# SAFETY DATA SHEET

Issuing Date 27-Feb-2017 Revision Date 27-Feb-2017 Revision Number 3



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# 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product identifier** 

Product Name 361-00103-00

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use LITHIUM ION BATTERIES

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name Garmin International

Supplier Address 1200 E. 151st Street

Olathe Kansas 66062 US

Supplier Phone Number Phone:9133978200

Supplier Email marcus.lewis@garmin.com

Emergency telephone number

**Company Emergency Phone** 

9133978200

Number

# 2. HAZARDS IDENTIFICATION

# Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1



Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1

## **GHS Label elements, including precautionary statements**

#### **Emergency Overview**

Signal word Danger

#### **Hazard Statements**

Causes skin irritation

Causes serious eye damage

May cause an allergic skin reaction

May cause cancer

Causes damage to organs through prolonged or repeated exposure



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture: the above hazards exist.

Appearance No information available Physical state Solid Odor No information available

## **Precautionary Statements - Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves

Do not breathe dust/fume/gas/mist/vapors/spray

Do not eat, drink or smoke when using this product

#### **Precautionary Statements - Response**

IF exposed or concerned: Get medical advice/attention

Specific treatment (see supplemental first aid instructions on this label)

# Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Immediately call a POISON CENTER or doctor/physician

## Skin

IF ON SKIN: Wash with plenty of soap and water Take off contaminated clothing and wash before reuse If skin irritation or rash occurs: Get medical advice/attention

## **Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal** 



Dispose of contents/container to an approved waste disposal plant

## Hazards not otherwise classified (HNOC)

Not applicable

## **Unknown Toxicity**

28.2 % of the mixture consists of ingredient(s) of unknown toxicity

#### Other information

Very toxic to aquatic life with long lasting effects

Repeated or prolonged skin contact may cause allergic reactions with susceptible persons

#### **Interactions with Other Chemicals**

Use of alcoholic beverages may enhance toxic effects.

# 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Chemical name	CAS No	Weight-%	Trade Secret
Graphite	7782-42-5	10 - 30	*
Aluminum	7429-90-5	10 - 30	*
Copper	7440-50-8	7 - 13	*
Lithium nickel oxide (LiNiO2)	12031-65-1	5 - 10	*
Lithium manganese oxide (LiMn2O4)	12057-17-9	5 - 10	*
Lithium Cobalt Oxide (CoLiO2)	12190-79-3	5 - 10	*
Phosphate(1-), hexafluoro-, lithium	21324-40-3	1 - 5	*

<sup>\*</sup>The exact percentage (concentration) of composition has been withheld as a trade secret

# 4. FIRST AID MEASURES

#### First aid measures

**General Advice** First aid is upon rupture of sealed battery.

**Eye contact**Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep

eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue

rinsing. Do not rub affected area. Seek immediate medical attention/advice.

**Skin contact** Wash off immediately with soap and plenty of water for at least 15 minutes. May cause an

allergic skin reaction. In the case of skin irritation or allergic reactions see a physician.

Remove and isolate contaminated clothing and shoes.

**Inhalation** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult,

(trained personnel should) give oxygen. Get medical attention immediately if symptoms

occur.

**Ingestion** Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an

unconscious person. Do NOT induce vomiting. Call a physician.

**Self-protection of the first aider** Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

Wear personal protective clothing (see section 8). Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of

contamination.

#### Most important symptoms and effects, both acute and delayed

**Most Important Symptoms and** 

Effects

Burning sensation. Itching. Rashes. Hives. Coughing and/ or wheezing.

Indication of any immediate medical attention and special treatment needed

Notes to Physician May cause sensitization in susceptible persons. Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media** 

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry chemical, CO2, water spray or regular foam. Move containers from fire area if you can do it without risk.

Large Fire Move containers from fire area if you can do it without risk.

Unsuitable extinguishing media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical

Product is or contains a sensitizer. May cause sensitization by skin contact.

**Explosion Data** 

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

Move containers from fire area if you can do it without risk.

# 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal

protective equipment as required. Evacuate personnel to safe areas.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions** 

**Environmental precautions** Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

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# 7. HANDLING AND STORAGE

## Precautions for safe handling

**Handling** In case of rupture: Handle in accordance with good industrial hygiene and safety practice.

Avoid contact with skin, eyes or clothing. Use personal protection equipment.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up.

