Milwaukee Lithium Ion Battery

Safety Data Sheet
Apendix A

Section 1. Product Identification

Product Trade Name: Milwaukee Lithium Ion Battery
Product Identifier: Rechargeable lithium-ion battery pack used for cordless power tools
Product Use: Power source for compatible cordless tools and equipment.
Email Address: info@arc-zone.com
Web Address: www.arc-zone.com
USA Address: 1331 Specialty Dr Vista CA 92081
Telephone: 1.760.931.1500
Emergency Phone: 1.800.424.9300 (CHEMTREC)
Preparation Date: 11 March 2026

Section 2. Hazards Identifications

2.1 Classification of the substance or mixture

Cells in lithium ion batteries are hermetically sealed and are harmless when used in compliance with the manufacturer's instructions for use and handling.
These devices are classified as products in accordance with REACH Article 3 (3) and are therefore not subject to the labelling requirements of hazardous substance legislation.
According to the CLP Regulation the product(s) is/are not classified as hazardous to health or the environment.

2.2 Label elements

According to EC Regulation No. 1272/2008, labelling of the product is not obligatory.

Hazard pictogram: Not required
Signal word: Not required
Hazard statements: Not required

2.3 Other hazards

A pressure release vent opens in the event of improper use of the battery pack in combination with electrical load, fire or mechanical impact. If the product is damaged, the battery housing can rupture and allow the ingredients to be released.
Corrosive vapours can be released in the event of fire.

Section 3. Composition, Information on Ingredients

3.1 Substances
Not applicable

3.2 Mixtures
Rechargeable lithium ion battery pack

CATHODE:	Li, Ni, Co & Mn oxides (active substances); phosphates Polyvinyl difluoride/SBR (binder) Carbon (conductive material), additives, aluminium foil
ANODE:	Carbon (active substance) Silicone, polyvinyl difluoride/SBR (binder), additives, copper foil
ELECTROLYTE:	Organic solvent (non-aqueous liquid), lithium salt, additives

Chemical Name	CAS no.	EC / List no.	Concentration [%]
Aluminium	7429-90-5	231-072-3	0.1 – 10
Biphenyl	92-52-4	202-163-5	0.1 – 0.3
Copper	7440-50-8	231-159-6	0.1 – 10
Chemical Name	**CAS no.**	**EC / List no.**	**Concentration**
Linear and cyclic carbonate solutions	n/a	n/a	0 – 17
Carbon	7440-44-0	231-153-3	10 – 30
Metal oxide or other electrolyte (proprietary)	secret	secret	10 – 50
Lithium hexafluorophosphate (1-)	21324-40-3	244-334-7	0 – 5
Polyvinyl difluoride	24937-79-9	607-458-6	0.1 – 5
Styrene-butadiene rubber (SBR)	n/a	n/a	< 5
Aluminium, steel, nickel, and other inert materials	n/a	n/a	Rest

Contact with the ingredients is not possible under normal operating conditions.

Section 4. First Aid Measures

4.1 Description of first aid measures

The lithium ion batteries contain an organic electrolyte. The following measures must be taken if the electrolyte has emerged and come in contact the skin and/or eyes:

EYE & SKIN CONTACT:	In case of skin or eye contact, rinse the affected areas thoroughly with water for at least 15 minutes. In case of eye contact, always contact a doctor in addition to thorough rinsing.
INHALATION:	In case of intense smoke formation or release of gas, leave the room immediately. In case of relatively large amounts and irritation of the respiratory tract, seek medical attention. Provide adequate ventilation as much as possible.
BURN:	Suitable treatment is necessary in the event of burns. It is strongly recommended to contact a doctor.
INGESTION:	Rinse mouth and surrounding areas with water. Seek medical attention immediately.

4.2 Essential acute and delayed symptoms and effects

No further relevant information available

4.3 Advice on immediate first aid treatment or special treatment

No further relevant information available

Section 5. Fire Fighting Measures

5.1 Extinguishing media

Always use water spray to fight fires with lithium ion batteries. No special extinguishing media are required.
Conventional extinguishing media should be used to fight fires in the vicinity of the batteries.
Battery fire cannot be considered separately from surrounding fire.
The cooling effect of water hampers propagation of the fire to battery cells which have not yet reached the critical temperature for ignition (“thermal runaway”).
Reduce the fire burden by singling out large quantities and removing them from the hazard area.

5.2 Special hazards arising from the substance or mixture

In the event of a fire, gases can be formed which are harmful to health when inhaled.

5.3 Advice for firefighters

Ensure adequate respiratory protection. Use self-contained respiratory equipment.
Observe local regulations and ensure adequate ventilation.

