SAFETY DATA SHEET

LITHIUM-ION BATTERY PACKS –RECHARGEABLE

Infosafe No.: MTNYW
ISSUED Date : 31/07/2019
ISSUED by: Techtronic Industries (Australia & NZ) Pty Ltd

1. Identification

GHS Product Identifier
LITHIUM-ION BATTERY PACKS –RECHARGEABLE

Company name
Techtronic Industries (Australia & NZ) Pty Ltd

Address
21 Kelletts Road Rowville
VIC 3178 AUSTRALIA

Telephone/Fax Number
Tel: 1300 234 797 (Australia), 0800 234 797 (New Zealand)

Emergency phone number
Australian Poison Information Centre: 13 11 26 www.poisonsinfo.nsw.gov.au, New Zealand Poison Information Centre: 0800 764 766 www.poisons.co.nz

Other Names

Name
DOCUMENT NUMBER: SDS180001-B

Additional Information
Proper Shipping Name:
-Battery only: UN 3480 Lithium ion Batteries
-Battery with equipment UN 3481 Lithium ion Batteries packed with equipment

Product Numbers:
Trade Name: Milwaukee
Model Number: M12B2
Voltage (Vdc): 12V
Rated Capacity (Ah): 2
Rated Capacity (Wh): 24

Trade Name: Milwaukee
Model Number: M12B3
Voltage (Vdc): 12V
Rated Capacity (Ah): 3
Rated Capacity (Wh): 36

Trade Name: Milwaukee
Model Number: M12B4
Voltage (Vdc): 12V
Rated Capacity (Ah): 4
Rated Capacity (Wh): 48

Trade Name: Milwaukee
Model Number: M12B6
Voltage (Vdc): 12V
Rated Capacity (Ah): 6

Rated Capacity (Wh): 72

Trade Name: Milwaukee
Model Number: M18B2
Voltage (Vdc): 18V
Rated Capacity (Ah): 2
Rated Capacity (Wh): 36

Trade Name: Milwaukee
Model Number: M18B4
Voltage (Vdc): 18V
Rated Capacity (Ah): 4
Rated Capacity (Wh): 72

Trade Name: Milwaukee
Model Number: M18B5
Voltage (Vdc): 18V
Rated Capacity (Ah): 5
Rated Capacity (Wh): 90

Trade Name: Milwaukee
Model Number: L4B2
Voltage (Vdc): 4V
Rated Capacity (Ah): 2.5
Rated Capacity (Wh): 10

Supplied with Samsung Li-Ion battery cells, INR18650-30Q or INR18650-20RM or INR18650-25RMor INR18650-15M.

2. Hazard Identification

GHS classification of the substance/mixture
Not classified as Hazardous according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) including Work, Health and Safety Regulations, Australia.

Hazard Statement (s)
No exposure during routine handling of product

Other Information
Acute Toxicity: No classified hazards
Flammable liquid: No classified hazards

GHS Label:
No applicable labelling

CLASSIFIED HAZARDS
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200. This SDS contains valuable information for the safe handling and proper use of this product. Save this SDS for future reference.

OTHER HAZARDS
Flammable:
Organic components will burn if cell is incinerated. Combustion of cell contents may cause evolution of Hydrogen Fluoride.

Potential Health Effects:
Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations

Warning:
No exposure during routine handling of product. Hydrofluoric Acid exposure during firefighting: This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate batteries. This section is provided solely in case of exposure, during firefighting, to the combustion by-products.

