

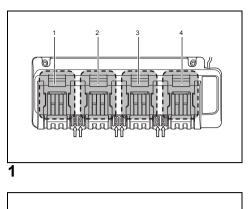
DC18SF

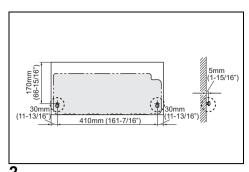
Four Port Multi Charger3	3
Chargeur 4 Batteries	1
Multicargador de Cuatro Puertos6	ò

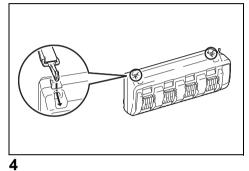
IMPORTANT: Read Before Using.

IMPORTANT: Lire ce qui suit avant d'utiliser cet outil.

IMPORTANTE: Leer antes de usar.







ENGLISH

Symbols

The followings show the symbols used for the charger and battery. Be sure that you understand their meaning before use.



· Ready to charge



Charging



· Charging complete



 Delay charge (Battery cooling or too cold battery, waiting for charging)



· Deffective battery



Do not short batteries.

Specifications

Model	DC18SF
Input	A.C. 120 V 50 – 60 HZ
Output	D.C. 14.4 V – 18 V
Weight	2.1 kg (4.561 lbs)

- Manufacturer reserves the right to change specifications without notice.
- · Note: Specifications may differ from country to country.
- Weight according to EPTA-Procedure 01/2003.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

. SAVE THESE INSTRUCTIONS

manual contains important safety and operating instructions for battery charger.

- Before using battery charger, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
- CAUTIÓN To reduce risk of injury, charge only MAKITA rechargeable batteries marked on the charger label. Other types of batteries may burst causing personal injury and damage.
- Non-rechargeable batteries cannot be charged with this battery charger.
- Use a power source with the voltage specified on the nameplate of the charger.
- namepiate of the charger.
 Do not charge the battery cartridge in presence of flammable liquids or gases.
- Do not expose charger to rain or snow.
- Never carry charger by cord or yank it to disconnect from receptacle.

- After charging or before attempting any maintenance or cleaning, unplug the charger from the power source. Pull by plug rather than cord whenever disconnecting charger.
- Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- Do not operate charger with damaged cord or plug. If the cord or plug is damaged, ask Makita authorized service center to replace it in order to avoid a hazard.
- 12. Do not operate or disassemble charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman. Incorrect use or reassembly may result in a risk of electric shock or fire.
- The battery charger is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure that they do not play with the battery charger.
- 15. Do not charge battery cartridge when room temperature is BELOW 10°C (50°F) or ABOVE 40°C (104°F). When the battery temperature is under 0°C (32°F), charging may not start.
- Do not attempt to use a step-up transformer, an engine generator or DC power receptacle.

Charging (Fig. 1)

This charger can charge at most two batteries at the same time. Left two ports and right two ports of the charger consist pairs respectively. One pair can charge a battery at one time. For example, if you insert the batteries in port 1 and 3, the charger starts charging those two batteries at the same time. However, if you insert the batteries in port 1 and 2, the charger starts charging only port 1. Charging of port 2 starts after the charging of battery in port 1 completes.

- Plug the battery charger into the proper AC voltage source. Charging lights start blinking rapidly in green color.
- Insert the battery cartridge into the charger until it stops. Terminal cover of the charger automatically opens as you insert the battery cartridge.
- The charging light on the port changes into red color, and charging starts shortly after.

Note:

Notice the charging light on the port of the pair starts blinking slowly when you insert a battery. If you insert a battery into the pair port, which charging light is blinking slowly in green, the charging light starts blinking in red color, and the port becomes stand-by status. Charging on the pair port starts after completion of charging on the first port.

 As charging progress, the both red and green color light up. And with completion of charging, green color lights up.

Note:

Charging time varies by temperature (10° C (50° F) -40° C (104° F)) and condition of the battery cartridge, such as a battery cartridge which is new or has not been used for a long period of time.

After charging all batteries, remove the battery cartridges from charger and unplug the charger.

NOTE:

- Do not use the charger other than its intended use, nor charge other manufacturer's cartridge.
- When the red light blinks, charging may not start if the battery cartridge is in a following state:
 - Having been just used.
 - Having been left under the direct sunlight or in a cold room for long.
 - Not at adequate temperature.

- Charging starts after the battery cartridge's temperature reaches the degree at which charging is possible.
- · If dust clogs the terminal or the battery cartridge is worn out or damaged, the charger does not charge the battery and the charging light shows green and red alternating light.
- The charger cannot use with INTERCHANGEABLE ADAPTER (ADP01, 04) and REFRESHING ADAPTER (ADP02, 03).

Voltage	14.4V	18V	14.4V	18V	Charging time (minutes)
Number of cells	4	5	8	10	(minutes)
	BL1415	BL1815			30
Li-ion battery	_	BL1820			45
cartridge	_	_	BL1430	BL1830	60
	_	_	BL1440	BL1840	90

Note:

It may take longer than the above charging time because of the optimal charging selected according to the temperature (10°C (50°F) – 40°C (104°F)), conditions of battery cartridge and maintenance charge.

Wall mounting

/ Warning:

- Make sure to use four screws when mounting the charger on the wall. Otherwise the charger may fall and cause serious injury.
- Always be sure that the charger is unplugged and all the batteries are removed from the charger before performing wall mounting work.
- · Follow the steps instructed in this manual, and complete the whole procedures at once. The charger may fall and cause injury or damage if you stop the work in the half way.
- · Check tightness of the screws on regular basis. Otherwise the charger may fall because of loosen screw.
- · Clean the terminal parts of the charger on regular basis with an air duster etc.

⚠ Caution:

· Carefully choose a stable wall for mounting the charger. Make sure there is no hindrance to mounting work or charging operation. The gross weight of the charger and four batteries reach approximately 5 kg, provide sufficient reinforcement for the wall if necessary.

Things you need to prepare:

- Four screws (6mm x more than 40mm) two for hanging and two for anchoring. Tools - for tightening screws.
- Fix the two screws for hanging on the wall as illustrated. (Fig. 2)
- Remove the rubber feet (four pieces) from the bottom of the charger.

Hang the charger with the screws fixed in step 1.

Mount the charger on the wall by tightening two anchoring screws completely. (Fig. 3)

Optional accessory

Caution:

These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

Shoulder belt

/!\ Warning:

- · Do not use the shoulder belt other than carrying the battery charger.
- · Attach the shoulder belt in accordance with this instruction manual. Otherwise the battery charger may fall and cause
- Check carefully that there are no breakage on the belt or its hook before use

Hook the shoulder belt onto the each hole for shoulder belt securely. (Fig. 4)

FRANÇAIS

Symboles

Nous donnons ci-dessous les symboles utilisés pour le chargeur et la batterie. Assurez-vous que vous en avez bien compris la signification avant d'utiliser l'outil.



· Prêt à recharger





Charge terminée





· Batterie défectueuse



- · Charge en cours
- · Charge différée (batterie en cours de refroidissement ou trop froide, en attente de charge)
- · Ne pas court-circuiter les bornes des batteries.

Spécifications

Modèle	DC18SF
Entrée	C.A. 120 V 50 – 60 Hz
Sortie	C.C. 14,4 V – 18 V
Poids	2,1 kg (4,561 lbs)

- · Le fabricant se réserve le droit de modifier sans avertissement les spécifications.
- Note: Les spécifications peuvent varier selon les pays.
- · Poids selon la procédure EPTA 01/2003.

LES CONSIGNES DE SECURITE IMPORTANTES

ATTENTION:

1. CONSERVEZ CES INSTRUCTIONS _

manuel contient d'importantes consignes de sécurité et instructions d'utilisation pour le chargeur de batterie.

- Avant d'utiliser le chargeur de batterie, veuillez lire toutes les instructions et tous les avertissements inscrits sur (1) le chargeur de batterie, (2) la batterie et (3) le produit alimenté par la batterie.
- ATTENTION Pour réduire les risques de blessure, chargez uniquement des batteries rechargeables MAKITA. Les autres types de batterie peuvent entraîner des blessures et des dommages en éclatant.
- 4. Il n'est pas possible de charger des batteries non rechargeables avec ce chargeur de batterie.
- Utilisez une source d'alimentation dont la tension correspond à celle spécifiée sur la plaque signalétique du chargeur.
- Ne chargez pas la batterie en présence de liquides ou gaz inflammables.
- 7. N'exposez pas le chargeur à la pluie ou à la neige.
- Ne transportez jamais le chargeur par son cordon d'alimentation, et ne tirez jamais sur le cordon lui-même pour débrancher sa fiche de la prise de courant.

- Après la charge ou avant d'effectuer l'entretien ou le nettoyage, débranchez le chargeur de la source d'alimentation. Pour débrancher le chargeur, ne tirez pas sur le cordon lui-même; saisissez-le plutôt par sa fiche.
- Vous devez placer le cordon de sorte que personne ne marche ou ne trébuche dessus, et de sorte qu'il ne risque aucun dommage et ne soit pas trop tendu.
- 11. N'utilisez pas le chargeur avec un cordon ou une fiche endommagé. Si le cordon ou la fiche est endommagé, faites-le remplacer dans un centre de service agréé Makita pour éviter tout danger.
- 12. Évitez d'utiliser ou de démonter le chargeur s'il a subi un choc violent, s'il a été échappé, ou s'il a été abîmé de quelque manière que ce soit : apportez-le chez un réparateur agréé. L'utilisation ou le remontage incorrect comporte un risque de choc électrique ou d'incendie.
- Ce chargeur ne doit pas être utilisé sans supervision par les ieunes enfants et par les personnes handicapées.
- Les jeunes enfants doivent être surveillés pour s'assurer qu'ils ne jouent pas avec le chargeur.
- 15. Ne chargez pas la batterie lorsque la température de la pièce est INFÉRIEURE à 10 °C (50 °F) ou SUPÉRIEURE à 40 °C (104 °F). Il se peut que la charge ne commence pas lorsque la température de la batterie est inférieure à 0 °C (32 °F).
- Ne tentez pas d'utiliser un transformateur élévateur, un groupe électrogène ou une prise de courant continu.

Charge en cours (Fig. 1)

Ce chargeur ne peut pas charger plus de deux batteries à la fois. Les deux ports de gauche et les deux ports de droite forment des paires. Chaque paire ne peut charger qu'une seule batterie à la fois.

Par exemple, si vous insérez des batteries dans les ports 1 et 3, le chargeur chargera les deux batteries en même temps. Par contre, si vous insérez des batteries dans les ports 1 et 2, le chargeur ne chargera d'abord que celle du port 1. Il ne chargera celle du port 2 qu'après avoir fini de charger celle du port 1.

- Branchez le chargeur de batterie sur une prise secteur d'une tension adéquate. Les témoins de charge se mettent à clignoter rapidement en vert.
- Insérez la batterie dans le chargeur jusqu'à ce qu'elle s'immobilise. Le couvre-bornes du chargeur s'ouvre automatiquement lorsque vous insérez une batterie.
- Le témoin de charge du port devient rouge, et la charge commence peu après.

Note:

Notez que le témoin de charge du port d'une paire se met à clignoter « lentement » lorsque vous insérez une batterie. Si vous insérez une batterie dans l'autre port de la paire dont le témoin de charge clignote lentement en vert, le témoin se mettra à clignoter en rouge et ce port sera en état d'attente. La charge sur ce port de la paire ne commencera qu'après l'achèvement de la charge sur le premier port de la paire.

 Pendant la charge, les couleurs rouge et verte s'allument toutes les deux. Une fois la charge terminée, la couleur verte s'allume.

Note

Le temps requis pour la charge peut varier suivant la température ambiante (10 °C (50 °F) à 40 °C (104 °F)) et l'état de la batterie, par exemple s'il s'agit d'une batterie neuve ou d'une batterie restée inutilisée pendant une période prolongée.

 Une fois toutes les batteries chargées, retirez-les du chargeur et débranchez le chargeur.

NOTE:

- Ne pas utiliser le chargeur à d'autres fins que la charge, et ne pas charger les batteries d'autres fabricants.
- Lorsque la lumière rouge clignote, il se peut que la charge ne commence pas si la batterie est dans l'état suivant :
- Elle a été laissée longtemps directement au soleil ou dans une pièce froide.
- Elle n'est pas à la température adéquate.

Elle vient tout juste d'être utilisée.

- La charge commence lorsque la batterie atteint la température à laquelle la charge est possible.
- Si des poussières recouvrent les bornes ou si la batterie est usée ou endommagée, le chargeur ne chargera pas la batterie et le témoin de charge s'allumera alternativement en vert et en rouge.
- Le chargeur de batterie ne peut être utilisé avec l'ADAPTATEUR INTERCHANGEABLE (ADP01, 04), ni avec l'ADAPTATEUR DE CHARGE DE RAFRAÎCHISSEMENT (ADP02, 03).

Tension	14,4V	18V	14,4V	18V	Tompo do oborgo
Nombre de cellules	4	5	8	10	Temps de charge (en minutes)
Batterie Li-ion	BL1415	BL1815	_	_	30
	_	BL1820	_	_	45
	_	_	BL1430	BL1830	60
		_	BL1440	BL1840	90

Note:

La charge peut prendre plus de temps que le temps de charge indiqué ci-dessus, en raison de la charge optimale sélectionnée pour la température ambiante (10 °C (50 °F) à 40 °C (104 °F)), de l'état de la batterie et de la charge d'entretien.

Montage mural

Avertissement :

- Vous devez utiliser quatre vis pour monter le chargeur sur un mur. Autrement le chargeur risquera de tomber et de causer une blessure grave.
- Avant d'effectuer le travail de montage mural, assurez-vous que le chargeur est débranché et que toutes les batteries sont retirées du chargeur.
- Suivez les étapes indiquées dans ce manuel, et achevez toute la procédure sans tarder. Si vous laissez le travail inachevé, le chargeur risquera de tomber et de causer une blessure ou des dommages.
- Assurez-vous régulièrement que les vis sont bien serrées.
 Autrement le chargeur risque de tomber à cause d'une vis desserrée.
- Nettoyez régulièrement les bornes du chargeur avec une bouteille d'air comprimé, etc.

Attention :

 Pour monter le chargeur, choisissez soigneusement un mur stable. Assurez-vous que rien ne gênera le travail de montage ou l'exécution de la charge. Comme le poids brut du chargeur et des quatre batteries atteint environ 5 kg, renforcez suffisamment le mur si nécessaire.

Préparatifs :

- Quatre vis (6 mm x plus de 40 mm) deux pour accrocher et deux pour ancrer.
- Outils pour serrer les vis.
- Posez les deux vis d'accrochage sur le mur, tel qu'illustré. (Fig. 2)
- Retirez les pieds de caoutchouc (quatre pièces) au bas du chargeur.

Accrochez le chargeur aux vis posées à l'étape 1. Montez le chargeur au mur en serrant complètement les deux vis d'ancrage. **(Fig. 3)**

Accessoire en option

Attention :

 Ces accessoires ou pièces complémentaires sont recommandés pour l'utilisation avec l'outil Makita spécifié dans ce mode d'emploi. L'utilisation de tout autre accessoire ou pièce complémentaire peut comporter un risque de blessure. N'utilisez les accessoires ou pièces qu'aux fins auxquelles ils ont été conçus.