Keep out of the reach of children.

Incompatible Products Strong acids. Strong oxidizing agents. Strong bases.

# 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## **Control parameters**

**Exposure Guidelines**The following ingredients are the only ingredients of the product above the cut-off level (or

level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other

recommended limit. At this time, the other relevant constituents have no known exposure

limits from the sources listed here

Chemical name	mical name ACGIH TLV		NIOSH IDLH
Graphite	TWA: 2 mg/m³ respirable particulate	TWA: 15 mg/m³ total dust synthetic	IDLH: 1250 mg/m <sup>3</sup>
7782-42-5	matter all forms except graphite fibers	TWA: 5 mg/m³ respirable fraction	TWA: 2.5 mg/m³ respirable dust
		synthetic	
		(vacated) TWA: 2.5 mg/m³ respirable	
		dust natural	
		(vacated) TWA: 10 mg/m³ total dust	
		synthetic	
		(vacated) TWA: 5 mg/m³ respirable	
		fraction synthetic	
	T 10 10 10 10 10 10 10 10 10 10 10 10 10	TWA: 15 mppcf natural	TIMA 40 / 2 / 4 / 1 /
Aluminum	TWA: 1 mg/m³ respirable particulate	TWA: 15 mg/m³ total dust	TWA: 10 mg/m³ total dust
7429-90-5	matter	TWA: 5 mg/m³ respirable fraction	TWA: 5 mg/m³ respirable dust
		(vacated) TWA: 15 mg/m³ total dust (vacated) TWA: 5 mg/m³ respirable	
		fraction (vacated) TWA: 5 mg/m³ Al	
		Aluminum	
Copper TWA: 0.2 mg/m³ fume TWA: 1 mg/m		TWA: 0.1 mg/m³ fume	IDLH: 100 mg/m <sup>3</sup> dust, fume and mist
7440-50-8	Cu dust and mist	TWA: 1 mg/m³ dust and mist	TWA: 1 mg/m <sup>3</sup> dust and mist
1110000	ou dust and mist	(vacated) TWA: 0.1 mg/m³ Cu dust,	TWA: 0.1 mg/m <sup>3</sup> fume
		fume, mist	
Lithium nickel oxide	TWA: 0.2 mg/m <sup>3</sup> Ni inhalable	TWA: 1 mg/m³ Ni	IDLH: 10 mg/m <sup>3</sup> Ni
(LiNiO2)	particulate matter	(vacated) TWA: 1 mg/m³ Ni	TWA: 0.015 mg/m³ except Nickel
12031-65-1	·	, ,	carbonyl Ni
Lithium manganese oxide	TWA: 0.2 mg/m <sup>3</sup> Mn	(vacated) Ceiling: 5 mg/m <sup>3</sup>	IDLH: 500 mg/m <sup>3</sup> Mn
(LiMn2O4)	_	Ceiling: 5 mg/m <sup>3</sup> Mn	TWA: 1 mg/m³ Mn
12057-17-9			STEL: 3 mg/m³ Mn
Lithium Cobalt Oxide	TWA: 0.02 mg/m <sup>3</sup>	-	
(CoLiO2)			
12190-79-3			
Phosphate(1-), hexafluoro-,	TWA: 2.5 mg/m <sup>3</sup> F	TWA: 2.5 mg/m <sup>3</sup> F	
lithium		(vacated) TWA: 2.5 mg/m <sup>3</sup>	
21324-40-3			

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health



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Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962

(11th Cir., 1992)

**Appropriate engineering controls** 

Engineering Measures Showers

Eyewash stations Ventilation systems

Individual protection measures, such as personal protective equipment

**Eye/face protection** Tight sealing safety goggles.

**Skin and body protection** Wear protective gloves and protective clothing. Long sleeved clothing. Impervious gloves.

respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be

provided in accordance with current local regulations.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Avoid contact with

skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling

the product.