Section 6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment appropriate to the situation (protective gloves, protective clothing, face protection, respiratory protection).
Wear protective gloves to prevent direct skin contact. Rinse with copious amounts of water.

6.2 Environmental precautions
Avoid seepage into the sewer system and/or soil.

6.3 Methods and materials for containment and cleaning up
Electrolyte can emerge if the battery housing is damaged. Place batteries in an air-tight plastic bag and add dry sand, lime powder (CaCO3) or vermiculite. Electrolyte traces can be soaked up with dry paper towels.

6.4 Reference to other sections
See Section 7 for more information on safe handling.
See Section 8 for more information on personal protective equipment.
See Section 13 for more information on disposal.

Section 7. Handling and Storage

7.1 Reference to other sections

Handle discharged batteries carefully
Discharged batteries are also a hazard source because they can still deliver very high short-circuit currents. Even when lithium ion batteries appear to be discharged, they must be handled just as carefully as when they are not discharged.

Avoid exposure to physical effects and/or blows
Blows and penetration of objects can damage the battery. That can lead to leaks, overheating, smoke formation, ignition or explosion of the battery.

Keep batteries away from other metallic objects
Including paper clips, coins, keys, screws, and other metallic objects which could cause shorting of the battery terminals. A short-circuit between the battery terminals can cause burns or fire.

Liquid can emerge from the battery if it is used improperly
Avoid contact with leaky batteries. In case of accidental contact, rinse with water. If the liquid comes in contact with the eyes, also seek medical attention. Emerging liquid can lead to skin irritation or burns.

Do not expose batteries to fire or high temperatures
If the batteries are thrown into a fire or exposed to temperatures above 85°C, the heat can lead to an explosion and/or fire and cause personal injuries. Do not incinerate batteries except in a waste incinerator approved for that purpose.

Do not dismantle batteries
Dismantling or altering the battery can degrade the protective measures. That can lead to overheating, smoke formation, ignition or explosion of the battery.

Do not immerse batteries in liquids, such as water or beverages
Contact with liquids can damage the battery. That can lead to overheating, smoke formation, ignition or explosion of the battery.

Recharge batteries only in battery chargers recommended by the manufacturer
There is a risk of fire if a charger is used with batteries other than those for which it is intended.

Use batteries only in the electrical tools and garden implements for which they are intended
Using other electrical tools or garden implements can lead to injuries or fire.

Do not use batteries which are damaged or in abnormal condition
Damaged batteries and batteries in abnormal condition can have unforeseeable properties which can lead to fire, explosion or personal injuries.

Do not use defective batteries
Stop using the battery immediately if it shows signs of abnormal properties, such as odour, heat, discolouration or deformation. Continued use of a defective battery can lead to overheating, smoke formation, ignition or explosion.

7.2 Conditions for safe charging with respect to incompatibilities
Always carefully observe the warning notices on the batteries and in the use instructions. Using only recommended battery types.
Lithium batteries should preferably be stored in a dry place at room temperature (max. 50°C). Large temperature variations should be avoided (do not store close to heaters, avoid long-term exposure to direct sunlight, etc.). Consult local authorities and/or insurance companies with regard to the storage of relatively large quantities of lithium batteries.

7.3 Specific end uses
No further relevant information available

Section 8. Exposure Controls, Personal Protection

8.1 Control parameters
Lithium ion batteries are products which do not release any substances under normal and reasonably foreseeable conditions of use. Exposure control and personal protective equipment are therefore not normally required.

8.2 Exposure controls
If substances are released from the battery cells, the following instructions for accident prevention when handling chemicals must be observed.

Personal protective equipment

Protective gloves with CE mark conforming to category III of EN 374.
Closed safety glasses or goggles
Protective clothing

Section 9. Physical and Chemical Properties

General Information

FORM:	Compact batteries with (plastic) enclosure and electrical terminals	**DECOMPOSITION TEMPERATURE:**	Not determined
COLOR:	Black	**SPONTANEOUS FLAMMABILITY:**	Not spontaneously flammable
ODOR:	Odorless	**EXPLOSION HAZARD:**	No explosion hazard in normal and reasonably foreseeable use
ODOR THRESHOLD:	Not applicable	**EXPLOSIVE LIMITS (LOWER, UPPER):**	Not determined
pH:	Not applicable	**VAPOUR PRESSURE:**	Not applicable
MELTING POINT / FREEZING POINT:	Not applicable	**DENSITY:**	Not determined
BOILING POINT:	Not applicable	**SOLUBILITY / MISCIBILITY IN WATER:**	Insoluble
FLASH POINT:	Not applicable	**PARTITION COEFFICIENT:**	Not applicable
FLAMMABILITY (SOLID, GAS):	Not determined	**VISCOSITY:**	Not applicable
IGNITION TEMPERATURE:	Not determined	**SOLVENT CONTENT:**	0.0%

Section 10. Stability and Reactivity

10.1 Reactivity

10.2 Chemical stability
No decomposition when used as intended

10.3 Possibility of hazardous reactions
No hazardous reactions known

10.4 Conditions to avoid

If the upper temperature limit (e.g. 130°C) is exceeded, there is a risk that the batteries may burst or that the pressure relief vent may open.
Storage temperatures above 60°C can lead to accelerated ageing and premature loss of functionality.