Si vous désirez obtenir plus de détails concernant ces accessoires, veuillez contacter le centre de service aprèsvente Makita le plus près.

· Bandoulière

Avertissement :

- N'utilisez pas la bandoulière à d'autre fin que le transport du chargeur de batterie.
- Suivez les instructions du présent manuel pour fixer la bandoulière. Autrement le chargeur de batterie risquera de tomber et de causer une blessure.
- Avant l'utilisation, vérifiez soigneusement l'absence de bris sur la bandoulière et sur son crochet.

Accrochez fermement la bandoulière dans chacun des orifices pour bandoulière. (Fig. 4)

ESPAÑOL

Símbolos

A continuación se muestran los símbolos utilizados con el cargador y la batería. Asegúrese de que entiende su significado antes de usarla.



Preparación para la carga



· Cargando



Completada la carga



 Retraso de la carga (La batería se está enfriando o está muy fría, esperando para cargar)





Especificaciones

Modelo	DC18SF
Entrada	120 V ∼ 50 – 60 Hz
Salida	14,4 V cc – 18 V cc
Peso	2,1 kg (4,561 lbs)

- El fabricante se reserva el derecho a cambiar las especificaciones sin aviso.
- · Nota: Las especificaciones podrán cambiar de un país a otro.
- Peso de acuerdo con el procedimiento EPTA 01/2003.

INSTRUCCIONES DE SEGURIDAD IMPORTANTES

PRECAUCIÓN:

GUARDE ESTAS INSTRUCCIONES

Este manual contiene instrucciones de seguridad y funcionamiento importantes para el cargador de baterías.

- Antes de utilizar el cargador de baterías, lea todas las instrucciones e indicaciones de precaución sobre (1) el cargador de baterías, (2) la batería, y (3) el producto con el que se utiliza la batería.
- PRECAUCIÓN Para reducir el riesgo de sufrir heridas, cargue solamente las baterías recargables MAKITA marcadas en la etiqueta de cargador. Otros tipos de baterías podrán reventar ocasionando heridas personales y daños.
- Con este cargador de baterías no se pueden cargar baterías no recargables.
- Utilice una fuente de alimentación cuya tensión sea igual a la especificada en la placa de características del cargador.
- No cargue el cartucho de batería en presencia de líquidos o gases inflamables.
- 7. No exponga el cargador a la lluvia ni a la nieve.
- No coja nunca el cargador por el cable ni tire del cable para desconectarlo de la toma de corriente.

- Después de efectuar la carga o antes de intentar cualquier mantenimiento o limpieza, desenchufe el cargador de la toma de corriente. Tire de la clavija y no del cable siempre que quiera desconectar el cargador.
- Asegúrese de que el cable quede tendido de forma que no lo pueda pisar, tropezar con él, ni que esté sometido a daños o fatigas de ningún tipo.
- No utilice el cargador con el cable o clavija dañado. Si está dañado el cable o la clavija, pida a un centro de servicio autorizado de Makita que lo reemplace para evitar riesgos.
- 12. No utilice ni desarme el cargador si ha recibido un fuerte golpe, lo ha dejado caer, o si se ha dañado de cualquier otra forma; llévelo a un técnico cualificado para que se lo arregle. Una utilización o montaje incorrecto de sus piezas podrá acarrear un riesgo de descarga eléctrica o incendio.
- El cargador de baterías no ha sido pensado para ser utilizado por niños pequeños ni personas frágiles sin supervisión.
- Los niños pequeños deberán ser supervisados para asegurarse de que no juegan con el cargador de baterías.
- 15. No cargue el cartucho de batería cuando la temperatura ambiente esté por DEBAJO de los 10°C (50°F) o por ENCIMA de los 40°C (104°F). Cuando la temperatura esté por debajo de los 0°C (32°F), es posible que la carga no se inicie.
- No intente utilizar un transformador elevador de tensión, un generador a motor ni una toma de corriente de CC.

Cargando (Fig. 1)

Este cargador puede cargar dos baterías al mismo tiempo como máximo. Los dos puertos de la izquierda y los dos puertos de la derecha constituyen pares respectivamente. Un par puede cargar una batería a la vez.

Por ejemplo, si inserta baterías en los puertos 1 y 3, el cargador comenzará a cargar esas dos baterías al mismo tiempo. Sin embargo, si inserta baterías en los puertos 1 y 2, el cargador comenzará a cargar solamente el puerto 1. La carga del puerto 2 comenzará después de haberse completado la carga de la batería en el puerto 1.

- Énchufe el cargador de baterías en una toma de corriente de la tensión de CA apropiada. Las luces de carga comenzarán a parpadear rápidamente en color verde.
- Inserte el cartucho de batería en el cargador a tope. La tapa de terminal del cargador se abre automáticamente al insertar el cartucho de batería.
- La luz de carga del puerto cambia a color rojo, y la carga comienza poco después.

Nota:

Tenga en cuenta que la luz de carga del puerto del par comenzará a parpadear "lentamente" cuando inserte una batería. Si inserta una batería en el puerto emparejado, cuya luz de carga esté parpadeando lentamente en verde, la luz de carga comenzará a parpadear en color rojo, y el puerto se pondrá en estado de en espera. La carga en el puerto emparejado comenzará después de haberse completado la carga en el primer puerto.

 A medida que avance la carga, se iluminarán los colores rojo y verde. Y una vez completada la carga, se iluminará el color verde.

Nota:

El tiempo de carga varía en función de la temperatura (10°C (50°F) – 40°C (104°F)) y la condición del cartucho de batería, tal como si es un cartucho de batería nuevo o no ha sido utilizado durante un periodo de tiempo largo.

 Después de haberse cargado todas las baterías, extraiga los cartuchos de batería del cargador y desenchufe el cargador.

NOTA:

- No utilice el cargador más que para su uso previsto, ni carque cartuchos de otros fabricantes.
- Cuando parpadee la luz roja, es posible que la carga no comience si el cartucho de batería se encuentra en uno de los estados siguientes:
 - Acaba de ser utilizado.
 - Ha sido dejado a la luz directa del sol o en un lugar frío durante largo tiempo.
 - La temperatura no es adecuada.

•	La carga	CO	menzará	despué	s de	que	la	temp	era	tura	del
	cartucho	de	batería	alcance	el g	grado	al	cual	es	pos	ible
	cargar.										

- Si el polvo obstruye el terminal o si el cartucho de batería está inservible o dañado, el cargador no cargará la batería y las luces de carga mostrarán luces que alternarán entre verde y rojo.
- El cargador se no puede utilizar con el ADAPTADOR INTERCAMBIABLE (ADP01, 04) ni con el ADAPTADOR DE REFRESCO (ADP02, 03).

Tensión	14,4 V	18 V	14,4 V	18 V	Tiempo de carga
Número de celdas	4	5	8	10	(minutos)
	BL1415	BL1815	_	_	30
Cartucho de batería	_	BL1820	_	_	45
de litio-ion	_	_	BL1430	BL1830	60
		_	BL1440	BL1840	90

Nota

Es posible que el tiempo de carga sea más largo que el indicado arriba debido a que la carga óptima se selecciona en función de la temperatura $(10^{\circ}C\ (50^{\circ}F)-40^{\circ}C\ (104^{\circ}F))$, las condiciones del cartucho de batería y la carga de mantenimiento.

Montaje en pared

Advertencia:

- Asegúrese de utilizar cuatro tornillos cuando monte el cargador en la pared. De lo contrario, el cargador podrá caerse y ocasionar heridas graves.
- Asegúrese siempre de que el cargador está desenchufado y que todas las baterías han sido retiradas del cargador antes de realizar el trabajo de montaje en pared.
- Siga los pasos indicados en este manual y complete todo el procedimiento de una sola vez. Si deja el trabajo a medias el cargador podrá caerse y ocasionar heridas o daños.
- Compruebe el apriete de los tornillos regularmente. De lo contrario el cargador podrá caerse si se afloian los tornillos.
- Limpie las partes del terminal del cargador regularmente con un sacudidor, etc.

♠ Precaución:

 Elija con cuidado una pared estable para montar el cargador. Asegúrese de que nada impide la realización del trabajo o la operación de carga. El peso bruto del cargador y cuatro baterías alcanza aproximadamente 5 kg. Refuerce la pared suficientemente si es necesario.

Cosas que necesita preparar:

- Cuatro tornillos (6 mm x más de 40 mm) dos para colgar y dos para anclar.
- Herramientas para apretar tornillos.
- Fije los dos tornillos para colgar en la pared como se muestra en la ilustración. (Fig. 2)
- Quite las patas de goma (cuatro piezas) de la parte inferior del cargador.
 Cualque el cargador, applica finada en el page 1.

Cuelgue el cargador con los tornillos fijados en el paso 1. Monte el cargador en la pared apretando los dos tornillos de anclaje completamente. (Fig. 3)

Accesorios opcionales

/!\ Precaución:

- Estos accesorios o aditamentos están recomendados para su uso con la herramienta Makita especificada en este manual. El uso de cualquier otro accesorio o aditamento puede suponer un riesgo de lesiones personales. Utilice el accesorio o aditamento exclusivamente para su uso declarado.
- Si necesita información más detallada sobre estos accesorios, consulte con su centro local de servicio de Makita.
- · Correa de bandolera

Advertencia:

- No utilice la correa de bandolera aparte de para transportar el cargador de baterías.
- Coloque la correa de bandolera de acuerdo con este manual de instrucciones. De lo contrario, el cargador podrá caerse y ocasionar heridas.
- Compruebe cuidadosamente que no hay roturas en la correa ni es su gancho antes de utilizarla.

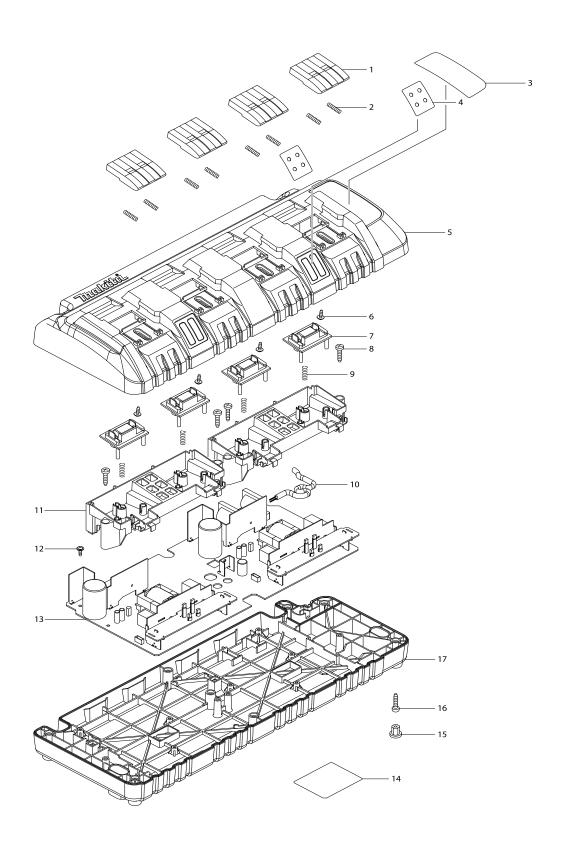
Enganche la correa de bandolera en cada agujero para correa de bandolera firmemente. (Fig. 4)

Makita Corporation

3-11-8, Sumiyoshi-cho, Anjo, Aichi 446-8502 Japan



DC18SF





rev 0_10-30-18 2

DC18SF

1

Battery Charger

Products with multiple versions are listed in subsiding order with the newest version on top not indented.

Section	Fig. No.	Part No.	Description	DC18SF	Tech Bulletin	Notes
1	1	454262-6	TERMINAL COVER	4	<u>B1681</u>	
1	2	231474-6	COMPRESSION SPRING 4	8		
1	3	801K88-7	CHARGING CONDITION LABEL	1		
1	4	801M82-1	INDICATION LABEL	2		
1	5	141900-6	CHARGER CASE COMPLETE	1		
1	6	266278-7	TAPPING SCREW FLANGE BT3X10	4		
1	7	632B34-3	TERMINAL UNIT	4		
1	8	266346-6	TAPPING SCREW BT 4X20	4		
1	9	233194-8	COMPRESSION SPRING 4	4		
1	10	667982-5	VINYL CORD #18-2-2.0	1		
1	11	454263-4	TERMINAL BASE	2		
1	12	266278-7	TAPPING SCREW FLANGE BT3X10	8		
1	13	620190-9	CHARGING CIRCUIT	1		
1	14	814K86-2	DC18SF NAME PLATE	1		
1	15	286255-3	CAP 13	4		
1	16	266346-6	TAPPING SCREW BT 4X20	8		
1	17	454261-8	CHARGER CASE COVER	1		







Two Port Multi Fast Charger Chargeur Rapide 2 Batteries Multi-Cargador Rápido de Dos Puertos

IMPORTANT: Read Before Using.

IMPORTANT: Lire ce qui suit avant d'utiliser cet outil.

IMPORTANTE: Leer antes de usar.

Symbols

The followings show the symbols used for the charger and battery. Be sure that you understand their meaning before use.

Symboles

Nous donnons ci-dessous les symboles utilisés pour le chargeur et la batterie. Assurez-vous que vous en avez bien compris la signification avant d'utiliser l'outil.

Símbolos

A continuación se muestran los símbolos utilizados con el cargador y la batería. Asegúrese de que entiende su significado antes de usarla.



- · Ready to charge
- · Prêt à recharger
- · Preparación para la carga



- · Charging
- En charge
- Cargando



- · Charging complete
- · Recharge terminée
- · Completada la carga



- · Delay charge (Battery cooling or too cold battery)
- Charge différée (Batterie en cours de refroidissement ou batterie trop froide)
- Retraso de la carga (La batería se está enfriando o está muy fría)



- · Defective battery
- · Batterie défectueuse
- · Batería defectuosa



- Conditioning
- · Recharge normale
- · Acondicionamiento



- · Cooling abnormality
- Problème de refroidissement
- Anormalidad en la carga



- · Do not short batteries.
- Ne jamais court-circuiter les bornes d'une batterie.
- No provoque un cortocircuito en las baterías.

SPECIFICATIONS

Model	DC18RD				
Input	A.C. 120 V 50 – 60 Hz / 50/60 Hz				
Output	For MAKITA Battery	D.C. 7.2 V / 7.2 V – 18 V			
Output	For USB Device	D.C. 5 V / D.C. 1.5 A			
Weight	1.9 kg (4.127 lbs)				

- · Manufacturer reserves the right to change specifications without notice.
- · Note: Specifications may differ from country to country.
- Weight according to EPTA-Procedure 01/2003.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

SAVE THESE INSTRUCTIONS — This manual contains important safety and operating instructions for battery charger.