3. Composition/information on ingredients

Ingredients

Name	CAS	Proportion
Biphenyl (BP)	92-52-4	0.1-0.3 %
Copper foil	7440-50-8	0.1-10 %
Linear & Cyclic Carbonate solvents	N/A	0-17 %
Graphite Powder/Carbon	7440-44-0	10-30 %
Metal Oxide or other Electrolyte (proprietary)	Confidential	10-50 %
Lithium Hexaflurophosphate (LiPF6)	21324-40-3	0-5 %
Polyvinylidene Flouride (PVDF)	24937-79-9	0.1-5 %
Styrene Butadiene Rubber (SBR)	N/A	<5 %
Aluminum, Steel, Nickel and other inert materials	N/A	Remainder
Aluminum foil	7429-90-5	0.1-10 %

4. First-aid measures

First Aid Measures
No exposure during routine handling of product. Risk of exposure occurs only if the battery is mechanically or electrically abused. No effect under routine handling and use to eyes, skin or if inhaled. Ingestion is not likely, given the physical size and state of the cell. If swallowed, seek medical attention immediately.
If exposure to internal materials within cell due to damaged outer casing the following actions are recommended:

Inhalation
Leave area immediately and move to fresh air and seek medical attention.

Ingestion
If swallowed, contact POISON CONTROL CENTER immediately.

Skin
Wash area immediately with soap and water. If irritation continues see medical attention.

Eye contact
Flush with water for 15 minutes without rubbing and immediately seek medical attention.

5. Fire-fighting measures

Suitable Extinguishing Media
Water spray, carbon dioxide, dry chemical powder or appropriate foam. Use agent appropriate for surrounding materials.

Unsuitable Extinguishing Media
None.

Hazards from Combustion Products
Organic components will burn if incinerated. Combustion of cell contents may cause evolution of Hydrogen Fluoride. In case of fire in an adjacent area, use water, CO2, or dry chemical extinguishers if cells are packed in their original containers since the fuel of the fire is basically paper products.

Special Protective Equipment for fire fighters
Hydrofluoric Acid exposure during firefighting: This information is given for the use of professional fire fighters responding to a warehouse fire where fire from other materials may incinerate batteries. This section is provided solely in case of exposure, during firefighting, to the combustion by-products.

Hazchem Code
4W

Decomposition Temperature
Not Applicable

6. Accidental release measures

Methods And Materials For Containment And Cleaning Up
METHODS FOR CONTAINMENT:
Transport container outdoors. Hold burned cells and fire cleanup solids for disposal as potential hazardous waste. Unburned cells are not hazardous waste. A fire with over 100 kg of cells burnt will likely require reporting to environmental officials. Always consult and obey all international, federal and local environmental laws.

METHODS FOR CLEAN-UP:
No data available

Personal Precautions
Use standard industrial clothing in normal use. If handling large containers of cells wear steel-toed footwear.

Environmental Precautions
No special precautions necessary.

Other Information
No data available

7. Handling and storage

Precautions for Safe Handling
Use only approved charging equipment. Do not disassemble battery or battery pack. Do not puncture, crush or dispose of in fire.

Conditions for safe storage, including any incompatibilities
Store in a cool, dry place away from sparks and flame. Keep below 125°C. Keep above -60°C. Charge between 0°C and 45°C.

8. Exposure controls/personal protection

Occupational exposure limit values
Chemical Name / OSHA PEL / ACGIH TLV / California Prop 65 Reg. Y/N / IARC/NTP Y/N
Aluminum Foil TWA 5mg/m3* TWA 5mg/m3* N N
Biphenyl (BP) Not Applicable Not Applicable N N
Copper Foil Not Applicable Not Applicable N N
Linear & Cyclic Carbonate solvents Not Applicable Not Applicable N N
Graphite Powder/Carbon Not Applicable Not Applicable N N
Metal Oxide or other Electrolyte (proprietary) Not Applicable Not Applicable N N
Lithium Hexaflurophosphate (LiPF6)Not Applicable Not Applicable N N
Polyvinylidene Flouride (PVDF)Not Applicable Not Applicable N N
Styrene Butadiene Rubber (SBR)Not Applicable Not Applicable N N
Aluminum, Steel, Nickel and other inert materialsNot Applicable Not Applicable N N

Appropriate engineering controls
Not necessary under conditions of normal use

Respiratory Protection
Not necessary under conditions of normal use

Eye Protection
Not necessary under conditions of normal use

Body Protection
Not necessary under conditions of normal use

Hygiene Measures
Not necessary under conditions of normal use

Other Information
EXPOSURE GUIDELINES:
Not necessary under conditions of normal use