10.5 Incompatible materials
Strong oxidants, strong acids, electrically conductive materials

10.6 Hazardous decomposition products
Vapours harmful to health are released in the event of fire.

Section 11. Toxicological Information

11.1 Information about toxicological effects
Lithium batteries are products which do not release any substances under normal and reasonably foreseeable conditions of use. Organic electrolyte and other ingredients may be released if the product is
damaged. Primary irritative effect:

On the skin - Irritating to the skin and mucous membranes.

On the eyes - Irritating

Additional toxicological information
According to the calculation procedure of the latest EC version of the General Classification Guideline, the product is not subject to labelling requirements.

Section 12. Ecological Information

12.1 Toxicity
No further relevant information available

12.2 Persistence and degradability
No further relevant information available

12.3 Bioaccumulative potential
No further relevant information available

12.4 Mobility in soil
No further relevant information available

12.5 Results of PBT and vPvB assessment
PBT: Not applicable
vPvB: Not applicable

12.6 Other adverse effects
General considerations
No adverse effects on the environment are to be expected under normal and reasonably foreseeable conditions of use. The batteries do not contain any heavy metals (lead, cadmium, mercury, etc.).

Section 13. Disposal Considerations

Dispose of the battery pack in accordance with national regulations.

Recycle lithium-ion batteries through approved recycling or take-back programs. Metal and plastic components of the tool can be recycled where facilities exist. Collect and dispose of grinding dust and used wheels in accordance with local, state, and federal regulations.

Section 14. Transport Information

U.S. Dot Hazardous Material Regulations (Re: Ground Transport)
Proper Shipping Description:
UN3480 Lithium ion batteries; UN3481 Lithium ion batteries packed with or contained in equipment; Class 9.

Milwaukee Lithium ion batteries are to be shipped in compliance with relevant requirements of HMR "49 CFR173.185".

Canada Transport Dangerous Goods (Re: Ground Transport)
Proper Shipping Description:
UN3480 Lithium ion batteries; UN3481 Lithium ion batteries packed with or contained in equipment; Class 9.

Milwaukee Lithium ion batteries are to be shipped in compliance with relevant requirements of TDG "Part 2" (Section 2.43), or TDG "Schedule 2" (Special Provision 34), as applicable.

International Dangerous Goods Regulations (Re: Air, Sea, Ground Transport)

Proper Shipping Description:

UN3480 Lithium ion batteries; UN3481 Lithium ion batteries packed with or contained in equipment; Class 9.

Milwaukee Lithium ion batteries are to be shipped in compliance with relevant requirements of the following DG Regulations:

- ICAO Technical Instructions or IATA Dangerous Goods Regulations (59th Edition): Packing Instructions 965; 966; 967 (Section I, or Section II, as applicable).
- IMDG Code: Packing Instruction P903, or Special Provision 188, as applicable.
- UN Model Regulations on the Transport of Dangerous Goods: Packing Instruction P903, or Special Provision 188, as applicable.
- UN European Agreements (ADR/RID/ADN): Packing Instruction P903, or Special Provision 188, as applicable.
- Australian Dangerous Goods (ADG): Packing Instruction P903, or Special Provision 188, as applicable.

IMPORTANT: The proper classification, packaging, labeling, marking, and documentation requirements for shipping Lithiumion batteries is dependent upon whether the particular batteries are:

A.) Rated at 100 Watt hours (Wh) or less; or

B.) Rated at greater than 100Wh.

Generally, Lithium ion batteries rated 100Wh or less are "excepted" from certain Class 9 DG requirements. Always check compliance of Lithium ion battery consignments against the current regulations governing the chosen mode of transport. When in doubt, contact the carrier or other trained Dangerous Goods professional to confirm acceptability.

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 Milwaukee Electric Tool Corporation located at:
13135 W. Lisbon Rd., Brookfield, WI, USA 53005.

Section 15. Regulatory Information

Global Inventories

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

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

ECL: Korea Compliant with, relevant transportation test requirements as described in the UN Manual of Tests & Criteria, Part III, Sub-section 38.3.

PICCS: Philippines 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.

AICS: Australia 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.

EINECS: European Union 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 Safe
Drinking 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.

Section 16. 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