- Before using battery charger, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
- CAUTION To reduce risk of injury, charge only MAKITA rechargeable batteries marked on the charger label. Other types of batteries may burst causing personal injury and damage.
- 4. Non-rechargeable batteries cannot be charged with this battery charger.
- 5. Use a power source with the voltage specified on the nameplate of the charger.
- 6. Do not charge the battery cartridge in presence of flammable liquids or gases.
- Do not expose charger to rain or snow.
- 8. Never carry charger by cord or vank it to disconnect from receptacle.
- After charging or before attempting any maintenance or cleaning, unplug the charger from the power source. Pull by plug rather than cord whenever disconnecting charger.
- Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- 11. Do not operate charger with damaged cord or plug. If the cord or plug is damaged, ask Makita authorized service center to replace it in order to avoid a hazard.
- 12. Do not operate or disassemble charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman. Incorrect use or reassembly may result in a risk of electric shock or fire.
- 13. The battery charger is not intended for use by young children or infirm persons without supervision.
- 14. Young children should be supervised to ensure that they do not play with the battery charger.
- 15. Do not charge battery cartridge when room temperature is BELOW 10°C (50°F) or ABOVE 40°C (104°F). At cold temperature, charging may not start.
- 16. Do not attempt to use a step-up transformer, an engine generator or DC power receptacle.
- 17. Do not allow anything to cover or clog the charger vents.
- 18. Do not insert a nail, wire, etc. into USB power supply port.

Charging for MAKITA batteries

This charger can charge two batteries at the same time.

- 1. Plug the charger into the proper AC voltage source. Charging light will flash in green color repeatedly.
- Insert the battery cartridge into charger until it stops adjusting to the guide of charger. Terminal cover of charger can be opened with inserting and closed with pulling out the battery cartridge.
- 3. When the battery cartridge is inserted, the red charging light will light up and charging will begin with a preset brief melody sound coming out for assurance as to which sound will come out to notify the completion of charging.
- 4. With finish of charge, the charging light will change from red one to green one and the melody sound or buzzer sound (a long beep) comes out to notify completion of charge.
- Charging time varies by temperature (10°C (50°F) 40°C (104°F)) that battery cartridge is charged at and
 conditions of the battery cartridge, such as a battery cartridge which is new or has not been used for a long period
 of time.
- 6. After charging, remove the battery cartridge from charger and unplug the charger.

Changing melody sound of completed charging

- Insert the battery cartridge into the charging port that you want to change the melody sound of completed charging. It brings out the last preset brief melody sound of completed charging.
- Removing and re-inserting it within five seconds after this action makes the melody sound change.
- 3. Every time removing and re-inserting it within another five seconds after this, the melody sound changes in order.
- 4. When the desired melody sound comes out, leave the battery cartridge being inserted and the charge will begin. When a "short beep" mode is selected, no completed charging signals comes out. (Silent Mode)
- 5. With finish of charge, the green light remains lit with the red light going out and the melody sound preset at the insertion of battery cartridge or buzzer sound (a long beep) comes out to notify completion of charge. (In selected silent mode, no sounds come out.)
- Preset melody sound remains stored even when the charger is unplugged.

NOTE:

- The battery charger is for charging Makita-battery cartridge. Never use it for other purposes or for other manufacturer's batteries.
- When you charge a battery cartridge which is new or has not been used for a long period of time, it may not accept a full charge until after discharging it completely and recharging a couple of times. (Ni-MH battery only)
- · If charging light may flash in red color, battery condition is as below and charging may not start.
 - Battery cartridge from just-operated tool or battery cartridge that has been left in a location exposed to direct sunlight for a long time.
 - Battery cartridge that has been left for a long time in a location exposed to cold air.

When the battery cartridge is too hot, charging will begin after the cooling fan installed in the charger cools the battery cartridge. Charging will begin after the battery cartridge temperature reaches the degree at which charging is possible. When the temperature on battery is more than approx. 70°C, two charging lights may flash in red color, and when approx. 50°C – 70°C, one charging light in red color.

If the charging light flashes alternately in green and red color, charging is not possible. The terminals on the charger
or battery cartridge are clogged with dust or the battery cartridge is worn out or damaged.

Cooling system

- This charger is equipped with cooling fan for heated battery in order to enable the battery to prove its own performance. Sound of cooling air comes out during cooling, which means no trouble on the charger.
- · Yellow light will flash for warning in the following cases.
- Trouble on cooling fan
- Incomplete cool down of battery, such as, being clogged with dust
- The battery can be charged in spite of the yellow warning light. But the charging time will be longer than usual in this case

Check the sound of cooling fan, vent on the charger, which can be sometime clogged with dust.

- The cooling system is in order although no sound of cooling fan comes out, if the yellow warning light will not flash.
- Always keep clean the vent on charger and battery for cooling.
- · The products should be sent to repair or maintenance, if the yellow warning light will frequently flash.

Conditioning charge

Conditioning charge can extend the life of battery by automatically searching the optimum charging condition for the batteries in every situation.

The battery employed in the following conditions repeatedly requires "conditioning charge" to prevent fast wear out. In that case, yellow light lights up.

- 1. Recharge of battery with its high temperature
- 2. Recharge of battery with its low temperature
- 3. Recharge of full charged battery
- 4. Over-discharge of battery (continue to discharge battery in spite of down of power.)

The charging time of such battery is longer than usual.

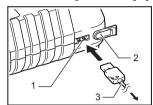
Using with USB device

This charger works as an external power supply for USB device.

- Open the cover of the USB power supply port. Connect the USB cable to the USB power supply port and USB device.
- 2. Plug the charger into a power source.
- 3. After charging, unplug the charger.

Note:

- · The charger may not supply power to some USB devices.
- Before connecting USB device to the charger, always backup your data of USB device. Otherwise your data may lose by any possibility.
- When not using or after charging, remove the USB cable and close the cover.



- 1. USB power supply port
- 2. Cover
- 3. USB cable

Voltage	9.6 V	12 V	14.4 V	Capacity (Ah)	Charging time	
Number of cells	8	10	12	Capacity (AII)	(Minutes)	
	BH9020A	_	_	2.0	20	
Ni-MH Battery	_	BH1220/C	BH1420	2.0	15	
cartridge	BH9033A	_	_	3.3	30	
	_	BH1233/C	BH1433	3.3	22	

Voltage	14.4 V	18 V	14.4 V	18 V	Charging time
Number of cells	4	5	8	10	(Minutes)
	BL1415/ BL1415N	BL1815/ BL1815N	_	_	15
Li-ion Battery	_	_	BL1430	BL1830	22
cartridge	_	BL1820	_	_	24
	_		BL1440	BL1840	36
	_		_	BL1850	45

Note:

 It may take twice the above charging time to the maximum because of the optimal charging selected according to the temperature (10°C (50°F) – 40°C (104°F)), conditions of battery cartridge and maintenance charge.

SPÉCIFICATIONS

Modèle	DC18RD			
Entrée	C.A. 120 V 50 – 60 Hz / 50/60 Hz			
Sortie	Pour les batteries MAKITA	C.C. 7,2 V / 7,2 V – 18 V		
	Pour le dispositif USB	C.C. 5 V / C.C. 1,5 A		
Poids	1,9 kg (4,127 lbs)			

- Le fabricant se réserve le droit de modifier sans avertissement les spécifications.
- · Remarque : Les spécifications peuvent varier selon les pays.
- · Poids selon la procédure EPTA 01/2003.

LES CONSIGNES DE SECURITE IMPORTANTES

ATTENTION:

- 1. CONSERVEZ CES INSTRUCTIONS Ce manuel renferme des consignes de sécurité et d'utilisation importantes pour le chargeur de batterie.
- Avant d'utiliser le chargeur de batterie, lisez toutes les étiquettes d'instruction et de précaution apposées sur (1) le chargeur de batterie, sur (2) la batterie et sur (3) le produit utilisant la batterie.
- ATTENTION Pour réduire le risque de blessure, ne chargez que les batteries rechargeables MAKITA qui figurent sur l'étiquette du chargeur. Les autres types de batteries peuvent causer des blessures et entraîner des dommages en explosant.
- 4. Il n'est pas possible de charger des batteries de type non rechargeable avec ce chargeur.
- Utilisez une source d'alimentation dont la tension correspond à celle spécifiée sur la plaque signalétique du chargeur.
- 6. Ne chargez pas la cartouche de batterie en présence de liquides ou gaz inflammables.
- 7. N'exposez pas le chargeur à la pluie ou à la neige.
- Évitez de transporter le chargeur en le tenant par son cordon d'alimentation, et de tirer directement sur le cordon pour le débrancher.
- Avant de charger la batterie ou d'y effectuer tout travail d'entretien ou de nettoyage, débranchez le chargeur de sa source d'alimentation. Pour débrancher le chargeur, tirez toujours le cordon par sa fiche, non par le cordon lui-même.
- 10. Assurez-vous que le câble n'est pas placé de façon à être piétiné, à faire trébucher quelqu'un ou à subir quelque dommage ou tension que ce soit.
- 11. N'utilisez pas le chargeur avec un cordon ou une fiche endommagé. Si le cordon ou la fiche est endommagé, faites-le remplacer dans un centre de service agréé Makita pour éviter tout danger.
- 12. Évitez d'utiliser ou démonter le chargeur après qu'il ait reçu un choc violent, ait été échappé ou ait subi quelque dommage que ce soit. Portez-le chez un réparateur qualifié. Une utilisation ou un remontage maladroit peut entraîner un risque de choc électrique ou d'incendie.
- 13. Ce chargeur ne doit pas être utilisé sans supervision par les jeunes enfants et par les personnes handicapées.
- 14. Les jeunes enfants doivent être surveillés pour s'assurer qu'ils ne jouent pas avec le chargeur.
- 15. Ne chargez pas la batterie lorsque la température de la pièce est INFÉRIEURE à 10 °C (50 °F) ou SUPÉRIEURE à 40 °C (104 °F). À basse température, la charge risque de ne pas démarrer.
- 16. Ne tentez pas d'utiliser un transformateur élévateur, un groupe électrogène ou une prise de courant continu.
- 17. Ne laissez rien recouvrir ou boucher les ouvertures du chargeur.
- 18. N'insérez pas de clou, de fil électrique, etc., dans le port d'alimentation USB.

Chargement des batteries MAKITA

Ce chargeur permet de charger deux batteries simultanément.

- Branchez le chargeur sur une source de courant alternatif dont la tension est adaptée. Le témoin de charge clignote en vert de manière répétée.
- Insérer la batterie dans le chargeur jusqu'à ce qu'elle s'arrête, ajustée sur le guide du chargeur. Le couvre-bornes du chargeur peut être ouvert en insérant la batterie, et fermé en la retirant.
- Lorsque vous insérez la batterie, le témoin de charge rouge s'allume et la charge commence; une courte mélodie préréglée est alors émise pour vous indiquer quel sera le son émis pour vous informer de l'achèvement de la charge.
- 4. Lorsque la charge est terminée, le témoin de charge passe du rouge au vert et une mélodie ou une sonnerie (un long bip) est émise pour vous informer de l'achèvement de la charge.
- 5. Le temps de charge varie suivant la température environnante (10 °C (50 °F) 40 °C (104 °F)) à laquelle s'effectue la charge de la batterie, et suivant l'état de la batterie, comme par exemple si elle est neuve ou si elle est restée inutilisée pendant longtemps.
- Après de la charge, retirez la batterie et débranchez le chargeur.

Modification de la mélodie de fin de charge

- Insérez la batterie dans le port de charge dont vous souhaitez modifier la mélodie de fin de charge. La dernière mélodie de fin de charge préréglée retentit.
- 2. Si vous retirez et réinsérez la batterie dans les cinq secondes qui suivent cette action, la mélodie changera.
- Chaque fois que vous retirez et réinsérez la batterie dans les cinq secondes par la suite, la mélodie change dans l'ordre préétabli.
- Lorsque la mélodie désirée est émise, laissez la batterie insérée et la charge commencera. Si vous sélectionnez le mode "court bip", aucun signal de charge terminée ne sera émis. (Mode silencieux)
- 5. Lorsque la charge est terminée, le témoin de charge vert demeure allumé et le témoin rouge s'éteint, et la mélodie ou la sonnerie (un long bip) préréglée au moment de l'insertion de la batterie est émise pour vous informer de l'achèvement de la charge. (Si le mode silencieux est sélectionné, aucun son n'est émis.)
- 6. La mélodie préréglée demeure en mémoire même lorsque vous débranchez le chargeur.

NOTE:

- Le chargeur de batterie est conçu pour les batteries Makita. Ne jamais l'utiliser à d'autres fins ou avec les batteries d'autres fabricants.
- Lorsque vous chargez une cartouche de batterie neuve ou restée inutilisée pendant une période prolongée, il se peut que vous deviez la recharger et la décharger à quelques reprises avant qu'elle n'accepte une charge complète. (Batterie au Ni-MH seulement)
- Si le témoin de charge clignote en rouge, l'état de la batterie est tel qu'indiqué ci-dessous et il se peut que la charge ne commence pas.
 - Cartouche de batterie d'un outil qui vient tout juste d'être utilisé, ou cartouche de batterie qui a été laissée longtemps dans un endroit exposé directement aux rayons du soleil.
 - Cartouche de batterie qui a été laissée longtemps dans un endroit exposé à de l'air froid.

Lorsque la batterie est trop chaude, la charge ne commence qu'une fois la batterie refroidie par le ventilateur de refroidissement du chargeur. La charge commencera lorsque la température de la cartouche de batterie aura atteint le degré pour lequel la charge est possible. Lorsque la température de la batterie est supérieure à environ 70 °C, deux témoins de charge peuvent clignoter en rouge, tandis qu'à une température d'environ 50 °C à 70 °C, un seul témoin clignote en rouge.

 Si le témoin de charge clignote alternativement en vert et en rouge, la charge n'est pas possible. Les bornes du chargeur ou de la batterie sont alors bloquées par la poussière, ou bien la batterie est soit usée, soit endommagée.

Système de refroidissement

- Ce chargeur est doté d'un ventilateur de refroidissement pour batterie chaude afin de permettre à la batterie de fournir son plein rendement. Un son de refroidissement d'air s'échappe pendant le refroidissement, ce qui signifie que le chargeur fonctionne correctement.
- Un témoin jaune d'avertissement clignote dans les cas suivants.
 - Problème de ventilateur de refroidissement.
 - Refroidissement insuffisant de la batterie, causé par une accumulation de poussière, etc.

La batterie peut être chargée même si le témoin jaune d'avertissement est allumé. Mais dans ce cas, le temps de charge sera plus long que d'ordinaire.

Vérifier le son du ventilateur de refroidissement, ainsi que les évents du chargeur, où s'accumule parfois de la poussière.

- Le système de refroidissement fonctionne normalement si le témoin jaune d'avertissement ne clignote pas, et ce même si aucun son ne provient du ventilateur de refroidissement.
- · Toujours garder les évents du chargeur et de la batterie propres pour permettre le refroidissement.
- Si le témoin jaune d'avertissement clignote souvent, les produits devraient être envoyés pour réparation ou entretien.

Charge de remise en condition

La charge de remise en condition peut faire augmenter la durée de vie de la batterie en effectuant automatiquement une recherche du niveau de charge optimale des batteries dans toute situation.

Une batterie utilisée à plusieurs reprises dans les conditions suivantes nécessitera une "charge de remise en condition" pour éviter qu'elle ne s'use rapidement. Dans ce cas, le témoin jaune s'allume.

- 1. Recharge de la batterie alors qu'elle est très chaude.
- 2. Recharge de la batterie alors qu'elle est très froide.
- 3. Recharge d'une batterie déià complètement chargée.
- 4. Décharge excessive de la batterie (continuer de décharger la batterie malgré l'absence d'alimentation).