# 9. PHYSICAL AND CHEMICAL PROPERTIES

## **Physical and Chemical Properties**

Physical state Solid

AppearanceNo information availableOdorNo information availableColorNo information availableOdor ThresholdNo information available

<u>Property</u> <u>Values</u> <u>Remarks Method</u>

No data available None known pН No data available None known Melting / freezing point Boiling point / boiling range No data available None known Flash Point No data available None known **Evaporation Rate** No data available None known Flammability (solid, gas) No data available None known

Flammability Limit in Air

Upper flammability limit
Lower flammability limit
Vapor pressure

No data available
No data available
No data available

None known No data available None known Vapor density **Specific Gravity** No data available None known None known Water Solubility Insoluble in water Solubility in other solvents No data available None known Partition coefficient: n-octanol/waterNo data available None known **Autoignition temperature** No data available None known **Decomposition temperature** No data available None known Kinematic viscosity No data available None known No data available None known

Dynamic viscosityNo data availableExplosive propertiesNo data availableOxidizing propertiesNo data available

**Other Information** 

Softening Point

VOC Content (%)

Particle Size

No data available

No data available

**Particle Size Distribution** 

# 10. STABILITY AND REACTIVITY

#### Reactivity

No data available.

#### **Chemical stability**

Stable under recommended storage conditions.

## **Possibility of Hazardous Reactions**

None under normal processing.

#### Conditions to avoid

None known based on information supplied.

## **Incompatible materials**

Strong acids. Strong oxidizing agents. Strong bases.

#### **Hazardous Decomposition Products**

None known based on information supplied.

# 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

**Product Information** Product does not present an acute toxicity hazard based on known or supplied information.

In case of rupture:.

**Inhalation** Specific test data for the substance or mixture is not available. May cause irritation of

respiratory tract.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye

damage. (based on components). Severely irritating to eyes. May cause irreversible

damage to eyes.

Skin contact Specific test data for the substance or mixture is not available. Causes skin irritation. (based

on components). Prolonged contact may cause redness and irritation.

**Ingestion** Specific test data for the substance or mixture is not available. Ingestion may cause

irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea,

vomiting and diarrhea.

Component Information No information available

## Information on toxicological effects



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Symptoms Erythema (skin redness). May cause redness and tearing of the eyes. May cause

blindness. Burning. Itching. Rashes. Hives.

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

**Sensitization** May cause sensitization in susceptible persons. May cause sensitization by skin contact.

Mutagenic Effects No information available.

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium nickel oxide (LiNiO2)	A1	Group 1	Known	X
12031-65-1		-		
Lithium Cobalt Oxide	A3	Group 2B		X
(CoLiO2)		-		
12190-79-3				

ACGIH (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

NTP (National Toxicology Program)

Known - Known Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Reproductive toxicity No information available.

**STOT - single exposure** No information available.

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure. Based on

classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from

chronic or repeated exposure. (STOT RE).

Chronic Toxicity Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure

may cause chronic effects. May cause adverse effects on the bone marrow and

blood-forming system. May cause adverse liver effects.

Target Organ Effects Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Blood. Central Nervous System

(CNS). Central Vascular System (CVS). Kidney. Liver. Lungs. Nasal cavities. Digestive

System.

Aspiration Hazard No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 8,411.00 mg/kg ATEmix (dermal) 5,983.00 mg/kg (ATE)

# 12. ECOLOGICAL INFORMATION

#### **Ecotoxicity**

Very toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Copper	96h EC50: 0.031 - 0.054	96h LC50: 0.0068 - 0.0156		48h EC50: = 0.03 mg/L
7440-50-8	mg/L (Pseudokirchneriella	mg/L (Pimephales promelas)		_
	subcapitata) 72h EC50:	96h LC50: = 1.25 mg/L		
	0.0426 - 0.0535 mg/L	(Lepomis macrochirus) 96h		
	(Pseudokirchneriella	LC50: = 0.052 mg/L		
	subcapitata)	(Oncorhynchus mykiss) 96h		
		LC50: = 0.2 mg/L		
		(Pimephales promelas) 96h		
		LC50: < 0.3 mg/L		
		(Pimephales promelas) 96h		
		LC50: = 0.112 mg/L		
		(Poecilia reticulata) 96h		
		LC50: = 0.3 mg/L (Cyprinus		
		carpio) 96h LC50: = 0.8		
		mg/L (Cyprinus carpio)		

## Persistence and Degradability

No information available.

