SAFETY DATA SHEET

Issuing Date 10-May-2019

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Revision Number 1

NGHS / English

(III)

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1. IDENTIFICATION

Product identifier

Product Name Lithium Ion Battery SWD-WT-N8

Other means of identification

Product Code(s) 1520062

Recommended use of the chemical and restrictions on use

Recommended Use LITHIUM ION BATTERIES

Restrictions on use No information available

Details of the supplier of the safety data sheet

Supplier Identification Samsung Electronics

Address 19 Chapin Road

Building D Pine Brook New Jersey 07058 United States

Telephone Phone:973-808-6362

E-mail d.rhee@samsung.com

Emergency telephone number

Company Emergency Phone

973-808-6373

Number

2. HAZARDS IDENTIFICATION

Classification

Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1



This is a battery. In case of rupture: the above hazards exist.

Appearance Solid Physical state Solid Odor No data available

GHS Label elements, including precautionary statements

Danger

Hazard statements

Causes severe skin burns and eye damage Suspected of causing cancer Causes damage to organs through prolonged or repeated exposure



Precautionary Statements - Prevention

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood Wear protective gloves/protective clothing/eye protection/face protection

Wash face, hands and any exposed skin thoroughly after handling

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

Do not eat, drink or smoke when using this product

Precautionary Statements - Response

Immediately call a POISON CENTER or doctor

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

Skin

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

Wash contaminated clothing before reuse

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing

Immediately call a POISON CENTER or doctor

Ingestion

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other information

Unknown acute toxicity

162 % of the mixture consists of ingredient(s) of unknown toxicity

112 % of the mixture consists of ingredient(s) of unknown acute oral toxicity

157 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

162 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)

162 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)

162 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)



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3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable.

Mixture

Chemical name	CAS No.	Weight-%	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Lithium Cobalt Oxide (CoLiO2)	12190-79-3	40	-	-
Graphite	7782-42-5	25	-	-
Propylene carbonate	108-32-7	15	-	1
Phosphate(1-), hexafluoro-, lithium	21324-40-3	5	-	-
Ci 77266	1333-86-4	2	-	-

4. FIRST AID MEASURES

First aid measures

General advice First aid is upon rupture of sealed battery. In case of rupture: Immediate medical attention is

required. Show this safety data sheet to the doctor in attendance. IF exposed or concerned:

Get medical advice/attention.

Inhalation Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical

attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical

advice/attention.

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

eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present

and easy to do. Continue rinsing. Get immediate medical advice/attention.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated

clothes and shoes. Get immediate medical advice/attention.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water.

Never give anything by mouth to an unconscious person. Get immediate medical

advice/attention.

Self-protection of the first aiderEnsure that medical personnel are aware of the material(s) involved, take precautions to

protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation.

Indication of any immediate medical attention and special treatment needed



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Note to physicians

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure.

5. FIRE-FIGHTING MEASURES

surrounding environment.

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

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

Specific hazards arising from the

chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition

can lead to release of irritating gases and vapors.

Hazardous Combustion Products Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact None. **Sensitivity to Static Discharge** None.

Special protective equipment for

fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout

gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate

ventilation. Use personal protective equipment as required. Evacuate personnel to safe

areas. Keep people away from and upwind of spill/leak.

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

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.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling In case of rupture: Handle in accordance with good industrial hygiene and safety practice.

Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated

clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities



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Storage Conditions

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits

Chemical name		ACGIH T	LV	0:	SHA PEL		NIOSH IDLH
Lithium Cobalt Oxide (CoLiO2) 12190-79-3		TWA: 0.02 mg/m ³		-			
Graphite		TWA: 2 mg/m³ respirable		TWA: 15	mg/m³ total dust		IDLH: 1250 mg/m ³
7782-42-5		particulate matter all forms		_	synthetic	TWA	a: 2.5 mg/m³ respirable
		except graphit	te fibers		ng/m³ respirable		dust
					on synthetic		
					TWA: 2.5 mg/m ³		
					le dust natural		
					NA: 10 mg/m³ total		
					t synthetic		
) TWA: 5 mg/m ³ fraction synthetic		
				•	•		
Phosphate(1-), hexafluc	ro-	TWA: 2.5 mg	n/m³ F	TWA: 15 mppcf natural TWA: 2.5 mg/m ³ F		IDLH: 250 mg/m ³ F	
lithium	,	1 VV/X. 2.3 mg/m 1		(vacated) TWA: 2.5 mg/m ³			15211. 200 mg/m 1
21324-40-3				(**************************************			
Ci 77266		TWA: 3 mg/m ³	g/m³ inhalable		: 3.5 mg/m ³		IDLH: 1750 mg/m ³
1333-86-4		particulate r	natter	(vacated) TWA: 3.5 mg/m ³			TWA: 3.5 mg/m ³
		-				TWA:	0.1 mg/m³ Carbon black
							presence of Polycyclic
							natic hydrocarbons PAH
Chemical name		Alberta		Columbia	Ontario TWAE	-	Quebec
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	TV	VA: 0.02 mg/m ³	TWA: 0.0	02 mg/m ³ TWA: 0.02 mg/		m³	TWA: 0.02 mg/m ³
Graphite	7	ΓWA: 2 mg/m ³	TWA: 2	2 mg/m ³ TWA: 2 mg/m		3	TWA: 2 mg/m ³
7782-42-5			3]	
Phosphate(1-),	T	WA: 2.5 mg/m ³	mg/m³ TWA: 2		2.5 mg/m ³ TWA: 2.5 mg/r		TWA: 2.5 mg/m ³
hexafluoro-, lithium							
21324-40-3							
Ci 77266	T	WA: 3.5 mg/m ³	TWA: 3	3 mg/m³	TWA: 3 mg/m	3	TWA: 3.5 mg/m ³
1333-86-4							

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

Showers **Engineering controls**

Eyewash stations Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Face protection shield.



Hand protection Wear suitable gloves. Impervious gloves.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are

exceeded or irritation is experienced, ventilation and evacuation may be required.

General hygiene considerations 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. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended.

None known

Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical state Solid **Appearance** Solid

No data available Odor No information available Color

Odor Threshold Not applicable

Property Values Remarks Method

No data available None known pН Melting / freezing point No data available None known 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 None known

Flammability Limit in Air

Upper flammability limit No data available

Lower flammability limit No data available

No data available Vapor pressure None known Vapor density No data available None known Relative density No data available None known Water Solubility Insoluble in water

Solubility(ies) No data available

Partition coefficient: n-octanol/waterN/A

Autoignition temperature No data available None known No data available **Decomposition temperature** None known No data available None known Kinematic viscosity Dynamic viscosity No data available None known

Other Information

No information available **Explosive properties Oxidizing properties** No information available **Softening Point** No information available Molecular Weight No information available No information available **VOC Content (%) Liquid Density** No information available **Bulk Density** No information available No information available **Particle Size Particle Size Distribution** No information available

10. STABILITY AND REACTIVITY

Reactivity No information available.



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Chemical stability Stable under normal conditions.

Possibility of Hazardous Reactions None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to avoid Exposure to air or moisture over prolonged periods.

Incompatible materials Acids. Bases. Oxidizing agent.

Hazardous Decomposition Products Carbon oxides.

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. Corrosive by inhalation.

(based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs.

Pulmonary edema can be fatal.

Eye contact Specific test data for the substance or mixture is not available. Causes burns. (based on

components). Corrosive to the eyes and may cause severe damage including blindness.

Causes serious eye damage. May cause irreversible damage to eyes.

Skin contact Specific test data for the substance or mixture is not available. Corrosive. (based on

components). Causes burns.