Le temps de charge est alors plus long que d'ordinaire.

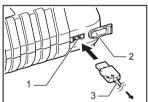
Utilisation avec un dispositif USB

Ce chargeur peut servir de source d'alimentation externe pour dispositif USB.

- Ouvrez le cache du port d'alimentation USB. Connectez le port d'alimentation USB et le dispositif USB au moyen du câble USB.
- Branchez le chargeur sur une source d'alimentation.
- 3. Une fois la charge terminée, débranchez le chargeur.

Note:

- Il est possible que le chargeur ne parvienne pas à alimenter certains dispositifs USB.
- Avant de raccorder un dispositif USB au chargeur, sauvegardez toujours les données du dispositif USB. Sinon, vous risquez de perdre vos données.
- · Lorsque vous n'utilisez pas le chargeur ou une fois la charge terminée, retirez le câble USB et fermez le cache.



- 1. Port d'alimentation USB
- 2. Cache
- 3. Câble USB

Tension	9,6 V	12 V	14,4 V		Temps de charge (en minutes)	
Nombre de cellules	8	10	12	Capacité (Ah)		
Cartouche de batterie au Ni-MH	BH9020A	_	_	2,0	20	
	_	BH1220/C	BH1420	2,0	15	
	BH9033A	_	_	3,3	30	
	_	BH1233/C	BH1433	3,3	22	

Tension	14,4 V	18 V	14,4 V	18 V	Tompo do oborgo	
Nombre de cellules	4	5	8	10	Temps de charge (en minutes)	
	BL1415/ BL1415N	BL1815/ BL1815N	_	_	15	
Cartouche de	_	_	BL1430	BL1830	22	
batterie au Li-ion	_	BL1820	_	_	24	
		_	BL1440	BL1840	36	
	_	_	_	BL1850	45	

Note:

 La charge complète peut prendre jusqu'à deux fois plus de temps que le temps indiqué ci-dessus, en raison de la température (10 °C (50 °F) – 40 °C (104 °F)), de l'état de la batterie ou de la charge d'entretien.

ESPECIFICACIONES

Modelo	DC18RD			
Entrada	120 V ~ 50 – 60 Hz / 50/60 Hz			
Salida	Para batería MAKITA	7,2 V cc / 7,2 V cc – 18 V cc		
	Para dispositivo USB	5 V cc / 1,5 A cc		
Peso	1,9 kg (4,127 lbs)			

- El fabricante se reserva el derecho a cambiar las especificaciones sin aviso.
- · Nota: Las especificaciones podrán cambiar de un país a otro.
- Peso de acuerdo con el procedimiento EPTA 01/2003.

INSTRUCCIONES DE SEGURIDAD IMPORTANTES

PRECAUCION:

- GUARDE ESTAS INSTRUCCIONES Este manual contiene instrucciones de seguridad y de funcionamiento importantes para el cargador de baterías.
- Antes de utilizar el cargador de baterías, lea todas las instrucciones e indicaciones de precaución sobre (1) el cargador de baterías, (2) la batería, y (3) el producto con el que se utilice la batería.
- 3. PRECAUCION Para reducir el riesgo de sufrir heridas, cargue solamente las baterías recargables MAKITA marcadas en la etiqueta de cargador. Otros tipos de baterías podrán explotar y ocasionar heridas personales y daños.
- 4. Con este cargador de baterías no se pueden cargar baterías no recargables.
- Utilice una fuente de alimentación cuya tensión sea igual a la especificada en la placa de características del cargador.
- 6. No cargue el cartucho de batería en presencia de líquidos o gases inflamables.
- 7. No exponga el cargador a la lluvia ni a la nieve.
- 8. No coja nunca el cargador por el cable ni tire del cable para desconectarlo de la toma de corriente.
- 9. Después de la carga o antes de intentar cualquier mantenimiento o limpieza, desconecte el cargador de la toma de corriente. Tire de la clavija y no del cable siempre que quiera desconectar el cargador.
- Asegúrese de que el cable quede tendido de forma que no lo pueda pisar, tropezar con él, ni que esté sometido a daños o desgaste de ningún tipo.
- 11. No utilice el cargador si su cable o clavija están dañados. Si el cable o la clavija están dañados, pida a un centro de servicio autorizado de Makita que los reemplace para evitar riesgos.
- 12. No utilice ni desarme el cargador si este ha recibido un fuerte golpe, lo ha dejado caer, o si se ha dañado de cualquier otra forma; llévelo a un técnico cualificado para que se lo arregle. Una utilización o montaje de sus piezas incorrecto podrá acarrear un riesgo de descarga eléctrica o incendio.
- 13. El cargador de baterías no ha sido pensado para ser utilizado por niños pequeños ni personas frágiles sin supervisión.
- Los niños pequeños deberán ser supervisados para asegurarse de que no juegan con el cargador de baterías.
- 15. No cargue el cartucho de batería cuando la temperatura esté por DEBAJO de los 10°C (50°F) o por ENCIMA de los 40°C (104°F). A baja temperatura, es posible que la carga no se inicie.
- No intente utilizar un transformador elevador de tensión, un generador a motor ni una toma de corriente de corriente contínua.
- 17. No permita que cosa alguna tape u obstruya los orificios de ventilación del cargador.
- 18. No inserte un clavo, alambre, etc., en el puerto USB de suministro de alimentación.

Carga de baterías MAKITA

Este cargador puede cargar dos baterías al mismo tiempo.

- Enchufe el cargador en una toma de corriente de la tensión de CA apropiada. La luz de carga parpadeará en color verde repetidamente.
- Inserte el carrucho de batería en el cargador hasta que haga tope ajustándose a la guía del cargador. La tapa del terminal del cargador se abre al insertar el cartucho de batería y se cierra al sacarlo.
- Cuando se inserte el cartucho de batería, se encenderá la luz de carga roja y comenzará la carga con un sonido de melodía breve programado emitido como aseguramiento del sonido que se emitirá para notificar la terminación de la carga.
- Con la terminación de la carga, la luz de carga cambiará de rojo a verde una vez y se emitirá el sonido de melodía o sonido de zumbador (un pitido largo) para notificar la terminación de la carga.
- 5. El tiempo de carga varía en función de la temperatura (10°C (50°F) 40°C (104°F)) a la que se carga el cartucho de batería y las condiciones del cartucho de batería, tal como si es un cartucho de batería nuevo o no ha sido utilizado durante un periodo de tiempo largo.
- 6. Después de cargar, extraiga el cartucho de batería del cargador y desconecte el cargador.

Cambio del sonido de melodía de carga terminada

- Inserte el cartucho de batería en el puerto de carga cuyo sonido de melodía de carga terminada quiere cambiar.
 Sonará brevemente el último sonido de melodía de carga terminada programado.
- El sonido de melodía puede cambiarse extrayendo y reinsertando antes de cinco segundos el cartucho de batería.
- 3. Cada vez que se extraiga y reinserte antes de otros cinco segundos, el sonido de melodía cambiará en orden.
- Cuando se emita el sonido de melodía deseado, deje el cartucho de batería insertado y comenzará la carga.
 Cuando se seleccione el modo "pitido corto", no se emitirán señales de carga terminada. (Modo silencio)
- 5. Con la terminación de la carga, la luz verde permanece encendida, la luz roja se apaga y se emite el sonido de melodía programado al insertar el cartucho de batería o sonido de zumbador (un pitido largo) para notificar la terminación de la carga. (Si se ha seleccionado el modo silencio, no se emitirán sonidos.)
- 6. El sonido de melodía permanecerá almacenado aunque desenchufe el cargador.

NOTAS:

- El cargador de baterías es sólo para cargar cartuchos de batería Makita. No lo utilice nunca con otros fines ni para baterías de otros fabricantes.
- Cuando cargue un cartucho de batería que sea nuevo o que no haya sido utilizado durante un largo periodo de tiempo, es posible que no acepte una carga completa hasta después de haberlo descargado completamente y vuelto a cargar unas cuantas veces. (Batería Ni-MH solamente)
- Si la luz de carga parpadea en color rojo, la condición de la batería será como se indica abajo y es posible que la carga no se inicie.
 - Cartucho de batería de una herramienta recién utilizada o un cartucho de batería que ha sido dejado en un sitio expuesto a la luz directa del sol durante largo tiempo.
 - Cartucho de batería que ha sido dejado durante largo tiempo en un sitio expuesto a aire frío.

Cuando el cartucho de batería esté muy caliente, la carga comenzará después de que el ventilador de enfriamiento instalado en el cargador enfríe el cartucho de batería. La carga comenzará después de que la temperatura del cartucho de batería alcance el grado al cual es posible cargar. Si la temperatura de la batería es de más de aproximadamente 70°C, podrán parpadear dos luces de carga en color rojo, y si es de aproximadamente 50°C – 70°C, podrá parpadear una luz de carga en rojo.

 Si la luz de carga parpadea alternativamente en color verde y rojo, la batería no se podrá cargar. Los terminales del cargador o de la batería estarán obstruidos con polvo o el cartucho de batería estropeado o dañado.

Sistema de enfriamiento

- Este cargador está equipado con un ventilador de enfriamiento para evitar el sobrecalentamiento de la batería, y así
 poder sacarle a ésta el máximo rendimiento. Durante el enfriamiento se oye el sonido del ventilador, lo que significa
 que no hay ningún problema en el cargador.
- En los siguientes casos parpadeará una luz amarilla de aviso.
 - Problema en el ventilador de enfriamiento
 - Batería no enfriada completamente, tal como, en el caso de que esté obstruida con polvo

La batería se puede cargar aunque esté parpadeando la luz amarilla. Pero en este caso tardará más tiempo en cargarse.

Verifique el sonido del ventilador de enfriamiento, el orificio de ventilación de la batería, porque algunas veces podrán estar obstruidos con polvo.

- Si la luz amarilla de aviso no parpadea, el sistema de enfriamiento estará bien aunque no se escuche el sonido del ventilador de enfriamiento.
- · Mantenga siempre limpios los orificios de ventilación del cargador y la batería.
- Si la luz amarilla de aviso parpadea con frecuencia, el cargador deberá ser enviado a que lo reparen o le hagan el mantenimiento.

Carga de acondicionamiento

La carga de acondicionamiento puede alargar la vida útil de la batería buscando automáticamente la condición óptima para la carga de la batería en cualquier situación.

La batería empleada en las siguientes condiciones repetidamente requerirá una "carga de acondicionamiento" para evitar que su vida de servicio no se acorte rápidamente. En ese caso, se encenderá la luz amarilla.

- 1. Si la carga estando caliente.
- Si la carga estando fría.
- Si la recarga estando completamente cargada.
- 4. Si la descarga demasiado (si continúa utilizándola a pesar de tener poca potencia.)

El tiempo de carga de tal batería será más largo del normal.

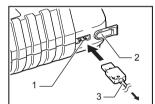
Utilización con dispositivo USB

Este cargador funciona como fuente de alimentación externa para dispositivos USB.

- Abra la tapa del puerto USB de suministro de alimentación. Conecte el cable USB al puerto USB de suministro de alimentación y el dispositivo USB.
- 2. Enchufe el cargador en una toma de corriente.
- Después de efectuar la carga, desenchufe el cargador.

Nota:

- Es posible que el cargador no suministre alimentación a algunos dispositivos USB.
- Antes de conectar un dispositivo USB al cargador, haga siempre una copia de seguridad de los datos del dispositivo USB. De lo contrario, podrá perder los datos debido a cualquier circunstancia.
- · Cuando no lo esté utilizando o después de cargar, retire el cable USB y cierre la tapa.



- 1. Puerto USB de suministro de alimentación
- 2. Tapa
- 3. Cable USB

Tensión	9,6 V	12 V	14,4 V		Tiempo de carga (minutos)
Número de celdas	8	10	12	Capacidad (Ah)	
	BH9020A	_	_	2,0 Ah	20 min
Cartucho de		BH1220/C	BH1420	2,0 Ah	15 min
batería Ni-MH	BH9033A			3,3 Ah	30 min
		BH1233/C	BH1433	3,3 Ah	22 min

Tensión	14,4 V	18 V	14,4 V	18 V	Tiempo de carga
Número de celdas	4	5	8	10	(minutos)
	BL1415/ BL1415N	BL1815/ BL1815N	_		15 min
Cartucho de	_	_	BL1430	BL1830	22 min
batería Li-ion	_	BL1820	_		24 min
	_	_	BL1440	BL1840	36 min
	_	_	_	BL1850	45 min

Nota

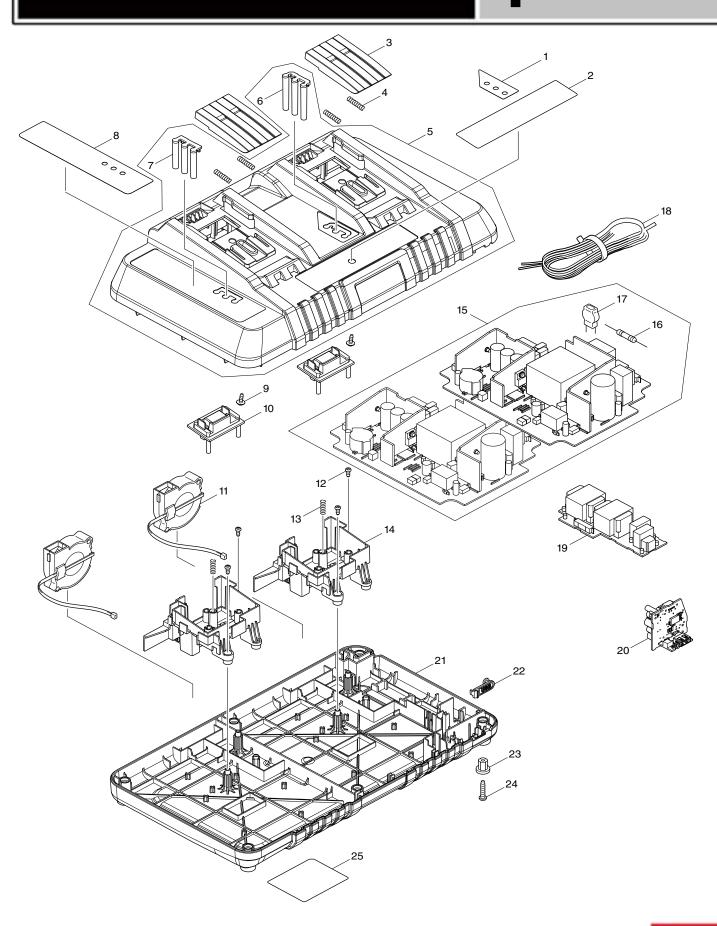
• Es posible que el tiempo de carga sea el doble que el indicado arriba como máximo debido a que la carga óptima se selecciona en función de la temperatura (10°C (50°F) – 40°C (104°F)), las condiciones del cartucho de batería y la carga de mantenimiento.

Makita Corporation

3-11-8, Sumiyoshi-cho, Anjo, Aichi 446-8502 Japan



DC18RD



Products with multiple versions are listed in subsiding order with the newest version on top not indented.

