SAFETY DATA SHEET

Product Name LITHIUM ION BATTERY 3.7V ISR18650 1500mAh

Issue Date 12-Jan-2016
Revision date 12-Jan-2016

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

PRODUCT NAME: 41542 18V BATTERY

APPLICATIONS: 18V BATTERY PACK LITHIUM BATTERY

SUPPLIER:

Draper Tools Ltd
Hursley Road
Chandlers Ford
Eastleigh
Hampshire
SO53 1YF

Draper Helpline +44 (0) 2380 494344

2. HAZARDS IDENTIFICATION

GHS Classification

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Symbols/Pictograms	None
Signal word	None
Hazard Statements	Not classified.
Precautionary Statements	
Prevention	None.
Response	None.
Storage	None.
Disposal	None.

Hazards not otherwise classified (HNOC)

No information available

Unknown acute toxicity

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Article

Chemical Name	CAS No	Weight-%
Cobalt lithium manganese nickel oxide	182442-95-1	30 - 32
Iron	7439-89-6	22 - 23

Copper	7440-50-8	15 - 16
Graphite	7782-42-5	14 - 15
Aluminum	7429-90-5	7 - 8
Polypropylene	9003-07-0	2 - 3
Phosphate(1-), hexafluoro-, lithium	21324-40-3	2 - 3

4. FIRST AID MEASURES

Description of first aid measures

General advice — In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Inhalation — Not an expected route of exposure. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Skin Contact — Wash hands thoroughly after handling.

Eye contact — Not an expected route of exposure. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion — Not an expected route of exposure. If swallowed, call a poison control center or physician immediately.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media — Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media — No information available.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors

Carbon oxides (CO_x), metal oxides

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. Cool containers with flooding quantities of water until well after fire is out. Evacuate personnel to safe areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Do not touch or walk through spilled material. Avoid breathing vapors or mists.

Methods and material for containment and cleaning up

Prevent further leakage or spillage if safe to do so.

Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid generation of dust. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling. Use personal protection recommended in Section 8. Take precautionary measures against static discharges. Do not eat, drink or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition. Keep locked up and out of reach of children. Keep away from food, drink and animal feeding stuffs. Store in accordance with local regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH	Denmark	European Union
Cobalt lithium manganese nickel oxide (CAS #: 182442-95-1)	TWA: 0.02 mg/m^3 Co TWA: 0.02 mg/m^3 Mn TWA: 0.1 mg/m^3 Mn	-	IDLH: 500 mg/m^3 Mn IDLH: 10 mg/m^3 Ni TWA: 1 mg/m^3 Mn TWA: 0.015 mg/m^3 except Nickel carbonyl Ni STEL: 3 mg/m^3 Mn	TWA: 0.01 mg/m^3 TWA: 0.2 mg/m^3	-
Copper (CAS #: 7440-50-8)	TWA: 0.2 mg/m^3 fume TWA: 1 mg/m^3 Cu dust and mist	-	IDLH: 100 mg/m^3 dust, fume and mist IDLH: 100 mg/m^3 Cu dust and mist TWA: 1 mg/m^3 dust and mist TWA: 0.1 mg/m^3 fume TWA: 1 mg/m^3 Cu dust and mist	TWA: 1.0 mg/m^3 TWA: 0.1 mg/m^3	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m^3 respirable fraction all forms except graphite fibers	-	IDLH: 1250 mg/m^3 TWA: 2.5 mg/m^3 natural respirable dust	TWA: 2.5 mg/m^3	-
Aluminum (CAS #: 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	TWA: 5 mg/m^3 TWA: 2 mg/m^3	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	TWA: 2.5 mg/m^3 F	-	-	TWA: 2.5 mg/m^3	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Cobalt lithium manganese nickel oxide (CAS #: 182442-95-1)	TWA: 0.05 mg/m^3	-	TWA: 0.05 mg/m^3 TWA: 0.01 mg/m^3 TWA: 0.02 mg/m^3 TWA: 0.2 mg/m^3	TWA: 0.2 mg/m^3 TWA: 0.02 mg/m^3 Ceiling / Peak: 1.6 mg/m^3 Ceiling / Peak: 0.16 mg/m^3 Ceiling / Peak: 0.2 mg/m^3 Skin TWA: 0.5 mg/m^3	-
Copper (CAS #: 7440-50-8)	TWA: 0.5 mg/m^3 STEL: 1 mg/m^3	TWA: 0.2 mg/m^3 TWA: 1 mg/m^3 STEL: 2 mg/m^3	TWA: 1 mg/m^3 TWA: 0.1 mg/m^3	TWA: 0.01 mg/m^3 Ceiling / Peak: 0.02 mg/m^3 Ceiling / Peak: 0.2 mg/m^3	-
Graphite (CAS #: 7782-42-5)	TWA: 2 mg/m^3	TWA: 2 mg/m^3	TWA: 2 mg/m^3	TWA: 1.5 mg/m^3 TWA: 4 mg/m^3	-
Aluminum (CAS #: 7429-90-5)	TWA: 2 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	TWA: 1.5 mg/m^3	TWA: 4 mg/m^3 TWA: 1.5 mg/m^3	-

