# Safety Information for Lithium Ion Batteries for Cordless Power Tools and Electric Garden Equipment

THE EUROPEAN POWER TOOL ASSOCIATION

February 2020

## PRELIMINARY REMARKS

**EC**

These batteries are neither "substances" nor "preparations" according to the REACH Regulation 1907/2006 EC. They have, however, to be regarded as "articles" which are not intended to release substances under normal or reasonably foreseeable conditions of use. Therefore it is not required to provide a Safety Data Sheet according to article 31 of the REACH Regulation (EC) 1907/2006.

**US**

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle;

(i) which is formed to a specific shape or design during manufacture;

(ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and

(iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.

## 1. IDENTIFICATION OF THE PRODUCT AND OF THE COMPANY

**Product Name:**

Lithium-ion Batteries - Rechargeable
Makita Type : BLXXXX(Y) BLXXXXX(Y) BLXXXX(YY) LXXXX PDCXXXX
DOLMAR Type : AP-XXX AP-XXXX

Note:
XXX : "XXX" represents 3 digit numbers
XXXX : "XXXX" represents 4 digit numbers
XXXXX : "XXXXX" represents 5 digit numbers
(Y) or (YY) : A letter or two letters may be followed after the 4 or 5 digit numbers
(ex. BL7010, BL1850B, BL1415NA, BL36120A etc.)

Integral Lithium-ion Batteries –Rechargeable
Makita Cordress Cleaner Type :CLXXXD
Makita Cordress Screwdriver Type :DFXXXD

Note:
XXX : "XXX" represents 3 digit numbers
(ex. CL105D, DF001D etc.)

**Manufacturer:**

Makita Corporation
3-11-8, Sumiyoshi-cho, Anjo, Aichi,
446-8502, Japan
Phone : +81 (0)566-98-1711
www.makita.com

## 2. HAZARDS IDENTIFICATION

Lithium ion batteries have a gas-tight seal and not hazardous when used and handled in accordance with the manufacturer's specifications.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Cathode: Li-, Ni-, Co-, Mn- containing oxides (active material), polyvinylidene fluoride (binder), carbon (conductive material), additives, aluminium foil

Anode: carbon (active material), silicon monoxide (active material), polyvinylidene fluoride(binder), styrene-butadiene rubber(binder), Carboxymethyl cellulose sodium salt(binder), Organic polymer (binder), additives, copper foil

Electrolyte: organic solvents (non aqueous liquids), lithium salt, additives,

The product does not contain metallic lithium or lithium alloys.

## 4. FIRST AID MEASURES

**Skin or eye contact with released substances (electrolyte)**:
Rinse eyes thoroughly with water for at least 15 minutes. Seek medical attention.

**Chemical Burns:**
Chemical burns require appropriate treatment. Seek medical attention.

**Respiratory tract**:
In case of intensive smoke generation or gas release immediately leave the room. In case of large quantities and irritation of the respiratory tract, seek medical attention. Ensure sufficient ventilation.

**Swallowing:**
Rinse mouth and vicinity with water. Seek immediate medical attention.

## 5. FIREFIGHTING MEASURES

Fires from lithium batteries can basically be fought with water. There is no need for additional or special extinguishing agents. Surrounding fires can be fought with conventional extinguishing agents. The fire of a battery cannot be considered separately from the surrounding fire.

The cooling effect of water effectively prevents surrounding fire from spreading to batteries which have not yet reached the critical ignition ("thermal runaway") temperature.

Reduce fire load by separating large quantities and moving them away from the area of risk.

During a fire, gases may develop which may cause injuries of the respiratory tract. Take care of sufficient respiratory protection.

## 6. ACCIDENTAL RELEASE MEASURES

When damaged the battery housing may release electrolyte. Seal batteries in an airtight plastic bag, add dry sand, chalk powder (CaCO3) or vermiculite. Traces of electrolyte can be absorbed with dry paper towels. Wear protective gloves in order to prevent direct contact with skin. Thoroughly rinse contaminated areas with water.