Section	Fig. No.	Part No.	Description	DC18RD	Tech Bulletin	Notes
1	1	- 804Y51-3	INDICATION LABEL	1		
1	2	804Y52-1	MAKITA LOGO LABEL	1		
1	3	455546-5	TERMINAL COVER	2		
1	4	231474-6	COMPRESSION SPRING 4	4		
1	5	142845-1	CHARGER CASE COMPLETE	1		INC 6,7
1	6	455402-9	LENS B	1		
1	7	455401-1	LENS A	1		
1	8	804Y47-4	CHARGING CONDITION LABEL	1		
1	9	266278-7	TAPPING SCREW FLANGE BT3X1	2		
1	10	632E11-3	TERMINAL UNIT	2		
1	11	638499-5	SCIROCCO FAN	2		
1	12	266764-8	TAPPING SCREW 3X8	4		
1	13	233194-8	COMPRESSION SPRING 4	2		
1	14	455399-2	TERMINAL BASE	2		
1	15	620203-6	CHARGING CIRCUIT	2		INC 16,17
1	16	652802-6	FUSE	1		
1	17	647321-5	VARISTOR	1		
1	18	667852-8	VINYL CORD	1		
1	19	620325-2	FILTER CIRCUIT	1		
1	20	620412-7	USB CIRCUIT	1		
1	21	455398-4	CHARGER CASE COVER	1		
1	22	455403-7	USB COVER	1		
1	23	286255-3	CAP 13	4		
1	24	266426-8	TAPPING SCREW 4X20	6		
1	25	850E35-9	DC18RD NAME PLATE	1		
1	E01	804Y49-0	CAUTION LABEL	1		



SECTION 1. CHEMICIAL PRODUCT AND COMPANY NAME

Lithium-Ion Rechargeable Battery Pack BL1850 / BL1850B

Symbol (S) at the bottom of the battery.

Safety Data Sheet

Complies with the OSHA Hazard Communication Standard: 29 CFR 1910 1200

Makita U.S.A., Inc.	Prepared By:	Stan Rodrigues
14930-C Northam Street		
La Mirada, CA 90638	Date Revised:	02/14/2022

EMERGENCY CONTACT INFORMATION

Telephone Number for Information: MAKITA: 1-510-657-9881

Emergency Response

For Chemical Emergency
Spills, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada 1-800-424-9300

SECTION 2. HAZARD IDENTIFICATION:

* This is a product that fulfills a certain function in solid state with specific shape without discharging any chemical substance in its use and has no obligation to write (M)SDS. Since this document contains the precautions for safe handling related to its materials or chemical substances consisting of this product, please note that this overall information is irrelevant to this product.

2.1 Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) No. 1272/2008 [CLP] and OSHA 29 CFR 1910.1200:

Not classified

2.1.2 Additional information:

Classification of the substance or mixture.

Preparation Hazards and Classification: The product is a Lithium- ion cell or battery and is therefore classified as an article and is not hazardous when used according to the recommendations of the manufacturer. The hazard is associated with the contents of the cell or battery. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the cell or battery integrity remains, and the seals remain intact. The potential for exposure should not exist unless the cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. If the cell or battery is compromised and starts to leak, based upon the battery ingredients, the contents are classified as Hazardous.

Hazardous Materials Information Label (HMIS)

Health: Not available Flammability: Not available Physical Hazard: Not available

NFPA Hazard Ratings

Health: Not available Flammability: Not available Reactivity: Not available

2.2 Label elements

Hazard pictograms: Not applicable

Signal word: Not applicable

Hazard statement: Not applicable

Precautionary statements: Not applicable

Supplemental Hazard information (EU): Not applicable

2.3 Other hazards:

Appearance, Color and Odor: Solid object with no odor.

Primary Routes(s) of Exposure: These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the cell or pack is mechanically, thermally, electrically or physically abused to the point of compromising the enclosure.

If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

Potential Health Effect(s):

Acute (short term): see Section 8 for exposure controls.

In the event that this cell or pack has been ruptured, the electrolyte solution contained within the cell would be corrosive and can cause burns to skin and eyes.

Inhalation: Inhalation of materials from a sealed cell is not an expected route of exposure. Vapors or mist from a ruptured cell may cause respiratory irritation.

Ingestion: Swallowing of materials from a sealed cell is not an expected route of exposure. Swallowing the contents of an open cell can cause serious chemical burns to mouth, esophagus, and gastrointestinal tract.

Skin: Contact between the cell and skin will not cause any harm. Skin contact with the contents of an open cell can cause severe irritation or burns to the skin.

Eye: Contact between the cell and the eye will not cause any harm. Eye contact with the contents of an open cell can cause severe irritation or burns to the eye.

CHRONIC (long term): see Section 11 for additional toxicological data.

Interactions with other chemicals: Immersion in high conductivity liquids may cause corrosion and breaching of the cell or battery enclosure. The electrolyte solution inside of the cells may react with alkaline (basic) materials and present a flammability hazard.

Potential Environmental Effects: Not Available.

SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS

3.1 Mixture

CAS No.	EC No.	REACH Registration No.	%[weight]	Name	Common Name (Synonyms)	Classification according to Regulation (EC) No 1278/2008(CLP)
12325-84-7	Not available	-	25~35	Lithium Nickel Oxide	Not available	Not classified
7782-42-5	231-955-3	=	20~30	Graphite	Not available	Not classified
7439-89-6	231-096-4	-	10~20	Iron	Not available	Not classified
7440-50-8	231-159-6	-	5~15	Copper	Not available	Not classified
12190-79-3	235-362-0	-	1~5	Cobalt Lithium Dioxide	Not available	Not classified
554-12-1	209-060-4	-	1~5	Methyl Propanoate	Not available	Flam. Liq. 2, H225 Acute Tox. 4, H332
7429-90-5	231-072-3	-	1~5	Aluminum	Not available	Pyr. Sol. 1, H250 Water-react. 2, H261
21324-40-3	244-334-7	-	1~3	lithium hexafluorophosphate(1-)	Not available	Not classified

114435-02-8	Not available	-	1~3	4-Fluoro-1,3-dioxolan-2- one	Not available	Not classified
616-38-6	210-478-4	-	1~3	Dimethyl Carbonate	Not available	Flam. Liq. 2, H225
9002-88-4	Not available	-	1~3	Polyethylene	Not available	Not classified
1309-37-1	215-168-2	-	0.1~1	Diiron Trioxide	Not available	Not classified
1318-23-6	215-284-3	-	0.1~1	Boehmite (Al(OH)O)	Not available	Not classified
1333-86-4	215-609-9	-	0.1~1	Carbon black	Not available	Not classified
7440-02-0	231-111-4	-	0.1~1	Nickel	Not available	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Chronic 3, H412
11089-89-7	Not available	-	0.1~1	Aluminum lithium oxide (LiAlO)	Not available	Not classified
7440-47-3	231-157-5	-	0.1~1	Chromium	Not available	Not classified
554-13-2	209-062-5	-	0.1~1	Lithium Carbonate	Not available	Not classified
100-41-4	202-849-4	-	0.1~1	Ethylbenzene	Not available	Flam. Liq. 2, H225 Acute Tox. 4, H332 Asp. Tox. 1, H304 STOT RE 2, H373(hearing organs)

Further Information

Because of the cell structure the dangerous ingredients will not be available if used properly.

During charge process a lithium graphite intercalation phase is formed.

Nominal Voltage: 18.0 V Rated Capacity: 5.0 Ah Wh rating: 90 Wh

SECTION 4. FIRST AID MEASURE

4.1 Description of first aid measures

Following eye contact:

- Rinse eyes with plenty of water for at least 15 minutes and seek medical attention.

Following skin contact:

- Remove contaminated clothing and wash before reuse.
- Immediately rinse contact area with plenty of clean water.
- Provide first aid to contacted area to prevent infection.
- Get medical attention.

Following inhalation:

- In case of inhalation of organic electrolyte mist, remove from exposure to fresh air.
- If necessary give oxygen. Get medical attention.

Following ingestion:

- -In case of ingestion of electrolyte don't induce vomiting.
- If patient is conscious and alert give 2~4 cupfuls of milk or water.
- Never give anything by mouth to an unconscious person.
- Get medical attention immediately.

Further Information:

- The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing.

4.2 Most important symptoms and effects, both acute and delayed

Acute effects: Not available

Delayed effects: Not available

4.3 Indication of immediate medical attention and special treatment needed

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

SECTION 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

- When the scale of the fire is small, use a HFC (hydrofluorocarbon) clean-agent fire extinguisher or alcohol resistant foam fire extinguishers. (In case of battery overheating, wear protective gear and immerse heated battery in water)
 - In case of large fire, use large amount of water to extinguish.

5.2 Special hazards arising from the substance or mixture

Flammable gas leaks before ignition and then the product ignites

5.3 Advice for firefighters

- The ignited battery has a high temperature, so there is a risk of additional ignition even if the fire is extinguished at early stage. Sprinkle a large amount of water until the battery temperature drops to normal temperature.
- If the battery is ignited in multi-stacked condition, multi-stack should be disassembled, and the nextinguished so that heat is not transferred between batteries
- In the event of a battery fire, cool it by spraying water directly on the battery.
- When handling a overheated battery, wear heat-resistant protective equipment

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency procedures

For non-emergency personal

Protective equipment: Use personal protective equipment, see Section 8

Emergency procedures:

- In case of cell damage, possible release of dangerous substances and a flammable gas mixture.
- Eliminate all ignition sources.
- Please note that materials and conditions to avoid.
- Battery may emit electrolyte if charging or discharging rates exceed manufacturer's recommendations or if pack has been breached
- Move battery to well ventilated area to prevent gas accumulation.

For emergency responders

- Eliminate all ignition sources.
- Please note that materials and conditions to avoid.
- Move battery to well ventilated area to prevent gas accumulation

6.2 Environmental precautions:

- Avoid release to the environment.
- Prevent entry into waterways, sewers, basements or confined areas

6.3 Methods and material for containment and cleaning up

For containment: Not available

For cleaning up:

- Cover with Dry earth, DRY sand or other non-combustible material and put on the plastic sheet to minimize spreading or contact with rain.
- Move battery to well ventilated area to prevent gas accumulation.
- Dispose in accordance with applicable local, state and federal regulations.

Other information: Not available

6.4 Reference to other sections

- See also sections 8 and 13 of the Safety Data Sheet.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

- In case of cell damage, possible release of dangerous substances and a flammable gas mixture.
- The battery stores electrical energy and is capable of rapid energy discharge.
- Battery cell contents are under pressure.
- Handle battery carefully to avoid puncturing case or electrically shorting terminals.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions: Not available

Packaging materials: Not available

Requirements for storage rooms and vessels:

- Storage at room temperature (approx. 20°C) at approx. 40% of the nominal capacity
- Keep in closed original container.

7.3 Specific end use(s)

Recommendations: Not available

Industrial sector specific solutions: Not available

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limits

Name	ACGIH regulation	Biological exposure index	OSHA Regulation	NIOSH regulation	EU Regulation
Lithium Nickel Oxide	TWA = 1.5 mg/m³ (inhalable particulate matter) (Nickel CAS. No 7440-02-0)	Not available	TWA = 1 mg/m³ (metal and insoluble compounds (as Ni)) TWA = 1 mg/m³ (soluble compounds (as Ni)) (Nickel CAS. No 7440- 02-0)	Ca TWA = 0.015 mg/m³ (metal and insoluble compounds (as Ni)) (Nickel CAS. No 7440-02-0)	Not applicable

Graphite	$TWA = 2mg/m^3$	Not available	Not applicable	Not applicable	Not applicable
Iron	Not applicable	Not available	Not applicable	Not applicable	Not applicable
Copper	$TWA = 0.2 \text{ mg/m}^3$ (fume)	Not available	Not applicable	Not applicable	Not applicable
Cobalt Lithium Dioxide	TWA = 0.2 mg/m³ (Cobalt and cobalt compounds, CAS. No. 7440-48-4)	Not available	TWA = 0.1 mg/m ³ (Cobalt metal, dust, and fume (as Co), CAS. No 7440-48-4)	TWA = 0.05 mg/m³ (Cobalt metal, dust, and fume (as Co), CAS. No.7440-48-4)	Not applicable
Cobalt, Co	$TWA = 0.02 \text{ mg/m}^3$	Not available	Not available	TWA 0.05 mg/m ³	Not available
Methyl Propanoate	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Aluminum	TWA = 1 mg/m³ (respirable particulate matter)	Not available	TWA = 15 mg/m³ (Aluminum Metal (as Al) Total dust) TWA = 5 mg/m³ (Aluminum Metal (as Al) Respirable fraction)	TWA = 1 mg/m³ (Aluminum Metal (as Al) Respirable fraction)	Not applicable
Lithium Hexafluorophosphate (1-)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
4-Fluoro-1,3- Dioxolan-2-one	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Dimethyl carbonate	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Polyethylene	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Diiron Trioxide	$TWA = 5 \text{ mg/m}^3$	Not available	$TWA = 10 \text{ mg/m}^3$ (fume)	TWA = 5 mg/m ³ (dust and fume)	Not applicable
Boehmite (Al(OH)O)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Carbon black	TWA =3mg/m³ (inhalable particulate matter)	Not available	$TWA = 3.5 \text{ mg/m}^3$	TWA = 3.5 mg/m ³ Ca TWA = 0.1 mg PAHs/m3 [Carbon black in presence of polycyclic aromatic hydrocarbons (PAHs]	Not applicable
Nickel	TWA = 1.5 mg/m³ (inhalable particulate matter)	Not available	TWA = 1 mg/m³ (metal and insoluble compounds (as Ni)) TWA = 1 mg/m³ (soluble compounds (as Ni))	Ca TWA = 0.015 mg/m³ (metal and insoluble compounds (as Ni)) Ca TWA = 0.015 mg/m³ (soluble compounds (as Ni))	Not applicable
Aluminum lithium oxide (LiAlO)	TWA = 1 mg/m³ (respirable particulate matter)(Aluminum CAS.no 7429-90-5)	Not available	TWA = 15 mg/m³ (Aluminum Metal (as Al) Total dust) TWA = 5 mg/m³ (Aluminum Metal (as Al) Respirable fraction) (Aluminum CAS. No 7429-90-5)	TWA = 1 mg/m³ (Aluminum Metal (as Al), Respirable fraction) (Aluminum CAS. No 7429-90-5)	Not applicable

Chromium	TWA = 0.5 mg/m ³ (inhalable particulate matter); TLV basis: respiratory tract irritation, TWA = 0.5 mg/m ³	Not available	TWA = 0.5 mg/m ³ (Chromium (II) compounds (as Cr), Chromium (III) compounds (as Cr)) TWA = 1 mg/m ³ (Chromium metal and insol. salts (as Cr))	TWA = 0.5 mg/m ³ (Chromium (II) compounds (as Cr),Chromium (III) compounds (as Cr)) TWA = 0.5 mg/m ³ (Chromium metaland insol. Salts (as Cr))	TWA =2 mg/m ³
Lithium Carbonate	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Ethylbenzene	TWA = 20 ppm	Not available	$TWA = 100 \text{ ppm}$ $TWA = 435 \text{ mg/m}^3$	TWA = 100 ppm (ST) 125 ppm	$TWA = 442$ mg/m^3 $TWA = 100 \text{ ppm}$ $STEL = 884$ mg/m^3 $STEL = 200 \text{ ppm}$

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Substance/mixture related measures to prevent exposure during identified uses:

- Avoid charging batteries in areas where hydrogen gas accumulate.
- Use local exhaust ventilation to maintain concentrations of hydrogen below the Lower Explosive collect and transport flammable gases in ventilation systems
- Insure proper ventilation is present and electrolyte mist and vapours.