Polypropylene (CAS #: 9003-07-0)	TWA: 5 mg/m^3	-	-	-	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)		-	-	TWA: 1 mg/m^3 Skin	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Copper (CAS #: 7440-50-8)	-	-	-	-	TWA: 0.1 mg/m^3
Aluminum (CAS #: 7429-90-5)	TWA: 2.5 mg/m^3 TWA: 1.2 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	TWA: 3 mg/m^3	-

Chemical Name	Norway	United Kingdom	Australia	Austria	Belgium
Cobalt lithium manganese nickel oxide (CAS #: 182442-95-1)	TWA: 0.05 mg/m^3 TWA: 0.02 mg/m^3 TWA: 1 mg/m^3 TWA: 0.1 mg/m^3 STEL: 0.05 mg/m^3 STEL: 0.02 mg/m^3 STEL: 1 ppm STEL: 0.1 mg/m^3	-	1 mg/m^3	Skin STEL 2 mg/m^3 TWA: 0.5 mg/m^3	-
Copper (CAS #: 7440-50-8)	TWA: 0.1 mg/m^3 TWA: 1 mg/m^3 STEL: 0.1 mg/m^3 STEL: 1 mg/m^3	-	1 mg/m^3 0.2 mg/m^3	STEL 4 mg/m^3 STEL 0.4 mg/m^3 TWA: 1 mg/m^3 TWA: 0.1 mg/m^3	-
Graphite (CAS #: 7782-42-5)	TWA: 5 mg/m^3 TWA: 2 mg/m^3 TWA: 10 mg/m^3 TWA: 4 mg/m^3 STEL: 5 mg/m^3 STEL: 2 mg/m^3 STEL: 10 mg/m^3 STEL: 4 mg/m^3	-	3 mg/m^3	STEL 10 mg/m^3 TWA: 5 mg/m^3	-
Aluminum (CAS #: 7429-90-5)	TWA: 5 mg/m^3 STEL: 5 mg/m^3	STEL: 30 mg/m^3 STEL: 12 mg/m^3 TWA: 10 mg/m^3 TWA: 4 mg/m^3	10 mg/m^3 5 mg/m^3	STEL 20 mg/m^3 TWA: 10 mg/m^3	-
Phosphate(1-), hexafluoro-, lithium (CAS #: 21324-40-3)	-	-	2.5 mg/m^3	-	-

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition.

Individual protection measures, such as personal protective equipment

Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved 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.
Hand Protection	Wear protective gloves.
Eye/face protection	No special technical protective measures are necessary.
Skin and body protection	Suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid
Color	No information available
Odor	No information available
Odor Threshold	Not determined
pH	Not determined
Melting point/freezing point	Not determined
Boiling point / boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not determined
Flammability (solid, gas)	Not flammable

Flammability Limit in Air	Not applicable
Vapor Pressure	Not determined
Vapor density	Not applicable
Density	Not determined
Relative density	Not determined
Bulk density	Not determined
Specific gravity	Not determined
Water solubility	Not determined
Partition coefficient (LogPow)	Not determined
Autoignition temperature	Not applicable
Decomposition temperature	Not determined
Kinematic viscosity	Not determined
Dynamic viscosity	Not determined
Explosive properties	Not an explosive
Oxidizing properties	Not determined

Other information

No information available

10. STABILITY AND REACTIVITY

Reactivity

Stable under recommended storage and handling conditions (see SECTION 7, handling and storage).

Chemical stability

Stable under normal conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Strong heating. Incompatible materials.

Incompatible materials

Strong acids. Strong bases. Strong oxidizing agents.

Hazardous Decomposition Products

Carbon oxides (CO_x), metal oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Not an expected route of exposure
Eye contact	Dust contact with the eyes can lead to mechanical irritation
Skin Contact	No known effect based on information supplied
Ingestion	Not an expected route of exposure

Information on toxicological effects

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron (CAS #: 7439-89-6)	98.6 g/kg bw (rat)	-	-
Copper (CAS #: 7440-50-8)	> 2500 mg/kg bw(rat)	> 2000 mg/kg bw(rat)	=1.03 mg/L/4 h(rat)
Graphite (CAS #: 7782-42-5)	> 2000 mg/kg (rat)	-	> 2000 mg/m³/4h (rat)
Aluminum (CAS #: 7429-90-5)	LD50> 15900 mg/kg bw(rat)	-	LC50> 0.888 mg/L/4 h(rat)
Polypropylene (CAS #: 9003-07-0)	>5 g/kg	-	-

Skin corrosion/irritation
Non-irritating to the skin

Serious eye damage/eye irritation
No eye irritation

Sensitization
No information available.