Use appropriate personal protective equipment (protective gloves, protective clothing, protective mask, respiratory protection).

## 7. HANDLING AND STORAGE

**Handling and Occupational Safety**

**Handle discharged batteries with care**
Even when discharged, batteries represent a risk as they may deliver a very high short-circuit current. Even if they seem to be discharged lithium ion batteries need to be treated as carefully as if they were not discharged.

**Avoid impact and physical damage**
Impact and penetration may damage the battery. This may cause leakage, heat generation, smoke, fire, or explosion.

**Keep batteries away from other metal objects**
Paperclips, coins, keys, nails, screws or other metal objects can short the terminals. This may cause burns or fire.

**Under abusive conditions liquid may be released from the battery**
Avoid contact with battery liquids. Rinse with water. Upon contact with eyes, seek also medical assistance. Liquid released from the battery may cause irritation or chemical burns.

**Do not expose a batteries to fire or excessive temperature**
Exposure to fire or temperature above 130 °C may cause fire, explosion and personal injuries. Do not incinerate batteries except for permitted waste incinerators.

**Do not disassemble batteries**
Disassembly or modification of the battery may damage the protection circuit. This may cause heat generation, smoke, fire, or explosion.

**Do not immerse batteries in liquids like water or beverages**
Exposure to liquids may damage the battery. This may cause heat generation, smoke, fire, or explosion.

**Use only chargers recommended by the manufacturer**
Chargers which are not suited for the battery being recharged may be damaged. This may cause fire.

**Use cordless power tools and electric garden equipment only with designated batteries**
Use of cordless power tools and electric garden equipment with other batteries may lead to battery damage. This may cause fire and personal injury.

**Do not use damaged or modified batteries**
Damaged or modified batteries may exhibit unpredictable risks. This may cause fire, explosion and personal injury.

**Do not use defective batteries**
Immediately stop using batteries when abnormalities are noticed, such as smell, heat, discoloration, or deformation. Otherwise the battery may be damaged. This may cause heat generation, smoke, fire, or explosion.

**Storage**
Always carefully observe warning notices on batteries and in instructions for use. Use only recommended battery types.

Lithium batteries preferably are to be stored at ambient temperature and in dry places (max. 50 °C). Large temperature fluctuations are to be avoided. (For example, do not store near heat radiators, do expose to sunlight for sustained periods).

Consult local authorities and insurers when storing large quantities of lithium batteries.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Not applicable. Lithium ion batteries are products, which do not release substances under normal and reasonably foreseeable conditions of use. Therefore there is normally no need for exposure controls and personal protection

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Compact batteries with (plastic) housing, terminals

## 10. STABILITY AND REACTIVITY

When an upper temperature limit of (e.g. 130°C) is exceeded, batteries may rupture or the pressure relief mechanism may be activated.

Exceeding a storage temperature of 60 °C may lead to accelerated ageing and premature loss of function.

## 11. TOXICOLOGICAL INFORMATION

Lithium ion batteries are products, which do not release substances under normal and reasonably foreseeable conditions of use. In case of damaged ingredients may be released.

## 12. ECOLOGICAL INFORMATION

Lithium ion batteries do not contain heavy metals (such as lead, cadmium or mercury).

## 13. DISPOSAL CONSIDERATIONS

In the EU, used batteries must not be disposed of with household waste and not be mixed with batteries of other systems in order to prevent risk for man and environment and not to exacerbate recycling.

Used batteries shall be returned (free of charge) to the point of sale or to a collection system (industry, distribution).

According to the EU battery directive, lithium batteries are marked with the symbol indicating 'separate collection' ( crossed-out wheeled bin shown below).