Structural measures to prevent exposure:

- Avoid charging batteries in areas where hydrogen gas accumulate.
- Use local exhaust ventilation to maintain concentrations of hydrogen below the Lower Explosive collect and transport flammable gases in ventilation systems.
- Insure proper ventilation is present and electrolyte mist and vapours.

Organizational measures to prevent exposure: Not available

Technical measures to prevent exposure:

- Insure proper ventilation is present and electrolyte mist and vapours.

8.2.2 Individual protection measures, such as personal protective equipment:

Eye and face protection

- Wear ANSI approved safety glasses with side shield during normal use.
- Wear NIOSH approved face shield with safety glasses and H.V protection during intentional disassembly

Skin protection

Hand protection

- Wear nitrile butyl rubber, neoprene, or PVC glove during battery component disassembly.
- Discard contaminated work clothing after one workday.

Other skin protection

- Wear protective clothing during battery component disassembly.
- Discard contaminated work clothing after one workday.

Respiratory protection:

- None required during normal use.
- Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles)respiratory protective equipment when necessary.
- In lack of oxygen (< 19.5%), wear the supplied-air respirator or self-contained oxygen breathing apparatus.
- In case exposed to particulate material, the respiratory protective equipment as follow are recommended; facepiece filtering respirator or air-purifying respirator, high-efficiency particulate air (HEPA) filter media or respirator equipped with powered fan, filter media of use (dust, mist, fume)

8.2.3 Environmental exposure controls

Substance/mixture related measures to prevent exposure: Not available

Instruction measures to prevent exposure: Not available

Organizational measures to prevent exposure: Not available

Technical measures to prevent exposure: Not available

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Description: Solid

Color: Not available

Odorless Odorless

Odor threshold:
pH:
Not available
Not available
Melting point/freezing point:
Not available
Initial boiling point and boiling range:
Not available
Flash point:
Not available
Evaporation rate:
Not available
Not available
Not available
Not available

Upper/lower flammability or explosive limits:

Vapor pressure:

Solubility (ies):

Vapor density:

Relative density:

Partition coefficient: n-octanol/water:

Not available

Not available

Not available

Auto ignition temperature:

Decomposition temperature:

Viscosity:

Explosive properties:

Oxidizing properties:

Not available

Not available

Not available

Not available

9.2 Other information Not available

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity

- Stable at ambient temperature.

10.2 Chemical stability

Molecular weight:

- There is no hazard when the measures for handling and storage are followed.
- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Will not occur under normal conditions.
- In case of cell damage, possible release of dangerous substances and a flammable gas mixture.
- Containers may explode when heated.
- Fire may produce irritating and/or toxic gases.
- Some liquids produce vapors that may cause dizziness or suffocation.
- Inhalation of material may be harmful.

10.4 Conditions to avoid

- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Friction, heat, sparks or flames
- Dusts or shavings from borings, turnings, cuttings, etc.
- Do not exceed manufacturer's recommendation for charging or use battery for an application for which it was not specifically designed.
- Do not electrically short.

10.5 Incompatible materials

- Avoid contact with acids and oxidizers.
- Keep away from any possible contact with water, because of violent reaction and possible flash fire.
- Handle under inert gas. Protect from moisture.
- Combustibles, reducing agents

10.6 Hazardous decomposition products

- None under normal conditions.
- Corrosive and/or toxic fume
- Material may produce irritating and highly toxic gases from decomposition by heat and combustion during burning.
- Irritating and/or toxic gases

SECTION 11. TOXICOLOGICAL INFORMATION

* This is a product that fulfills a certain function in solid state with specific shape without discharging any chemical substance in its use and has no obligation to write (M)SDS. Since this document contains the precautions for safe handling related to its materials or chemical substances consisting of this product, please note that this overall information is irrelevant to this product.

11.1 Information on toxicological effects

Acute toxicity

Oral : ATEmix = 5,082.4 mg/kg bw

- Graphite : Rat LD₅₀ > 2,000 mg/kg (female)(OECD Guideline 401)
- Fe : Rat $LD_{50} = 98,600 \text{ mg/kg}$ (Reduced iron, OECD TG 401)
- Copper : Rat LD₅₀ > 2,500 mg/kg (Cupric oxide; read across)(OECD TG 423, GLP)
- Aluminum : Rat $LD_{50} > 15,900 \text{ mg/kg}$ (OECD TG 401)(Fumed alumina; read across)
- Lithium hexafluorophosphate(1-): Rat LD₅₀ = 50 ~ 300 mg/kg (Female)(OECD Guideline 423, GLP)
- 4-fluoro-1,3-dioxolan-2-one : Rat $LD_{50} = 500 \text{ mg/kg (male)}(OECD \text{ Guideline } 423)$
- Dimethyl carbonate : Rat $LD_{50} > 5,000$ mg/kg (male/female) (OECD Guideline 401)
- Polyethylene : Rat $LD_{50} > 2,000 \text{ mg/kg}$
- Diiron trioxide : Rat LD₅₀ > 5,000 mg/kg (male/female)(EU Method B.1)
- Boehmite (Al(OH)O): Rat LD₅₀ > 2,000 mg/kg (OECD Guideline 423, GLP)
- Carbon black : Rat $LD_{50} > 8,000 \text{ mg/kg}$ (OECD TG 401)
- Nickel; Raney nickel : Rat $LD_{50} > 9{,}000 \text{ mg/kg}$ (male/female) (OECD Guideline 401, GLP)
- Chromium : Rat LD₅₀ > 5,000 mg/kg (Read across; chromium(III) oxide)(OECD TG 420, GLP)
- Lithium carbonate; Lithane : Rat $LD_{50} = 525 \text{ mg/kg}$
- Ethylbenzene : Rat $LD_{50} = 3,500 \text{ mg/kg}$ (male or female)

Dermal : ATEmix = 1,651,224 mg/kg bw

- Copper : Rat LD₅₀ > 2,000 mg/kg (OECD TG 402, GLP)
- 4-fluoro-1,3-dioxolan-2-one : Rat $LD_{50} > 2,000$ mg/kg (male/female) (OECD Guideline 402)
- Dimethyl carbonate : Rabbit LD₅₀ > 2,000 mg/kg (male/female)
- Lithium carbonate;Lithane : Rabbit $LD_{50} > 3,000$ mg/kg (male/female) (OECD Guideline 402)
- Ethylbenzene : Rabbit $LD_{50} = 15,432 \text{ mg/kg}$

Inhalation : ATEmix = 226.04 mg/L

- Graphite : Rat LD₅₀ > 2 mg/L/4hr (male/female) (OECD Guideline 403)
- Fe : Rat LC50 $> 100 \text{ mg/m}^3/6\text{hr}$
- Aluminum : Rat LC₅₀ > 0.888 mg/L/4hr (analytical) (OECD TG 403)
- Dimethyl carbonate : Rat LD $_{50} \geq$ 5.36 mg/L/4hr (male/female) (OECD Guideline 403)
- Diiron trioxide : Rat $LC_{50} = 5.05 \text{ mg/L/4hr}$ (male/female) (OECD Guideline 403, GLP)
- Boehmite (Al(OH)O) : Rat LD₅₀ $> \sim 0.888$ mg/kg/4hr (OECD Guideline 403, GLP)
- Carbon black : Rat $LC_{50} > 0.005 \text{ mg/L/4hr}$
- Chromium : Rat $LD_{50} > 5.41$ mg/L/4hr (Read across; chromium(III) oxide)(OECD TG 403, GLP)
- Lithium carbonate;Lithane : Rat $LC_{50} > 2 \text{ mg/L/4hr}$ (male/female) (OECD Guideline 403)
- Ethylbenzene : Rat $LC_{50} = 17.8 \text{ mg/L/4hr}$

Skin corrosion/irritation:

- Graphite: In the skin irritation test using rabbits, the test material was not irritating. (OECD Guideline 404, GLP)
- Fe: In test on skin irritation with rabbits, skin irritations were not observed. (Read across; Fe3O4) (OECD TG 404, GLP)
- Copper: In test on skin irritation with rabbits, skin irritations were not observed. (OECD TG 404, GLP)
- Aluminum : Aluminum oxide caused slight erythema in 2/12 rabbits. The observed effects do not lead to a classification. Aluminum oxide is, therefore, not considered to be a primary skin irritant.(OECD TG 404)(Read across; aluminium oxide)
- Lithium hexafluorophosphate(1-): In the skin irritation test using human, the test material was corrosive. (EU Method B.40, GLP)
- 4-fluoro-1,3-dioxolan-2-one: In the skin irritation test using human skin model, the test material was non-corrosive. (OECD Guideline 431, GLP)
- Dimethyl carbonate: In the skin irritation test using rabbits, the test material was not irritating. (OECD Guideline 404)
- Polyethylene: No irritation was observed at the other two treated sites and no corrosive effects were noted during the study using rabbits. The primary irritation index was calculated as 0.2 and polyethylene was classified as a mild irritant.
- Diiron trioxide: In the skin irritation test using rabbits, the test material was not irritating. (OECD Guideline 404, GLP)
- Boehmite (Al(OH)O): In the skin irritation test using rabbits, skin irritations were not observed.(OECD Guideline 404, GLP)
- Carbon black: In test on skin irritation with rabbits, skin irritations were not observed. (OECD TG 404)
- Nickel; Raney nickel: Industrial nickel dust causes nickel dermatitis.
- Chromium : In test on skin irritation with rabbits, skin irritations were not observed.(Read across; chromium(III) oxide)(OECD TG 404, GLP)
- Lithium carbonate; Lithane : In the skin irritation test using rabbits, the test material was not irritating. (OECD Guideline 404, GLP)
- Ethylbenzene: In test on skin irritation with rabbits, moderate irritations were observed to rabbit skin.

Serious eye damage/irritation:

- Graphite: In the eye irritation test using rabbit, the test material was not irritating. (OECD Guideline 405, GLP)
- Fe: In test on eyes irritation with rabbits, eyes irritations were not observed. (Read across; Fe3O4) (OECD TG 405, GLP)
- Copper: In test on skin irritation with rabbits, skin irritations were not observed. (OECD TG 405, GLP)
- Aluminum : An eye irritation study of the aluminum oxide was performed in rabbits. No eye irritation/ corrosion effects were observed. (Read across; aluminum oxide)
- Lithium hexafluorophosphate(1-): In the eye irritation test using fertilised brown leghorn chicken eggs, the test material was severely irritating. (GLP)
- Dimethyl carbonate: In the eye irritation test using rabbit, the test material was not irritating. (GLP)
- Polyethylene: Mild irritants were observed in eye irritation test with rabbits. (Score 11.7/110)
- Diiron trioxide: In the eye irritation test using rabbits, the test material was not irritating. (OECD Guideline 405, GLP)
- Boehmite (Al(OH)O): In the eyes irritation test using rabbits, the test material was not irritating.(OECD Guideline 405, GLP)
- Carbon black: In test on eyes irritation with rabbits, eyes irritations were snot observed. (OECD TG 405)
- Chromium : In test on eyes irritation with rabbits, eyes irritations were not observed.(Read across; chromium(III) oxide)(OECD TG 405, GLP)
- Lithium carbonate; Lithane: In the eye irritation test using rabbit, the test material was moderately irritating. (OECD Guideline 405, GLP)
- Ethylbenzene: In test on eyes irritation with rabbits, slight irritations were observed to rabbit.

Respiratory sensitization: Not

Skin sensitization:

- Graphite: In the skin sensitization test using mice, the test material was not skin sensitization.(OECD Guideline 429, GLP)
- Fe: In the test using guinea pigs, the test substance was not considered to be a dermal sensitizer inguinea pigs. (read across; FeO, Fe2O3)
- Copper: In maximization test on skin sensitization with guinea pig, skin sensitization was not observed. (OECD TG 406, GLP)
- Aluminum: In test with guinea pigs, it can be concluded that aluminum oxide has no sensitization potential under the experimental conditions. (Read across; Aluminum oxide)
- Lithium hexafluorophosphate(1-): In the skin sensitization test using mice, the test material was not skin sensitization. (OECD Guideline 429, GLP)
- 4-fluoro-1,3-dioxolan-2-one: In the skin sensitization test using mice, the test material was skin sensitization. (OECD Guideline 429, GLP)
- Dimethyl carbonate: In the skin sensitization test using guinea pig, this material was not skin sensitizing. (OECD Guideline 406, GLP)
- Polyethylene: No reactions were observed in skin sensitization test with guinea pigs.
- Diiron trioxide: In the skin sensitization test using guinea pigs, the test material was not skin sensitizing.
- Boehmite (Al(OH)O): In the skin sensitization test using guinea pig, this material was not skin sensitizing.(OECD Guideline 406, GLP)
- Carbon black: In skin sensitization test with guinea pig, it did not induce skin sensitization. (OECDTG 406, GLP)
- Nickel; Raney nickel: Nickel hypersensitivity dermatitis may be initiated by contact with nickel on the skin.
- Chromium : In vitro skin sensitization test, the test substance was not considered to be a dermal sensitizer.
- Lithium carbonate; Lithane: In the skin sensitization test using guinea pig, this material was not skin sensitizing. (OECD Guideline 406, GLP)

Carcinogenicity : IARC

- Nickel: Group 2B
- Cobalt and cobalt compounds : Group 2B
- Polyethylene: Group 3diiron trioxide: Group 3Carbon black: Group 2BChromium: Group 3
- Ethylbenzene : Group 2B

NTP

- Nickel : RIron : Present
- Carbon black: Present

OSHA

- Nickel: Present
- Carbon black: Present

ACGIH

- Nickel: A5
- Aluminum: A4
- Cobalt and cobalt compounds : A3
- diiron trioxide : A4Carbon black : A3
- Chromium : A4
- Ethylbenzene : A3

KOREA-ISHL

- Lithium Nickel Oxide: 2
- Nickel: 1A
- Cobalt and inorganic compounds: 2
- Carbon black: 2
- Chromium: 1A(Chromium(VI)compounds(Water insoluble inorganic compounds))
- Ethylbenzene: 2

EU

- Nickel: Carc. 2
- Copper: EPA IRIS: D In carcinogenicity study with rat, tumor was not observed.

- Polyethylene : Fifty rats were implanted with polyethylene. In the polyethylene group, 23 developed tumors (two of these were unrelated to the implants).
- Boehmite (Al(OH)O): bauxite and alumina exposure was not associated with increased cancer risk.
- Ethylbenzene: there was clear evidence of carcinogenic activity of ethylbenzene in rat(male/female)with based on increased incidences of renal tubule neoplasms; increased incidence of testicular adenoma.