#### **Bioaccumulation**

No information available

#### Other adverse effects

No information available.

# 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

Disposal methods This material, as supplied, is not a hazardous waste according to Federal regulations (40

CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local

regulations for additional requirements.

**Contaminated Packaging** Dispose of contents/containers in accordance with local regulations.

## California Hazardous Waste Codes 141

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

Chemical name	California Hazardous Waste
Aluminum	Ignitable powder
7429-90-5	
Copper	Toxic
7440-50-8	
Lithium Cobalt Oxide (CoLiO2)	Toxic
12190-79-3	



# 14. TRANSPORT INFORMATION

Note:

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule)

Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

DOTNOT REGULATEDProper Shipping NameNON-REGULATED

Hazard Class N/A Emergency Response Guide 147

Number

TDG Not regulated

MEX Not regulated

ICAO Not regulated

IATA Not regulated
Proper Shipping Name NON REGULATED

Hazard Class N/A

IMDG/IMO Not regulated

Hazard Class N/A EmS-No. F-A, S-I

RID Not regulated

ADR Not regulated

ADN Not regulated

# 15. REGULATORY INFORMATION

# **International Inventories**

TSCA Not determined DSL Not determined

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory **DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

# **US Federal Regulations**

# **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 %
Aluminum - 7429-90-5	7429-90-5	10 - 30	1.0
Copper - 7440-50-8	7440-50-8	7 - 13	1.0
Lithium nickel oxide (LiNiO2) - 12031-65-1	12031-65-1	5 - 10	0.1
Lithium manganese oxide (LiMn2O4) - 12057-17-9	12057-17-9	5 - 10	1.0
Lithium Cobalt Oxide (CoLiO2) - 12190-79-3	12190-79-3	5 - 10	0.1

# SARA 311/312 Hazard Categories

Acute Health Hazard

Chronic Health Hazard

No
Fire Hazard

Sudden release of pressure hazard

No
Reactive Hazard

No

# **CWA (Clean Water Act)**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper 7440-50-8		Х	X	
Lithium nickel oxide (LiNiO2) 12031-65-1		X		

#### **CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Copper 7440-50-8	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

# **US State Regulations**

# **California Proposition 65**

This product contains the following Proposition 65 chemicals.

Chemical name	California Proposition 65	
Lithium nickel oxide (LiNiO2) - 12031-65-1	Carcinogen	

# U.S. State Right-to-Know Regulations

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Chemical name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Graphite 7782-42-5	Х	X	Х		
Aluminum 7429-90-5	Х	X	Х	Х	
Copper 7440-50-8	X	X	X	X	X
Lithium nickel oxide (LiNiO2) 12031-65-1	Х		Χ	Х	Х
Lithium manganese oxide (LiMn2O4) 12057-17-9	Х		Χ	Х	Х
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	Х		X	Х	X
Phosphate(1-), hexafluoro-, lithium 21324-40-3	X				
Dimethyl carbonate 616-38-6	Х	Х	X		

# International Regulations



#### Mexico

National occupational exposure limits

Chemical name	Carcinogen Status	Exposure Limits
Graphite		Mexico: TWA= 2 mg/m <sup>3</sup>
Aluminum		Mexico: TWA= 10 mg/m <sup>3</sup>
Copper		Mexico: TWA= 1 mg/m <sup>3</sup>
		Mexico: TWA= 0.2 mg/m <sup>3</sup>
		Mexico: STEL= 2 mg/m <sup>3</sup>
Lithium manganese oxide (LiMn2O4)		Mexico: TWA 0.2 mg/m <sup>3</sup>

Mexico - Occupational Exposure Limits - Carcinogens

#### Canada

**WHMIS Hazard Class** 

Non-controlled

# **16. OTHER INFORMATION**

NFPA Health Hazards 1 Flammability 0 Instability 0 Physical and Chemical Hazards - HMIS Health Hazards 0 Flammability 0 Physical Hazard 0 Personal Protection

Prepared By Product Stewardship

23 British American Blvd. Latham, NY 12110 1-800-572-6501

**Issuing Date** 27-Feb-2017 **Revision Date** 27-Feb-2017

Revision Note No information available

# **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 other materials or in any process, unless specified in the text

**End of Safety Data Sheet** 

