhalable fraction	TWA: 3.5 mg/m^3 (vacated) TWA: 3.5 mg/m^3	IDLH: 1750 mg/m^3 TWA: 3.5 mg/m^3 TWA: 0.1 mg/m^3 Carbon black in presence of Polycyclic aromatic hydrocarbons PAH
Aluminum 7429-90-5	TWA: 1 mg/m^3 respirable fraction	TWA: 15 mg/m^3 total dust TWA: 5 mg/m^3 respirable fraction (vacated) TWA: 15 mg/m^3 total dust (vacated) TWA: 5 mg/m^3 respirable fraction (vacated) TWA: 5 mg/m^3 Al Aluminum	TWA: 10 mg/m^3 total dust TWA: 5 mg/m^3 respirable dust TWA: 5 mg/m^3 Al

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits. Showers. Eyewash stations. Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Always wear safety glasses when working with batteries and cells. Refer to 29 CFR 1910.133 for eye and face protection regulations.

Skin and Body Protection Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron and Viton rubber gloves, Protective clothing.

Respiratory Protection Not necessary under conditions of normal use. In case of battery venting or rupture, use a self-contained full face respiratory mask.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid		
Appearance	Geometric, solid object	**Odor**	Not determined
Color	Not determined	**Odor Threshold**	Not applicable

Property	**Values**	**Remarks • Method**
pH	Not determined	
Melting Point/Freezing Point	NA	
Boiling Point/Boiling Range	NA	
Flash Point	None	
Evaporation Rate	NA	
Flammability (Solid, Gas)	Not determined	
Flammability Limits in Air		
Upper Flammability Limits	NA	
Lower Flammability Limit	NA	
Vapor Pressure	NA	
Vapor Density	NA	
Relative Density	NA	
Water Solubility	Not applicable	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	NA	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not applicable	

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10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Heating, mechanical and electrical abuse. Moisture, recharge, disassembly.

Incompatible Materials
If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons. Water with internal contents of battery.

Hazardous Decomposition Products
None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information Inhalation, skin contact and eye contact are possible when the battery is opened. The following is based on exposure to internal contents

Eye Contact Corrosive fumes will be very irritating to eyes.

Skin Contact Contents of an open battery may be absorbed through the skin causing localized inflammation.

Inhalation Contents of an open battery can cause respiratory irritation. Inhalation of vapors may cause irritation of the upper respiratory tract and lungs.

Ingestion Swallowing a battery can be harmful. Contents of an open battery can cause serious chemical burns of the mouth, esophagus, and gastrointestinal tract.

Component Information

Chemical Name	ATEmix (oral)	ATEmix (dermal)	Inhalation LC50
Propylene carbonate 108-32-7	= 29000 mg/kg (Rat)	> 20 mL/kg (Rabbit)	-
1,3-Dioxolane 646-06-0	= 3 g/kg (Rat)	= 8480 µL/kg (Rabbit) = 15 g/kg (Rat)	= 20650 mg/m^3 (Rat) 4 h
Manganese dioxide 1313-13-9	= 9000 mg/kg (Rat)	-	-
Iron 7439-89-6	= 984 mg/kg (Rat)	-	-
Carbon Black 1333-86-4	> 15400 mg/kg (Rat)	> 3 g/kg (Rabbit)	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

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

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested.

Chemical Name	ACGIH	IARC	NTP	OSHA
Manganese dioxide 1313-13-9			Reasonably Anticipated	X
Carbon Black 1333-86-4	A3	Group 2B		X

Legend

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans
NTP (National Toxicology Program)
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life with long lasting effects.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Propylene carbonate 108-32-7	500: 72 h Desmodesmus subspicatus mg/L EC50	5300: 96 h Leuciscus idus mg/L LC50 static 1000: 96 h Cyprinus carpio mg/L LC50 semi-static	500: 48 h Daphnia magna mg/L EC50
Iron 7439-89-6		13.6: 96 h Morone saxatilis mg/L LC50 static	
Carbon Black 1333-86-4			5600: 24 h Daphnia magna mg/L EC50

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Chemical Name	Partition Coefficient
Propylene carbonate 108-32-7	0.48
1,3-Dioxolane 646-06-0	-0.37
Manganese dioxide 1313-13-9	<0

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

Lithium batteries are best disposed as a non-hazardous waste when fully or mostly discharged. The Federal Environmental Protection Agency (EPA) (governed by the Resource Conservation and Recovery Act (RCRA)) do not list or exempt lithium as a hazardous waste. However, if waste lithium batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amounts of unreacted lithium in the battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste (as required by the U.S. Land Ban Restrictions for the hazardous and Solid Waste Amendments of 1984.) Secondary treatment center receive these batteries as manifested hazardous waste under code"D003-reactive.Use a professional disposal firm for disposal of mass quantities of charged lithium batteries. Consult your local environmental officer. Do not incinerate. Dispose of in accordance with federal, state and local environmental regulations.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

This product contains one or more substances that are listed with the State of California as a hazardous waste

Chemical Name	California Hazardous Waste Status
Aluminum 7429-90-5	Ignitable powder

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT Please contact manufacturer for most current information

IATA Please contact manufacturer for most current information

IMDG Please contact manufacturer for most current information

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Propylene carbonate	X	X	X	Present	X	Present	X	X
1,3-Dioxolane	X	X	X	Present	X	Present	X	
Manganese dioxide	X	X	X	Present	X	Present	X	X
Iron	X	X	X		X	Present	X	X
Lithium Perchlorate	X	X	X	Present	X	Present		X
PVC Resin	X	X	X	Present	X	Present	X	X
Carbon Black	X	X	X	Present	X	Present	X	X
Aluminum	X	X	X		X	Present	X	X
Polypropylene	X	X		Present	X	Present	X	X
Poly(tetrafluoroethylene)	X	X		Present	X	Present	X	X
Lithium	X	X	X		X	Present	X	X

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Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

ENCS *- Japan Existing and New Chemical Substances*

IECSC *- China Inventory of Existing Chemical Substances*

KECL *- Korean Existing and Evaluated Chemical Substances*

PICCS *- Philippines Inventory of Chemicals and Chemical Substances*

AICS *- Australian Inventory of Chemical Substances*

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Manganese dioxide - 1313-13-9	1313-13-9	12-42	1.0
Aluminum - 7429-90-5	7429-90-5	1-5	1.0

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

Chemical Name	California Proposition 65
Carbon Black - 1333-86-4	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
1,3-Dioxolane 646-06-0	X	X	X
Manganese dioxide 1313-13-9	X		X
PVC Resin 9002-86-2	X		
Carbon Black 1333-86-4	X	X	X
Aluminum 7429-90-5	X	X	X
Poly(tetrafluoroethylene) 9002-84-0			X

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Lithium 7439-93-2	X	X	X

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical hazards**	**Personal Protection**
	Not determined	Not determined	Not determined	Not determined

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Revision Note: New product

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any othe materials or in any process, unless specified in the text.

End of Safety Data Sheet

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