Mutagenicity:

- Graphite: Negative reactions were observed in vitro (Bacterial Reverse Mutation Assay(OECD Guideline 471, GLP)).
- Fe: In mammalian cell gene mutation assay electrolytic iron, positive carbonyl iron exhibited acytotoxic and mutagenic response (OECD TG 476)
- Copper: Negative reactions were observed in both in vitro(Ames test) and in vivo (DNA damage and /or repair; unscheduled DNA synthesis, micronucleus assay). (GLP)
- Aluminum: Negative reactions were observed in vitro (mammalian cell gene mutation assay with mouse lymphoma L5178Y cells(OECD TG 476, GLP)) and in vivo (micronucleus assay with rats (OECD TG 474, GLP)). (Aluminum hydroxide, aluminum chloride, aluminum oxide; read across)
- Lithium hexafluorophosphate(1-): Negative reactions were observed in both in vivo (Mammalian Erythrocyte Micronucleus test(OECD Guideline 474)) and in vitro (Bacterial Reverse Mutation Assay(OECD Guideline 471, GLP)).
- 4-fluoro-1,3-dioxolan-2-one: Positive reactions were observed in vitro (Bacterial Reverse Mutation Assy(OECD Guideline 471, GLP)) and Negative reactions were observed in vivo (Mammalian Erythrocyte Micronucleus Test(OECD Guideline 474, GLP)).
- Dimethyl carbonate: Negative reactions were observed in both in vitro (Mammalian Chromosome Aberration Test (OECD Guideline 473, GLP)) and in vivo (Mammalian Spermatogonial ChromosomeAberration Test (OECD Guideline 483))
- Polyethylene: Negative reactions were observed in Ames test using Salmonella typhimurium and Escherichia coli.
- Diiron trioxide: Negative reactions were observed in both in vitro (Mammalian Chromosome Aberration Test (OECD Guideline 473, GLP)) and in vivo (DNA damage, chromosome aberration and micronuclei induction test)
- Boehmite (Al(OH)O): Negative reactions were observed in vitro(mammalian cell gene mutation ass(OECD TG 476, GLP), Negative reactions were observed in vivo Mammalian Erythrocyte Micronucleus Test(OECD TG 474, GLP)
- Carbon black: Negative reactions were observed in both in vitro(Bacterial gene mutation test(OECD TG 471, GLP), Chromosomal aberrations test(OECD TG 476)) and in vivo(DNA damage and/or repair test).
- Chromium : In vitro mammalian chromosome aberration test, the result of the assay was negative.(Read across; stainless steel)(OECD TG 473, GLP)
- Lithium carbonate; Lithane: Negative reactions were observed in vitro (Bacterial Reverse Mutation Assay(OECD Guideline 471, GLP)).
- Ethylbenzene: Negative reactions were observed in in vitro-mammalian chromosome aberration test(OECD TG 473), mammalian cell gene mutation test (OECD TG 476, GLP) and in vivo- unscheduled DNA synthesis (UDS) test with mammalian liver cells (OECD TG 486, GLP), mammalian erythrocyte micronucleus test (OECD TG 474, GLP).

Reproductive toxicity:

- Graphite:
- Copper: In reproductive toxicity with rats, there were no effects considered (up to 1500 ppm).(OECD TG 416, GLP)
- Aluminum : No reproduction, breeding and early post-natal developmental toxicity was observed in rats at 1000 mg/kg bw for males and females. (OECD TG 422, GLP)(Aluminum chloride; read across)
- Lithium hexafluorophosphate(1-): In the two-generation reproductive toxicity with rats, no effects observed on reproductive toxicity. (male/female)(OECD Guideline 416, GLP)(OECD Guideline 414)(Information on major hydrolysis product of the registered substance (released rapidly on contactwith water/moisture))
- Boehmite (Al(OH)O) : No reproduction, breeding and early post-natal developmental toxicity was observed in rats at 1000 mg/kg body weight for males and females.(OECD Guideline 422, GLP)
- Carbon black: No adverse effects on the reproductive function are expected.(OECD TG 414)
- Chromium : In the 90 days inhalation toxicity study using rat, there were no effects on clinical signs,mortality.(OECD TG 413)
- Ethylbenzene: There were no adverse effects on reproductive or developmental endpoints at dose levels up to 500 ppm EB in this guideline two-generation rat inhalation study. OECD TG 416, GLP); Results of prenatal Developmental Toxicity tests for rats, litter size was comparable between the treated and control dose groups, while a statistically significant dose-related reduction in fetal weights were noted in the 1000 and 2000 ppm dose groups. Visceral malformations occurred in one or few fetuses from the 100, 1000 and 2000 ppm exposure groups, without a clear dose relationship and nostatistical significance. NOAEC = 2000ppm (OECD Guideline 414)

Specific target organ toxicity (single exposure):

- Fe: If inhaled, iron is a local irritant to the lung and gastrointestinal tract.
- Copper: All animals showed expected gains in bodyweight over the study period and there were no abnormalities noted at necropsy. (OECD TG 423, GLP)
- Aluminum: In test using rats, Clinical signs of depression, laboured respiration, piloerection and hunched appearance was noted at the highest dose 15900 mg/kg. Macroscopic examination at the end of the observation period did not reveal any aluminum-related changes of the internal organs of the aluminum treated animals compared to the control group. (OECD TG 401)(Fumed alumina; readacross)
- Lithium hexafluorophosphate(1-): Clinical signs observed during the study period were lethargy, hunched posture, uncoordinated movements, piloerection at 300 mg/kg, hunched posture, piloerectionat 50 mg/kg. The surviving animals had recovered from the symptoms by Day 3.(OECD Guideline 423, GLP)
- Polyethylene: No test substance-related toxic effects were observed in an acute oral toxicity study with rats.

Carbon black: No effect on endothelins or blood pressure was observed after exposure to carbon black. There were also no effects on body temperature and activity of the animals.

- Nickel; Raney nickel: In the acute oral toxicity using rat, there were no effects on clinical signs, systemic toxicity.(OECD Guideline 401, GLP)
- Chromium: In the acute oral toxicity using rat, salivation increased among all animals 15 minutes after administration of the test substance, and lasted about 8 hours. (OECD TG 420, GLP)
- Ethylbenzene: In acute oral, inhalation, dermal toxicity study with rats, adverse effects were not observed related to acute toxicity.

Specific target organ toxicity (repeat exposure):

- Fe: Rats were exposed to metallic iron as carbonyl iron via their feed (2.5%) for 2, 4, 6, or 9 weeks. This resulted in a strong increase of non-heme iron in the liver and clear lipid peroxidation in the liver and the mucosa of the duodenum. No evidence for DNA breakage were found. What follows is the original abstract of the publication. (carbonyl iron)
- Copper: In test with rats for 92 days, there were no mortalities or signs of clinical toxicity observed in any of the test species during the duration of the study. Opthalmoscopic examinations revealed no abnormalities at any dose level tested. At gross pathology, significant decreases in heart and kidney weight were noted in the high dose males in the thymus and kidneys of high dose females. (GLP)
- Aluminum : On occasion workers chronically exposed to aluminum-containing dusts or fumes have developed severe pulmonary reactions including fibrosis, emphysema and pneumothorax.
- Lithium hexafluorophosphate(1-): According to expert review of fluoride intake and effects on human health, fluoride intake in drinking water at levels close to or above 4 mg/l is associated with dental fluorosis and perhaps also bone fluorosis and/or weakening.; Damage to dental enamel recorded: especially notable in young animals, which also showed atrophy of respiratory organs/tissues with local oedema of bronchial mucosa. Older animals showed peribronchial hyperplasia. Animals around 1 year in age showed cavity formation in their bones. (Information on major hydrolysis product of the registered substance (released rapidly on contact with water/moisture))(OECD Guideline 412)
- Polyethylene: No significant adverse effects were observed in subchronic (90-day) oral toxicity study with rats and dogs.
- Boehmite (Al(OH)O): There were no clear clinical signs or observations during necropsy which could be related to the treatment.(OECD Guideline 408, GLP), Intratracheal injection of aluminum powder caused nodular pulmonary fibrosis in the lungs of the rats only at the highest dose administered (100 mg).(OECD Guideline 413)
- Carbon black: Mice were continuously fed various types of carbon black in massive quantities (10% in diet) for 12 to 18 months. This led to no detectable changes from the normal in the organs and tissues of the mice fed.
- Nickel; Raney nickel: In nickel plating industry, exposure to nickel containing vapors has been reported to be assoc with asthma.
- Chromium: In the repeated Dose 90-Day Oral toxicity test using rat, there were no effects on clinical sign, mortality.
- Ethylbenzene: In repeated oral toxicity study with rats for 28 days, increased liver weight and hepatocellular hypertrophy at higher dose levels were observed. (NOEAL = 75 mg/kg bw/day) (OECDTG 407, GLP); In repeated inhalation toxicity study with rats for 13 weeks, increases in liver and kidney weights but no other treatment related effects were observed in rats that inhaled >=250 ppm ethylbenzene vapour for 13 weeks, NOAEC = 1000ppm (OECD Guideline 413, GLP), Classified as Category 2 according to EU GHS

Aspiration Hazard:

- Ethylbenzene: Classified as Category 1 according to EU GHS

SECTION 12. ECOLOGICAL INFORMATION

* This is a product that fulfills a certain function in solid state with specific shape without discharging any chemical substance in its use and has no obligation to write (M)SDS. Since this document contains the precautions for safe handling related to its materials or chemical substances consisting of this product, please note that this overall information is irrelevant to this product.

12.1 Ecological toxicity

- Acute toxicity : ATEmix = 0.48250mg/ ℓ

Fish

- Graphite : 96hr-LC₅₀ (Brachydanio rerio) > 100 mg/L
- Fe : 96hr-LC₅₀ > 10000 mg/L (OECD TG 203, GLP)
- -: 96hr-LC₅₀ = 54.1 mg/L (Read across; cobalt (II) chloride hexahydrate), 34d-NOEC (Pimephales promelas) = 0.21 mg/L
- Aluminum : 96hr-LC₅₀ > 218.64 mg/L (GLP)(Read across; aluminum chloride hexahydrate), 28d- NOEC (*Pimephales promelas*) = 4.7 mg/L (Read across; aluminum sulphate)
- Lithium hexafluorophosphate(1-): 96hr-LC₅₀ = $51 \sim 193$ mg/L Information on major hydrolysis product of the registered substance (released rapidly on contact with water/moisture); 21d-NOEC = 4 mg F-/L
- Boehmite (Al(OH)O) : $96hr-LC_{50} = 1.16 mg/L$
- Carbon black : $96hr-LC_0 = 1000 \text{ mg/L}$ (OECD TG 203, GLP)
- 1-Methyl-2-pyrrolidinone : 96hr-LC₅₀ > 500 mg/L (BBA-bulletin No. 33, 2. edition)
- Lithium carbonate;Lithane : 96hr-LC₅₀ = 30.3 mg/L (OECD Guideline 203, GLP), 34d-NOEC (*Danio rerio*) = 15.28 mg/L (Read across; lithium hydroxide monohydrate)(OECD Guideline 210, GLP)
- Ethylbenzene : $96hr-LC_{50} = 4.2 \text{ mg/L}$ (OECD Guideline 203)

Crustacean

- Graphite: 48hr-EC₅₀ (Daphnia magna) > 100 mg/L
- Fe : 48hr-EC₅₀ > 100 mg/L (OECD TG 202, GLP)
- : $48\text{hr-EC}_{50} = 2.618 \text{ mg/L (GLP)}(\text{Read across; cobalt (II) chloride hexahydrate)}, 42\text{d-NOEC (Neanthes arenaceodentata)} = 0.713 \text{ mg/L (ASTM Method E1562, GLP)}$
- Aluminum : 48hr- $LC_{50} = 0.071$ mg/L (Read across; CAS 13473-90-0), 8d-NOEC (Ceriodaphnia dubia) = 4.9 mg/L (Read across; CAS 7784-13-6)
- Lithium hexafluorophosphate(1-): 48hr-LC₅₀ > 100 mg/L (OECD Guideline 202, GLP);21d- NOEC (*Daphnia magna*) = 10 mg/L (Information on major hydrolysis product of the registered substance (released rapidly on contact with water/moisture)) (OECD guideline 202, GLP)
- 4-fluoro-1,3-dioxolan-2-one : 48hr-LC₅₀ = 8.4 mg/L (OECD Guideline 202, GLP)
- Boehmite (Al(OH)O) : 48hr-EC₅₀ > 100 mg/L (OECD Guideline 202, GLP)
- Carbon black : 24hr-EC₅₀ > 5600 mg/L (OECD TG 202, GLP)
- Lithium carbonate;Lithane : 48hr-EC₅₀ = 33.2 mg/L (OECD Guideline 202, GLP), 21d-NOEC (*Daphnia magna*) = 9 mg/L (Read across; lithium)(OECD Guideline 211, GLP)
- Ethylbenzene: 48hr-EC₅₀ = 1.8 ~ 2.4 mg/L (EPA method F), 7d-NOEC(Ceriodaphnia dubia) = 0.96 mg/L (U.S. EPA 600/4-91-003)

Algae

- Graphite : 72hr-EC_{50} (Selenastrum capricornutum) > 100 mg/L
- : 96hr-EC₅₀ = 71.314 mg/L (Read across; cobalt (II) chloride hexahydrate), 96hr-NOEC (*Dunaliellatertiolecta*) = 4.672 mg/L
- $-:96hr-EC_{50} > 500 \text{ mg/L}$
- Aluminum: 72hr-EC₅₀ = 0.0169 mg/L (OECD TG 201), (Read across; CAS 13473-90-0)
- Lithium hexafluorophosphate(1-): 96hr-EC₅₀ > 100 mg/L; 96h-NOEC = 22 mg/L (OECD Guideline201, GLP)
- 4-fluoro-1,3-dioxolan-2-one : $72hr-EC_{50} = 32 \text{ mg/L}$
- Boehmite (Al(OH)O) : 72hr-EC₅₀ \geq 100 mg/L (OECD Guideline 201, GLP)
- Carbon black : $72\text{hr-EC}_{50} > 10000 \text{ mg/L}$, 72hr-NOEC > 10,000mg/l (OECD TG 201, GLP
- Lithium carbonate; Lithane : $72hr-EC_{50} > 400 \text{ mg/L}$
- Ethylbenzene: 96hr-EC₅₀ = 3.6 mg/L (U.S. EPA. 1985. Toxic substance Control Act Test guidelines)

12.2 Persistence and degradability

Persistence

- Graphite: Low persistency (log Kow is less than 4 estimated.) (Log Kow = 0.78)
- : Low persistency (log Kow is less than 4 estimated.) (Log Kow = 0.82)
- Aluminum: Low persistency (log Kow is less than 4 estimated.) (Log Kow = 0.33) (estimated)
- Lithium hexafluorophosphate(1-): Low persistency (log Kow is less than 4 estimated.) (Log Kow =0.354) (20 °C, pH > 6.5 < 7.5)(OECD Guideline 107, GLP)

Degradability: Not available

12.3 Bioaccumulative potential

Bioaccumulation

- Graphite: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 2.433)
- Copper: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = $0.02 \sim 20$)
- -: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 23) (Read across; 57CoCl)
- : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 2.5)
- Aluminum : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 3.162) (estimated)
- Lithium hexafluorophosphate(1-): Bioaccumulation is expected to be low according to the BCF < 500 (BCF < 31)
- 4-fluoro-1,3-dioxolan-2-one: Bioaccumulation is expected to be low according to the BCF < 500 (BCF= 3.162) (estimated)
- Dimethyl carbonate: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 3.2)
- Nickel; Raney nickel: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 70)
- Ethylbenzene: Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 1)

Biodegradation

- Lithium hexafluorophosphate(1-): As well-biodegraded, it is expected to have low accumulation potential in living organisms (= 86% biodegradation was observed after 28 days) (OECD Guideline 301C, GLP)
- 4-fluoro-1,3-dioxolan-2-one: As not well-biodegraded, it is expected to have high accumulation potential in living organisms (= 38% biodegradation was observed after 21 days) (OECD Guideline 301D, GLP)
- Dimethyl carbonate: As well-biodegraded, it is expected to have low accumulation potential in living organisms (= 86% biodegradation was observed after 28 days) (OECD Guideline 301 C, GLP)
- Polyethylene: As not well-biodegraded, it is expected to have high accumulation potential in living organisms (= 0% biodegradation was observed after 28 days)
- Carbon black : carbon black is an inorganic substance and will not biodegraded by microorganisms.
- Ethylbenzene : As well-biodegraded, it is expected to have low accumulation potential in living organisms (70% ~ 80% biodegradation was observed after 28 days) (ISO 14593-CO2-HeadspaceTest)

12.4 Mobility in soil

- 4-fluoro-1,3-dioxolan-2-one : Low potency of mobility to soil. (Koc = 5.117)
- Nickel; Raney nickel: Low potency of mobility to soil. (Koc = 2.86)
- Ethylbenzene : Low potency of mobility to soil. (Koc = 257.04)

12.5 Results of PBT and vPvB assessment: Not available

12.6 Other adverse effects: Not available

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product/Packaging disposal

- Consider the required attentions in accordance with waste treatment management regulation.