To prevent short circuits and associated heating, lithium batteries must not be stored or transported in bulk form and unprotected. Suitable measures against short circuits include:

- Placing the batteries in original packaging or a plastic bag
- Individual protection of battery contacts (e.g. using insulating tape)
- Embedding in dry sand

## 14. TRANSPORT INFORMATION

Commercial transport of lithium ion batteries is subject to dangerous goods regulations. Transport preparations and transport are exclusively to be carried out by appropriately trained personnel and/or the process has to be accompanied by experts with suitable knowledge or qualified companies.

**Transport regulations:**

Lithium batteries are subject to the following dangerous goods regulations and exemptions based on the respective valid revision:

Class 9

UN 3480: LITHIUM ION BATTERIES

UN 3481: LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT,
(i.e. inserted in battery operated product) or

LITHIUM ION BATTERIES PACKED WITH EQUIPMENT
(i.e. packed together with battery operated product)

**ADR, RID**
Special provisions: 188, 230, 310, 376, 377, 636
Packing instructions: P903, P908, P909, LP903, LP904
Tunnel category E

February 2020

**IMDG Code**
Special provisions: 188, 230, 310, 348, 360, 376, 377
Packing instructions: P903, P908, P909, LP903, LP904
EmS: F-A, S-I
Stowage category A

**ICAO, IATA-DGR**
Special provisions: A88, A99, A154, A164, A181, A182, A183, A185, A201
Packing instructions: 965, 966, 967

**All transport modes**

[Test methods and requirements

In accordance with the dangerous goods regulations for lithium batteries, each new type of cell or battery must have passed all tests listed in the UN Manual of Tests and Criteria, Part III, Section 38.3. This particularly applies also if multiple cells or batteries have been assembled into new batteries (battery packs or battery assemblies). Therefore it should be confirmed here that batteries as distributed by the manufacturer/supplier have passed the respective tests.

These requirements also apply to used batteries. Used batteries that are intact and undamaged can usually be transported under the regulations for unused batteries]

Defective or damaged batteries are subject to more stringent regulations. These regulations may prohibit the transport completely. A general ban applies to air transport (IATA DGR - special provision A154).

For transport of used - but not damaged - batteries please refer to the respective special provisions.

Waste batteries and batteries which are sent for recycling or disposal are prohibited from air transport (IATA Special provision A 183).

Exemptions need to be approved in advance by the competent authority of the country of origin and the respective country of the airline.

## 15. REGULATORY INFORMATION

Regardless of shape, volume, weight and application, batteries, in the EU are subject to the respective national implementation of the European Battery Directive (2006/66/EC). It includes but is not limited to regulations regarding placing on the market, collection, treatment and recycling of batteries.

Transport regulations are according to IATA, ADR, IMDG, RID. Refer to section 14.

## 16. OTHER INFORMATION

This information provides assistance for compliance with legal requirements, but does not replace them. It is based on our present knowledge.

The above information was compiled to the best of our knowledge and belief.

The information does not represent any warranties. Distributors and users of the product have to take their own responsibility to observe applicable laws and regulations.

# LITHIUM BATTERIES TEST SUMMARY

## IN ACCORDANCE WITH SUB-SECTION 38.3 OF UN MANUAL OF TESTS AND CRITERIA

| | | |
|---|---|---|
| 1 | Product Manufacturer | Makita Corporation<br>3-11-8, Sumiyoshi-cho, Anjo, Aichi,<br>446-8502, Japan<br>Phone : +81 (0)566-98-1711<br>www.makita.com |
| 2 | Model | Detachable Lithium-ion Batteries – Rechargeable<br>Makita Type : BL<br><br>Separable Lithium-ion Batteries – Rechargeable<br>Makita Type : PDC<br><br>Integral Lithium-ion Batteries – Rechargeable for Makita Cordless Cleaner<br><br>Integral Lithium-ion Batteries – Rechargeable for Makita Cordless Screwdriver<br><br>For detailed list of models see product test information table |
| 3 | Voltage rating | 3.6V / 7.2V / 10.8V (12Vmax.) / 14.4V / 18V / 36V (40Vmax.) |
| 4 | Ah rating | 1.3Ah / 1.5Ah / 2.0Ah / 2.5Ah / 3.0Ah / 4.0Ah / 5.0Ah / 6.0Ah / 33.5Ah |
| 5 | Wh rating | 5.4Wh / 10.8Wh / 14.0Wh / 17.0Wh / 22.0Wh / 27.0Wh / 36.0Wh / 44.0Wh / 54.0Wh / 58.0Wh / 72.0Wh / 80.0Wh / 87.0Wh / 90.0Wh / 94.0Wh / 108.0Wh / 144.0Wh / 180.0Wh / 1206Wh |