9. Physical and chemical properties

Properties	Description	Properties	Description
Form	Solid	**Colour**	Not Applicable
Physical and chemical properties	Data represent typical values and are not intended to be specifications. NA=Not Applicable; ND=Not Determined	**Odour**	Odorless
Decomposition Temperature	Not Applicable	**Boiling Point**	Not Applicable
Solubility	Not Applicable	**Specific Gravity**	Not Applicable
pH	Not Applicable	**Vapour Pressure**	Not Applicable
Vapour Density (Air=1)	Not Applicable	**Evaporation Rate**	Not Applicable
Odour Threshold	Not Applicable	**Viscosity**	Not Applicable
Partition Coefficient: n-octanol/water	Not Applicable	**Flash Point**	Not Applicable
Flammability	(solid, gas): Organiccomponents will burn if cell incinerated	**Auto-Ignition Temperature**	Not Applicable
Explosion Limit - Upper	Not Applicable in air	**Explosion Limit - Lower**	Not Applicable in air
Relative density	Not Applicable	**Melting/Freezing Point**	Not Applicable

Other Information
VOC Content: Not Applicable

10. Stability and reactivity

Reactivity
Hazardous polymerization will not occur. Spontaneous decomposition will not occur at normal temperature.

Chemical Stability
This product is stable.

Conditions to Avoid
Do not crush, puncture, incinerate, immerse in water or heat over 212°F (100°C). Steel casing slowly dissolves in strong mineral acids.

Incompatible materials
Water, heat and strong acids.

Hazardous Decomposition Products
Hydrogen Fluoride, Phosphorus Oxides, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Oxides, AluminiumOxide, possible fluoro-compounds, Carbon soot.

Hazardous Polymerization
Hazardous polymerization will not occur. Spontaneous decomposition will not occur at normal temperature.

11. Toxicological Information

Toxicology Information
LIKELY ROUTES OF EXPOSURE: Inhalation, Eye and Skin contact
Eye contact, skin contact, skin absorption, inhalation only if burned. Hydrofluoric acid is extremely corrosive. Contact with hydrogen fluoride fumes is to be avoided. Permissible exposure limit is 3ppm. In case of contact with hydrogen fluoride fumes, immediately leave the area and seek first aid andemergency medical attention. Symptoms may have delayed onset. Fluorideions penetrate skin readily causing destruction of deep tissue layers even bone. Fluoride interferes with nerve impulse conduction causing severe pain or absence of sensations. Immediately flush eyes or skin with water for at least 20 minutes toneutralize the acidity and remove some fluoride. Remove and destroy all contaminated clothing and permeable personalpossessions. Before re-use, impermeable possessions should be soaked in benzalkonium chloride after washing. Following flushing of the affected areas, an iced aqueous solution of benzalkonium chloride or 2.5% calcium gluconate gel should be applied to react with the fluoride ion. Compresses and wraps may be used for areas where immersion is not practical. Medicated dressing should be changed every 2 minutes. Exposure to hydrofluoric acid fumes sufficient to cause pain requiresimmediate hospitalization for monitoring for pulmonary edema.

Acute Toxicity - Oral
No classified hazards

Acute Toxicity - Inhalation
No classified hazards

Ingestion
No further toxicological data known

Inhalation
No further toxicological data known

Skin
No further toxicological data known

Eye
No further toxicological data known

Skin corrosion/irritation
No classified hazards

Serious eye damage/irritation
No classified hazards

Subchronic/Chronic Toxicity
No classified hazards

Other Information
No further data known.

12. Ecological information

Ecological information
ECOTOXICOLOGICAL INFORMATION:
None in routine handling of product.

Ecotoxicity
No data available

Persistence and degradability
None in routine handling of product.

Mobility
MOBILITY IN SOIL:
None in routine handling of product.

Bioaccumulative Potential
None in routine handling of product.