Waste codes / Waste designation according to LoW(2015): 16-06-05

Waste treatment-relevant information

- Waste must be disposed of in accordance with federal, state and local environmental controlregulations.

Sewage disposal-relevant information: Not available **Other disposal recommendations:** Not available

SECTION 14. TRANSPORT INFORMATION

* If those lithium-ion batteries are packed with or contained in an equipment, then it is theresponsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section II of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous). If those lithium-ion batteries are packed with or contained in an equipment, UN No. is UN3481.

14.1 UN Number: 3480

14.2 UN Proper shipping name: LITHIUM-ION BATTERIES

14.3 Transport Hazard class: 9

14.4 Packing group: II

14.5 Special provisions: 188, 230, 38414.6 Packing instructions: P90314.7 Environmental hazard: No

14.8 Special precautions for user

in case of fire: F-A in case of leakage: S1

14.9 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not Available

14.10 IATA Transport: PI 965-Section IB

14.11 Package labels



SECTION 15. REGULATORY INFORMATION

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

EU regulations

Authorizations and/or restrictions on use:

Authorizations: Not regulated

Restrictions on use:
- Nickel: Regulated
Other EU regulations:

Foreign Regulatory Information

External information:

U.S.A management information (OSHA Regulation): Not regulated

U.S.A management information (CERCLA Regulation):

Copper: 5,000 lbNickel: 100 lbChromium: 5,000 lbethylbenzene: 1,000 lb

U.S.A management information (EPCRA 302 Regulation): Not regulated U.S.A management information (EPCRA 304 Regulation): Not regulated

U.S.A management information (EPCRA 313 Regulation):

- Aluminum (metal): Regulated

Copper : RegulatedNickel : Regulated

- Chromium: Regulated

- lithium carbonate : Regulated

Substance of Roterdame Protocol: Not regulated

Substance of Stockholme Protocol:

lithium hexafluorophosphate(1-): Regulated
 Substance of Montreal Protocol: Not regulated

15.2 Chemical safety assessment:

- No chemical safety assessment has been carried out for this product by the supplier.

SECTION 16. OTHER INFORMATION

Product safety data sheet for PA0001N0006A/PA0001N0007A/PA001N0008A prepared in accordance with Regulation (EU) 2015/830 (REACH), Annex II, and OSHA 29 CFR 1910.1200

16.1 Indication of changes

Date Updated: January 20, 2022

Version: Rev. 00

16.2 Abbreviations and acronyms

ACGIH = American Conference of Government Industrial Hygienists

CLP = Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

CAS No. = Chemical Abstracts Service number

DMEL = Derived Minimal Effect Levels

DNEL = Derived No Effect Level

EC Number = EINECS and ELINCS Number (see also EINECS and ELINCS)

EU = European Union

IARC = International Agency for Research on Cancer

ISHL = Industrial Safety & Health Law

NIOSH = National Institute for Occupational Safety & Health

NTP = National Toxicology Program

OSHA = European Agency for Safety and Health at work

PBT = Persistent, Bio accumulative and Toxic substance

PNEC(s) = Predicted No Effect Concentration(s)

REACH = Registration, Evaluation, Authorization and Restriction of Chemicals Regulation (EC) No 453/2010

STP = Sewage Treatment Plant

SVHC = Substances of Very High Concern

vPvB = Very Persistent and Very Bio accumulative

UN = United Nations

MARPOL = International Convention for the Prevention of Pollution from Ships (IMO)

IBC = Intermediate Bulk Container

CERCLA = Comprehensive Environmental Response, Compensation & Liability Act (US)

EPCRA = Emergency Planning and Community Right-to-Know Act (US)

EINECS = European Inventory of Existing Commercial chemical Substances

ELINCS = European List of Notified Chemical Substances

16.3 Key literature reference and sources for data:

U.S. National library of Medicine (NLM) Hazardous Substances Data Bank (HSDB)

LookChem; http://www.lookchem.com/

IUCLID: http://ecb.jrc.ec.europa.eu/IUCLID-DataSheets/7631905.pdf

CHRIP (Chemical Risk Information Platform)

EPISUITE v4.11; http://www.epa.gov/opt/exposure/pubs/episuitedl.html

The Chemical Database -The Department of Chemistry at the University of Akron;

http://ull.chemistry.uakron.edu/erd/

ECOTOX: http://cfpub.epa.gov/ecotox/

International Chemical Safety Cards (ICSC): http://www.nihs.go.jp/ICSC/

National Chemical Information System (http://ncis.nier.go.kr)

Korea Dangerous Material Inventory Management System (http://hazmat.nema.go.kr)

REACH information on registered substances; https://echa.europa.eu/information-on-chemicals/registered-

substances

EU CLP; https://echa.europa.eu/information-on-chemicals/cl-inventory-database

NIOSH Pocket Guide; http://www.cdc.gov/niosh/npg/npgdcas.html

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; http://monographs.iarc.fr

National Toxicology Program; http://ntp.niehs.nih.gov/results/dbsearch/

TOMES-LOLI®; http://www.rightanswerknowledge.com/loginRA.asp

UN Recommendations on the transport of dangerous goods 17th

American Conference of Governmental Industrial Hygienists TLVs and BEIs.

$16.4\ Classification\ and\ procedure\ used\ to\ derive\ the\ classification\ for\ mixtures\ according\ to\ Regulation\ (EC)\ 1272/2008(CLP):$

Not classified

16.5 Relevant H-statements: Not applicable

16.6 Training advice:

- Do not handle until all safety precautions have been read and understood.

16.7 Further information:

Data of Sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product (s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)"

The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.

SECTION 1. CHEMICIAL PRODUCT AND COMPANY NAME

Lithium-Ion Rechargeable Battery Pack BL1850B

Safety Data Sheet

Complies with the OSHA Hazard Communication Standard: 29 CFR 1910 1200

Makita U.S.A., Inc. 14930-C Northam Street La Mirada, CA 90638

Prepared By:	Stan Rodrigues		
Date Revised:	02/17/2022		

EMERGENCY CONTACT INFORMATION

Telephone Number for Information: MAKITA: 1-510-657-9881

Emergency Response

For Chemical Emergency Spills, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada 1-800-424-9300

SECTION 2. HAZARD IDENTIFICATION

Class Name: Not applicable for regulated class

Hazard: It may cause heat generation or electrolyte leakage if battery terminals contact with other metals. Electrolyte is

flammable. In case of electrolyte leakage, move the battery from fire immediately.

Toxicity: Vapor generated from burning batteries, may make eyes, skin and throat irritate.

SECTION 3. COMPOSITION, INFORMATION OR INGREDIENTS

IMPORTANT NOTE:

The battery should not be opened or burned since the following ingredients contained within the battery that could be harmful under some circumstance if exposed or misused.

The cell contains neither metallic lithium nor lithium alloy.

Cathode: (active material)

Polyvinylidene Fluoride (binder)

Anode: (active material)
Electrolyte: Organic Solvent ()

Lithium Salt

Others: Heavy metals such as Mercury, Cadmium, Lead, and Chromium are not used in the battery.

Enclosure : Plastic (PC) UN number : UN3480

Watt-hour rating: 90 Wh for battery pack

SECTION 4. FIRST AID MEASURE

The product contains organic electrolyte. In case of electrolyte leakage form the battery, actions described below are required.

Eye contact: Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing, and call a doctor. If

appropriate procedures are not taken, this may cause an eye irritation.

Skin contact: Wash the contact areas off immediately with plenty of water and soap.

If appropriate procedures are not taken, this may cause sores on the skin.

Inhalation: Remove to fresh air immediately and call a doctor.

SECTION 5. FIRE FIGHTING MEASURES

- Use specified extinguishers (gas, foam, powder) and extinguishing system under the Fire Defense Law.
- Since corrosive gas may be produced at the time of fire extinguishing, use an air inhalator when danger is predicted.
- Use a large amount of water as a supportive measure in order to get cooling effect if needed. (Indoor/outdoor fire hydrant)
- · Carry away flammable materials immediately in case of fire.
- Move batteries to a safer place immediately in case of fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Wipe off with dry cloth
- · Keep away from fire
- · Wear safety goggles, safety gloves as needed

SECTION 7. HANDLING AND STORAGE

Storage: Store within the recommended limit of -30°C to 45°C (-22°F to 113°F), well-ventilated area. Do not expose to high

temperature (60°C/140°F). Since short circuit can cause bum hazard or safety vent to open, do not store with metal

jewelry, metal covered tables, or metal belt.

Handling: Do not disassemble, alter, or solder. Do not short + and – terminals with metal.

Do not open the battery pack.

Charging: Refer to the charger instruction manual.

Discharging: Discharge within the limits of -20°C to 60°C (-4 °F to 140°F) temperature.

Disposal: Dispose in accordance with applicable federal, state and local regulations.

Caution: FOR SAFE OPERATION, SEE INSTRUCTION MANUAL. USE ONLY WITH MAKITA CHARGER DC18R/S

SERIES SEE INSTRUCTION MANUAL FOR DETAILS. CHARGING ROOM TEMP.:10°C \sim 40°C. DO NOT

EXPOSE ATTERY TO WATER OR RAIN. DO NOT DESTROY BATTERY BY FIRE.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

(In case electrolyte is leaked from battery)

Acceptable concentration: Not specified in ACGIH.

Facilities: Provide appropriate ventilation such as local ventilation system in the storage.

Protective clothing: Gas mask for organic gases, safety goggle, safety glove.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Lithium-ion rechargeable cells are set in a resin case.

Average Operating Voltage: 18V

SECTION 10. STABILITY AND REACTIVITY

External short-circuit, deformation by crush, high temperature (over 100°C) exposure of the battery may cause generation of heat and ignition.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Toxicity: No information as a battery **Local Effects:** No information as a battery

SECTION 12. ECOLOGICAL INFORMATION

When exhausted battery is buried in the ground, corrosion may be caused on the outer case of battery and electrolyte may be oozed. There is no information on environmental influence.

SECTION 13. DISPOSAL CONSIDERATIONS

When battery is disposed, isolate positive (+) and negative (-) terminals of the battery to avoid those terminals from touching each other. Batteries may be short-circuited when piled up or mixed with the other batteries. Dispose in accordance with applicable federal, state and local regulations.

SECTION 14. TRANSPORT INFORMATION

- The cells in these batteries have been tested and meet the requirements for the UN Manual of Tests and Criteria, Part III, subsection 38.3.
- When a number of batteries are transported by ship, vehicle and railroad avoid high temperature and dew condensation.
- Avoid transportation which may cause damage of package.
- Lithium-ion batteries are not subject to dangerous goods regulation for the purpose of transportation by the International Maritime Dangerous Goods regulations (IMDG). For Lithium-ion batteries, the Watt-hour rating is no more than 20Wh /cell and 100Wh/ battery pack can be treated as "non-dangerous goods" by the United Nations Recommendations on the Transport of Dangerous Goods/Special Provision 188, provided that the products are prevented from being short-circuited with each other and are packaged in an appropriate condition which satisfies Packing Group II performance level.
- IATA (International Air Transport Association): Dangerous Goods Regulation
 Packing Instruction 965 (Lithium ion or lithium polymer cells and batteries without electronic equipment) went into effect April 1,
 2016: Lithium ion cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity.
 UN 3480, PI 965, Section IA and IB and II will be restricted to carriage on cargo aircraft. All packages must bear the Cargo Aircraft
 Only label in addition to the other marks and labels required by the Regulations.

• US Hazardous Materials Regulations 49 CFR (Code of Federal Regulations) Sections 173-185 Lithium batteries and cells.

Section II requirements apply to lithium-ion cells with a Watt-hour rating not exceeding 20 Wh and lithium-ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that within the allowance permitted in Section II, Table 965-11.

TABLE 965-II

Contents	Lithium-ion cells and/or batteries with a Watt-hour rating of 2.7 Wh or less	Lithium-ion cells with a Watthour rating of more than 2.7Wh but not more than 20Wh	Lithium-ion batteries with a Watt-hour rating of more than 2.7Wh but not more than 100Wh
Maximum number of cells / batteries per package	No limit	8 cells	2 Batteries
Maximum net quantity per package	2.5 kg	N/A	N/A

Lithium-ion cells and batteries meeting the requirements in this section are not subject to other additional requirements of these Regulations except for:

- Each cell and battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3;
 - cells and batteries must be manufactured under a quality management program;
 - for batteries, The Watt-hour rating must be marked on the outside of the battery case;
 - Each package must be capable of withstanding a 1.2m drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
- Each package must be marked with the lithium battery mark and the cargo aircraft only Label.
- A shipper is not permitted to offer for transport more than one package prepared according to Section II in any single consignment Section IB requirements apply to lithium-ion cells with a Watt-hour rating not exceeding 20 Wh and lithium-ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II.

Quantities of lithium-ion cells or batteries that exceed the allowance permitted in Section II, Table 965-II must be assigned to Class 9 and are subject to all of the applicable provisions of Regulation.

Lithium batteries packed without equipment are classified under (UN3480), IATA Dangerous Goods Regulations packing instruction 965 is applied.

Lithium batteries packed with equipment are classified under (UN3481), IATA Dangerous Goods Regulations packing instruction 966 is applied.

Lithium batteries installed in equipment are classified under (UN3481), IATA Dangerous Goods Regulations packing instruction 967 is applied.

SECTION 15. REGULATORY INFORMATION

- IMDG Code: International Maritime Dangerous Goods (IMDG) Code
- ICAO TI: International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air
- IATA DGR: International Air Transport Association (IATA) Dangerous Goods Regulations

SECTION 16. OTHER INFORMATION

The information contained within is provided for your information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, Makita U.S.A, Inc. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON IT.