## List of Tests Conducted and Results

| PERFORMED TESTS | | RESULTS |
|---|---|---|
| 38.3.4.1 T1 | Altitude Simulation | Passed |
| 38.3.4.2 T2 | Thermal Test | Passed |
| 38.3.4.3 T3 | Vibration | Passed |
| 38.3.4.4 T4 | Shock | Passed |
| 38.3.4.5 T5 | External Short Circuit | Passed |
| 38.3.4.7 T7 | Overcharge | Passed |

(Note that tests T6 and T8 are not applicable to batteries.)

| Revision Date: 2021-1-25 | Revision Number: 2.0 |
|---|---|
| RESEARCH & DEVELOPMENT PLANNING DEPARTMENT<br>GENERAL MANAGER<br>Yoshihisa Inuzuka | Signature  |

The UN 38.3 tests were performed by one of the following test houses and were tested to UN Manual Test and Criteria Revision 3 Amendment 1 or subsequent revisions or amendments.

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|---|---|
| Tohoku Murata Manufacturing Co., Ltd.<br>1-1 Shimosugishita, Takakura, Hiwada-machi,<br>Koriyama-shi, Fukushima, 963-0531 Japan<br>Phone: +81-24-955-7770<br>e-mail: tmm-qa-compliance@murata.com<br>Website: https://www.murata.com/en-global/group/tohokumurata | Samsung SDI Co., Ltd<br>467, Beonyeong-ro, Seobuk-gu,<br>Cheonan-si, Chungcheongnam-do,<br>Korea<br>Phone: +82-41-560-3114<br>e-mail: lian55.kim@samsung.com<br>Website: http://samsungsdi.co.kr |
| CQC Intime Testing Technology Co.,Ltd.<br>East Taihu Technology and Finance City,<br>No.1368<br>Wuzhong Dadao Rd., Wuzhong Economic Development<br>Zone, Suzhou, Jiangsu.<br>Phone: 0512-66303623<br>e-mail: cqc_jszlb@126.com<br>Website: http://www.cqc-it.com | Celxpert(Kunshan) Energy Co.Ltd<br>NO.1111,Hanpu Road,Yushan Town,Kunshan City,Jiangsu Province,P.R.China<br>Phone: +86-0512-57775999-8239<br>e-mail: Frank_Gao@cn.celxpert.com<br>Website: http://www.celxpert.com.tw |
| Murata Energy Device Wuxi Co., Ltd.<br>No.27 Changjiang Road, New District,Wuxi,Jiangsu Province, 214028 P.R.C.<br>Phone: +86-510-8523-9120<br>e-mail: mdw-qa-comp@murata.com<br>Website: https://www.murata.com/en-global/group/tohokumurata | Shanghai Research Institute of Chemical Industry Testing Center<br>No.345 East Yunling Road, Putuo, Shanghai,China<br>Phone: +86-21-3176555<br>e-mail: battery@ghs.cn<br>Website: http://www.ghs.cn |
| HCT CO.,LTD.<br>74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383<br>KOREA<br>Phone:031-645-6300<br>e-mail:E_safety@hct.co.kr<br>Website: http://www.hct.co.kr/ | |