Ingestion Specific test data for the substance or mixture is not available. Causes burns. (based on

components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung

damage if swallowed. May be fatal if swallowed and enters airways.

Information on toxicological effects

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing.

Numerical measures of toxicity

Acute Toxicity

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

ATEmix (oral) 7,592.40 mg/kg **ATEmix (dermal)** 6,000.00 mg/kg

Unknown acute toxicity 162 % of the mixture consists of ingredient(s) of unknown toxicity

112 % of the mixture consists of ingredient(s) of unknown acute oral toxicity 157 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

162 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas) 162 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)



162 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Component Information

Chemical name Oral LD50		Dermal LD50	Inhalation LC50
Propylene carbonate	= 29000 mg/kg (Rat)	> 3000 mg/kg (Rabbit)	-
Ci 77266	> 15400 mg/kg (Rat)	> 3 g/kg (Rabbit)	-

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

Skin corrosion/irritationClassification based on data available for ingredients. Causes burns.

Serious eye damage/eye irritation Classification based on data available for ingredients. Risk of serious damage to eyes.

Causes burns.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available.

Carcinogenicity Contains a known or suspected carcinogen. Classification based on data available for

ingredients. Suspected of causing cancer.

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

Chemical name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide (CoLiO2)	A3	Group 2B	Reasonably Anticipated	X
12190-79-3				
Ci 77266 1333-86-4	A3	Group 2B	-	Х

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

Reproductive toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposureCauses damage to organs through prolonged or repeated exposure.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity The environmental impact of this product has not been fully investigated.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to	Daphnia Magna (Water
			Microorganisms	Flea)
Propylene carbonate	72h EC50: > 500 mg/L	96h LC50: > 1000 mg/L	EC50 > 10000 mg/L 17 h	48h EC50: > 500 mg/L
	(Desmodesmus	(Cyprinus carpio) 96h		-
	subspicatus)	LC50: = 5300 mg/L		
	, ,	(Leuciscus idus)		



Ci 77266 24h EC50: > 5600 mg/L

Persistence and Degradability

No information available.

Bioaccumulation

Component Information

Chemical name	Log Pow		
Propylene carbonate	0.48		

Mobility No information available.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products

Dispose of in accordance with local regulations. Dispose of waste in accordance with

environmental legislation.

Contaminated packaging Do not reuse empty containers.

California 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
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"

DOT NOT REGULATED Proper Shipping Name NON-REGULATED

Hazard Class Emergency Response Guide

Number

N/A 147

Not regulated TDG



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

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

International Regulations

Ozone-depleting substances (ODS) Not applicable

Persistent Organic Pollutants Not applicable

Export Notification requirements Not applicable

International Inventories

TSCA

Contact supplier for inventory compliance status.

<u>Legend</u>

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

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

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 %
Lithium Cobalt Oxide (CoLiO2) - 12190-79-3	12190-79-3	40	0.1

SARA 311/312 Hazard Categories



Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications. Under the amended regulations at 40 CFR 370, EPCRA 311/312 Tier II reporting for the 2017 calendar year will need to be consistent with updated hazard classifications.

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)

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). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical name	California Proposition 65
Ci 77266 - 1333-86-4	carcinogen, 2/21/2003 (airborne, unbound particles of respirable
	size)

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusett	Pennsylvania	Rhode Island	Illinois
		S			
Lithium Cobalt Oxide (CoLiO2) 12190-79-3	Х		Х	Х	Х
Graphite 7782-42-5	Х	Х	Х		
Phosphate(1-), hexafluoro-, lithium 21324-40-3	Х				
Ci 77266 1333-86-4	X	X	Х		X

16. OTHER INFORMATION

NFPA Health hazards 1 Flammability 0 Instability 0 Physical and Chemical Properties
HMIS Health hazards 0 Flammability 0 Physical hazards 0 Personal Protection X

Prepared By Product Stewardship

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

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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



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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



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