Germ cell mutagenicity
No information available

Carcinogenicity

Chemical Name	ACGIH	IARC	NTP	OSHA
Cobalt lithium manganese nickel oxide (CAS #: 182442-95-1)	A3	-	Known	-
Polypropylene (CAS #: 9003-07-0)	-	Group 3	-	-

Reproductive toxicity
No information available

STOT - single exposure
No information available

STOT - repeated exposure
No information available

Aspiration hazard
No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Iron (CAS #: 7439-89-6)	-	13.6: 96 h Morone saxatilis mg/L LC50 static	> 100 mg/L/48h (Daphnia magna)
Copper (CAS #: 7440-50-8)	0.031 - 0.054 mg/L/96h Pseudokirchneriella subcapitata static 0.0426 - 0.0535 mg/L/72h Pseudokirchneriella subcapitata static	1.25: 96 h Lepomis macrochirus mg/L LC50 static 0.3: 96 h Cyprinus carpio mg/L LC50 semi-static 0.8: 96 h Cyprinus carpio mg/L LC50 static 0.112: 96 h Poecilia reticulata mg/L LC50 flow-through 0.0068 - 0.0156: 96 h Pimephales promelas mg/L LC50 0.3: 96 h Pimephales promelas mg/L LC50 static 0.2: 96 h Pimephales promelas mg/L LC50 flow-through 0.052: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	-
Graphite (CAS #: 7782-42-5)	> 100 mg/l/72h (Pseudokirchneriella subcapitata)	> 100 mg/l/96h (Danio rerio)	> 100 mg/l/48h (Daphnia magna)
Aluminum (CAS #: 7429-90-5)	-	> 50 mg/L/96h	-

Persistence and degradability
No information available

Bioaccumulative potential
No information available

Mobility in soil
No information available

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations
Contaminated packaging	Dispose of in accordance with federal, state and local regulations

Chemical Name	California Hazardous Waste Status
Cobalt lithium manganese nickel oxide 182442-95-1	Toxic
Copper 7440-50-8	Toxic
Aluminum 7429-90-5	Ignitable powder

14. TRANSPORT INFORMATION

It is considered as non-dangerous good by the ICAO, IATA, IMDG and TDG.

According to IATA DGR 57th Edition for transportation and International Maritime Dangerous Goods (IMDG Code 36th) and the Recommendation on the Transportation of Dangerous Goods-Model Regulation (18th). The products are not subjects/subject to dangerous.

DOT/IMDG/IATA

UN/ID No.	Not regulated
UN Proper shipping name	Not regulated
Hazard Class	Not regulated
Packing Group	Not regulated
Special precautions	No information available
Marine pollutant	Not applicable

15. REGULATORY INFORMATION

International Inventories

Component	AICS	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	TSCA
Cobalt lithium manganese nickel oxide 182442-95-1 (30 - 32)	-		-		X	-	-	X
Iron 7439-89-6 (22 - 23)	X	X	X	Exempt	X	X	X	X
Copper 7440-50-8 (15 - 16)	X	X	X	Exempt	X	X	X	X

Graphite 7782-42-5 (14 - 15)	X	X	X	Exempt	X	X	X	X
Aluminum 7429-90-5 (7 - 8)	X	X	X	Exempt	X	X	X	X
Polypropylene 9003-07-0 (2 - 3)	X	X	-	X	X	X	X	X
Phosphate(1-), hexafluoro-, lithium 21324-40-3 (2 - 3)	X	X	X	X	X	X	X	X

"-" Not Listed
"X" Listed

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	SARA 313 - Threshold Values %
Aluminum - 7429-90-5	1.0

SARA 311/312 Hazard Categories

Not applicable

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
Cobalt lithium manganese nickel oxide 182442-95-1	-	X	-	-
Copper 7440-50-8	-	X	X	-

CERCLA

Not applicable

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Cobalt lithium manganese nickel oxide - 182442-95-1	Carcinogen

U.S. State Right-to-Know Regulations

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

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Cobalt lithium manganese nickel oxide 182442-95-1	X	-	-
Copper 7440-50-8	X	X	-
Graphite 7782-42-5	X	X	-
Aluminum 7429-90-5	X	X	X
Phosphate(1-), hexafluoro-, lithium 21324-40-3	X	-	-

16. OTHER INFORMATION

Revision Note

Issue Date	12-Jan-2016
Revision date	12-Jan-2016
Revision Note	Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet

TWA - TWA (time-weighted average)
STEL - STEL (Short Term Exposure Limit)
Ceiling - Maximum limit value
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

Disclaimer

The information provided in this Material 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 --------