# Description of Battery and Test Information

| Model numbers | Physical Description | Battery weight (kg) | Wh rating | Test report number | Test report date | Applicable UN Numbers acc. to UN Model Regulations |
|---|---|---|---|---|---|---|
| BL0715<br>7.2V<br>1.5 Ah | Detachable cluster lithium-ion accumulator | 0.12 | 10.8 | QA-7349 | 10-Oct-2017 | UN3480/<br>UN3481 |
| BL1013/BL1014<br>10.8V/12Vmax.<br>1.3Ah | Detachable cluster lithium-ion accumulator | 0.17 | 14.0 | QA-7332<br>QA-7357 | 4-Oct-2017<br>20-Oct-2017 | UN3480/<br>UN3481 |
| BL1013/BL1014<br>10.8V/12Vmax.<br>1.3Ah | Detachable slide in lithium-ion accumulator | 0.18 | 14.0 | MT0038801 | 4-Mar-2011 | UN3480/<br>UN3481 |
| BL1015/BL1016<br>10.8V/12Vmax.<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.25 | 17.0 | CPK-QA-Lab-UN383PACK1402<br>CPK-Lab-UN383PACK15060 | 16-Aug-2014<br>16-Aug-2015 | UN3480/<br>UN3481 |
| BL1021B<br>12Vmax.<br>2.0Ah | Detachable slide in lithium-ion accumulator | 0.24 | 22.0 | CPK-QA-Lab-UN383PACK15063 | 20-Aug-2015 | UN3480/<br>UN3481 |
| BL1040B/BL1041B<br>10.8V/12Vmax.<br>4.0Ah | Detachable slide in lithium-ion accumulator | 0.43 | 44.0 | CPK-Lab-UN383PACK14042<br>CPK-QA-Lab-UN383PACK15062 | 23-Dec-2014<br>23-Aug-2015 | UN3480/<br>UN3481 |
| BL1415N<br>14.4V<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.32 | 22.0 | SDI-UN-131101-02 | 17-Dec-2017 | UN3480/<br>UN3481 |
| BL1415NA<br>14.4V<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.40 | 21.6 | MT0045738 | 15-Jul-2011 | UN3480/<br>UN3481 |
| BL1430B<br>14.4V<br>3.0Ah | Detachable slide in lithium-ion accumulator | 0.50 | 44.0 | SDI-UN-P160118-01 | 18-Jan-2016 | UN3480/<br>UN348 |
| BL1440<br>14.4V<br>4.0Ah | Detachable slide in lithium-ion accumulator | 0.53 | 58.0 | QA-7358 | 20-Oct-2017 | UN3480/<br>UN3481 |
| BL1450<br>14.4V<br>5.0Ah | Detachable slide in lithium-ion accumulator | 0.51 | 72.0 | SDI-UN-P140807-01 | 11-Aug-2014 | UN3480/<br>UN348 |
| BL1460A<br>14.4V<br>6.0Ah | Detachable slide in lithium-ion accumulator | 0.54 | 87.0 | CPK-QA-Lab-UN383PACK15061 | 12-June-2015 | UN3480/<br>UN3481 |