Other Adverse Effects
No data available

13. Disposal considerations

Waste Disposal
Dispose in accordance with appropriate regulations. Always consult and obey all international, federal, provincial/state and local hazardous waste disposal laws. Some jurisdictions require recycling of this spent product. Battery recycling is encouraged.Lithium ion batteries are safe for disposal in the normal municipal waste stream since they are not defined by the federalgovernment as hazardous waste. However, Lithium ion batteries are recyclable.

This product does not contain mercury, cadmium or Lithium (metal).

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F (100°C).

14. Transport information

Transport Information
Proper Shipping Description:
•UN3480 Lithium ion batteries-For batterieson theirown.
•UN3481 Lithiumion batteries packed with equipment-For batteries packed with other equipment.

These Milwaukee Lithium-ion batteries are to be shipped in compliance with relevant requirements of the following DGRegulations:
•Air:
•ICAO Technical Instructions or IATA Dangerous Goods Regulations
For UN3480
?Packing Instruction 965, Section IB
For UN3481
?Packing Instruction 966, Section IB

•Sea:
•IMDG Code: Packing Instruction P903, or Special Provision 188, as applicable.

•Road:
•Australian Dangerous Goods (ADG): Packing Instruction P903, or Special Provision 188, as applicable.

UN 38.3 BATTERY TRANSPORTATION TESTING:
Milwaukee rechargeable Lithium-ion batteries listed in Section 1 have passed the relevant transportation test requirements as described in the UN Manual of Tests and Criteria, Part III, section 38.3.

UN 38.3 Test Reports are maintained on file at the corporate headquarters of Techtronic Industries (Australia & NZ) Pty Ltd, 21 Kelletts Rd, Rowville, Victoria, Australia.

Milwaukee batteries are shipped with a State of Charge (SOC) less than 30%.

U.N. Number
3480

UN proper shipping name
LITHIUM ION BATTERIES

Transport hazard class(es)
9

Hazchem Code
4W

IERG Number
26

UN Number (Air Transport, ICAO)
3480

IATA/ICAO Proper Shipping Name
LITHIUM ION BATTERIES

IATA/ICAO Hazard Class
9

IMDG UN No
3480

IMDG Proper Shipping Name
LITHIUM ION BATTERIES

IMDG Hazard Class
9

15. Regulatory information

Regulatory information
GLOBAL INVENTORIES
ECL: Korea
Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
ENCS: Japan
Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.
IECS: China
Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

SARA 313 Information:
SARA Title III Section 313: This product does not contain regulated levels of any toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR part 372.

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)
This product does not contain regulated levels of any toxic chemical subject to the reporting requirements of California SafeDrinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

WHMIS: Canadian Workplace
This product does not contain regulated levels of any toxic chemical subject to the reporting requirements

Hazard Rating Systems
HMIS
Health: 0
Flammability: 0
Reactivity: 0
Personal protection: X
0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

EINECS/ELINCS (EC)
Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

Australia (AICS)
Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

Canada (DSL/NDSL)
See Sec. 14. Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

Philippines (PICCS)
Philippines Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

USA (TSCA)
See Sec. 14. Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

16. Other Information

User Codes

User Title Label	User Codes
Wis Numbers	00000361
Wis Numbers	00000378
Wis Numbers	00229011
Wis Numbers	00325605
Wis Numbers	02318893
Wis Numbers	02698452
Wis Numbers	03003959
Wis Numbers	03609295
Wis Numbers	03609312
Wis Numbers	03683415
Wis Numbers	03683432
Wis Numbers	04047810

Signature of Preparer/Data Service
Prepared by: Milwaukee Electric Tool Corporation

Other Information
ABBREVIATIONS:
TSCA: Toxic Substance Control Act
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous
OSHA: Occupational Safety and Health
IARC/NTP: International Agency for Research on Cancer/National Toxicology Program
SARA: Superfund Amendments and Reauthorization Act of 1986
ACGIH: American Conference of Governmental Industrial Hygienists
NIOSH/MSHA: National Institute for Occupational Safety Health/Mine Safety and Health Administration
WHMIS: Workplace Hazardous Materials Information System

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Any disclaimer by the manufacturer may not be included in the transcription.

END OF SDS