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|---|---|---|---|---|---|---|
| BL1460B<br>14.4V<br>6.0Ah | Detachable slide in lithium-ion accumulator | 0.54 | 87.0 | CPK-QA-Lab-UN383PACK15027 | 12-June-2015 | UN3480/ UN3481 |
| BL1415G<br>14.4V<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.33 | 22.0 | CPK-QA-Lab-UN383PACK16008 | 01-Mar-2016 | UN3480/ UN3481 |
| BL1815N<br>18V<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.36 | 27.0 | MT0059172 | 15-Feb-2012 | UN3480/ UN3481 |
| BL1815N<br>18V<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.36 | 27.0 | CPK-QA-Lab-UN383PACK13025 | 13-Oct-2013 | UN3480/ UN3481 |
| BL1820B<br>18V<br>2.0Ah | Detachable slide in lithium-ion accumulator | 0.38 | 36.0 | QA-7337 | 5-Oct-2017 | UN3480/ UN3481 |
| BL1830B<br>18V<br>3.0Ah | Detachable slide in lithium-ion accumulator | 0.64 | 54.0 | QA-7344 | 5-Oct-2017 | UN3480/ UN3481 |
| BL1830B<br>18V<br>3.0Ah | Detachable slide in lithium-ion accumulator | 0.60 | 54.0 | SDI-UN-P160314-01 | 14-Mar-2016 | UN3480/ UN3481 |
| BL1840B<br>18V<br>4.0Ah | Detachable slide in lithium-ion accumulator | 0.65 | 72.0 | QA-7285 | 1-Sep-2017 | UN3480/ UN3481 |
| BL1840B<br>18V<br>4.0Ah | Detachable slide in lithium-ion accumulator | 0.60 | 72.0 | SDI-UN-P150209-01 | 10-Feb-2015 | UN3480/ UN3481 |
| BL1850B<br>18V<br>5.0Ah | Detachable slide in lithium-ion accumulator | 0.64 | 90.0 | QA-7286 | 1-Sep-2017 | UN3480/ UN3481 |
| BL1850B<br>18V<br>5.0Ah | Detachable slide in lithium-ion accumulator | 0.62 | 90.0 | SDI-UN-P160104-01 | 4-Jan-2016 | UN3480/ UN3481 |
| BL1860B<br>18V<br>6.0Ah | Detachable slide in lithium-ion accumulator | 0.67 | 108.0 | 2017126J17835 | 7-Dec-2017 | UN3480/ UN3481 |
| BL1815G<br>18V<br>1.5Ah | Detachable slide in lithium-ion accumulator | 0.39 | 27.0 | CPK-QA-Lab-UN383PACK16012 | 23-Mar-2016 | UN3480/ UN3481 |
| BL3626<br>36V<br>2.6Ah | Detachable slide in lithium-ion accumulator | 1.34 | 94.0 | QA-7346 | 6-Oct-2017 | UN3480/ UN3481 |

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|---|---|---|---|---|---|---|
| BL3622A<br>36V<br>2.2Ah | Detachable slide in lithium-ion accumulator | 1.33 | 80.0 | QA-7348 | 6-Oct-2017 | UN3480/<br>UN3481 |
| Integral Batteries for DF001D | Integral lithium-ion accumulator | 0.13 | 5.4 | CPK-QA-Lab-UN383PACK16026 | 26-Dec-2016 | UN3480/<br>UN3481 |
| Integral Batteries for CL105D | Integral lithium-ion accumulator | 0.18 | 14.0 | CPK-QA-Lab-UN383PACK13028-K092-1-1 | 18-May-2014 | UN3480/<br>UN3481 |
| Integral Batteries for CL104D | Integral lithium-ion accumulator | 0.18 | 17.0 | CPK-QA-Lab-UN383PACK16022-1-1-1-1 | 27-Feb-2018 | UN3480/<br>UN3481 |
| BL4025<br>40Vmax.<br>2.5Ah | Detachable slide in lithium-ion accumulator | 0.70 | 90.0 | MDW-B19090 | 12-Sep-2019 | UN3480/<br>UN3481 |
| BL4040<br>40Vmax.<br>4.0Ah | Detachable slide in lithium-ion accumulator | 1.04 | 144.0 | 1119040200 | 20-May-2019 | UN3480/<br>UN3481 |
| BL4020<br>40Vmax.<br>2.0Ah | Detachable slide in lithium-ion accumulator | 0.68 | 72.0 | 1120010340 | 27-Feb-2020 | UN3480/<br>UN3481 |
| BL4050F<br>40Vmax.<br>5.0Ah | Detachable slide in lithium-ion accumulator | 1.31 | 180.0 | 1120050246 | 28-Jun-2020 | UN3480/<br>UN3481 |
| PDC1200<br>36V<br>33.5Ah | Separable lithium-ion accumulator | 8.80 | 1206 | HCT-BA-2002-RE016 | 13-Feb-2020 | UN3480/<br>UN3481 |