

## Marking of equipment (BAT)

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DPA-System is short for Danish Producer Responsibility System. DPA-System is in charge of administrative tasks associated with the rules on producer responsibility under Danish environmental law regarding waste from electrical and electronic equipment, end-of-life batteries and accumulators, and end-of-life vehicles.

Producer responsibility for these waste types has authority in the Danish Environmental Protection Act. This Act translates into three Statutory Orders for the different waste types: the WEEE Order, the Battery Order, and the End-of-life Vehicles Order (the current statutory texts can be found on [www.dpa-system.dk](http://www.dpa-system.dk)).

The Danish Statutory Orders take offset in three EU directives for the same waste types: the so-called WEEE Directive, the Batteries Directive, and the ELV Directive. Also these directives with exact titles and dates can be found on [www.dpa-system.dk](http://www.dpa-system.dk).

Producer responsibility rests on the principle that each producer or importer assumes responsibility for collection and management of WEEE, waste batteries, and end-of-life vehicles to the effect that products becoming waste are managed in an environmentally correct manner, with the highest possible utilisation of resources contained in such products.

Producers and importers are in the following referred to as *producers* as the rules applying to both types are the same.

In general, the following abbreviations are used: WEEE for waste electrical and electronic equipment, BAT for batteries and accumulators, and ELV for end-of-life vehicles.

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In pursuance of rules on producer responsibility for waste batteries and accumulators this document describes rules on marking of batteries and producer obligations in relation to information for end-users.

### **Three types of marking and consumer information**

Producers and importers must mark their batteries and accumulators with a crossed-out wheeled bin symbol, the chemical symbol for lead, mercury or cadmium (within certain limits) and an indication of capacity. In addition, producers and importers must in other ways inform users about management of waste batteries, including the potential effects on the environment and human health. The provisions have authority in section 37 of the Order and article 21 of the Directive.

#### **Marking for separate collection - crossed-out wheeled bin**

Marking, which must be found on all batteries, must be in compliance with the symbol found in Annex 1 to Statutory Order no. 943 of 23 September 2008 on import, sale and export of batteries and accumulators. (Appendix 1). Rules on marking entered into force on 26 September 2008.

The symbol illustrates that the product must not be discarded with ordinary household waste, but must be collected separately.

According to the Battery Order, the symbol shall cover at least 3 % of the area of the largest side of the battery, up to a maximum size of 5 × 5 cm. In the case of cylindrical cells, the symbol shall cover at least 1.5 % of the surface area of the battery and shall have a maximum size of 5 × 5 cm.



Where the size of the battery is such that the symbol would be smaller than 0.5 × 0.5 cm, the battery need not be marked but a symbol measuring at least 1 × 1 cm shall be printed on the packaging.

For battery packs, the battery compartment – not each cell – is marked. A battery pack means any set of batteries that are connected together and/or encapsulated within an outer casing so as to form a complete unit that the end-user is not intended to split up or open.

By contrast to the symbol for WEEE the crossed-out wheeled bin symbol does not have a bar in the lower part of the symbol. Here, marking of heavy metal contents must be placed in the lower part of the symbol (see below).

The producer can choose to emboss the symbol onto the product, print it, or use stickers. Generally, "the marking shall be accessible, durable, legible and indelible". Producers are responsible for production of the symbol with a printing shop or similar. Danish Standards Association has drawn up materials in the form of electronic files with graphic formats that printing houses etc. can use in the production.

## Marking of heavy metal content

With the purpose of reducing the use of dangerous substances, including avoiding potential releases to the surrounding environment, batteries in addition to the marking with the crossed-out wheeled bin, must be marked with heavy metal contents according to the following rules. All batteries containing heavy metal exceeding the limit values listed below shall be marked with the chemical symbol for mercury (Hg), cadmium (Cd), and lead (Pb), respectively.

Table 1: Marking of heavy metals and limit values

Substance group	Ban - limit value	Marking required
Mercury	0.0005% (button cells 0.2%)	<b>Hg</b> , if > 0.0005%
Cadmium	0.002% in portable batteries*	<b>Cd</b> , if > 0.002%
Lead	-	<b>Pb</b> , if > 0.004%

\* An exemption from the Cd ban is the use in medical devices, tools, and emergency and alarm equipment incl. emergency lighting.

The symbol indicating the heavy metal content shall be printed beneath the crossed-out wheeled bin symbol and shall cover an area of at least one quarter the size of that symbol.

## Capacity labelling of rechargeable batteries

Rechargeable portable batteries and automotive battery and accumulators (secondary batteries) must furthermore carry a capacity label. The capacity of the battery is an expression of the charge that the battery can give off under given circumstances, such as temperature conditions, after charging/discharging etc. The purpose of capacity labelling is to optimize use of the different types of battery by showing the suitability of the battery for a specific end-user need. When the most suitable battery for a given need is selected quantities of waste batteries will be reduced due to a longer useful life of the battery. Thus, capacity labelling is a measure intended to reduce waste arisings.

In order for capacity labelling to achieve the intended aim, including consistent quality values and elimination of distortion of competition among producers, harmonized and controlled methods for capacity measurement of different types of battery are set up. After a large number of studies this process was completed in 2010.

Provisions for capacity labelling are found in [Commission Regulation no. 1103/2010 of 29 November 2010 establishing rules as regards capacity labelling of portable secondary \(rechargeable\) and automotive batteries and accumulators](#). By contrast to directives an EU regulation is binding in all its details and must be implemented as such in all Member States. The regulation must be fully implemented no later than 18 months after the date of entry into force; this means that producers of rechargeable portable batteries and automotive accumulators must label their batteries according to international standards no later than May 2012.

### Standards for measurement methods and requirements for units of measurement

In the below table the requirements for measurement methods are summarised, including the concrete standards to be used and the contents of the labels for the different battery types; units of measurement are also stated. The following units of measurement are used: milliampere-hours (mAh), ampere-hours (Ah), and “Cold Cranking Amperes” (A).

The standards used are IEC standards. IEC (International Electrotechnical Commission) is the global organisation for standardisation for all electrical, electronic and related technologies.

Table 2: Method and requirements for capacity labelling

Battery type and chemical substance group	Rated capacity measured according to standard:	Unit of measurement	Capacity stated as:	Notes
Rechargeable portable		NOTE! Shaded fields apply to both Ni-CD, Ni-MH and Li-ion.		
Ni-Cd	IEC/EN 61951-1 IEC /EN 60622	mAh	Integer	Not for tools
Ni-MH	IEC/EN 61951-2	mAh	Integer	Only for tools
Li-ion	IEC/EN 61960	Ah	Decimal number (one digit)	

Pb-Ac	IEC/EN 61056-1	Ah*	Decimal number (one digit)	Not for tools
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Automotive batteries and accumulators				
Pb-Ac	IEC 60095-1/EN 50342-1	A Cold cranking	Integer (with a level of $\pm 10\%$ accuracy of the nominal value)	Both values must be stated
		Ah (Cranking current)	Integer (with a level of $\pm 10\%$ accuracy of the nominal value)	

\* In the Danish version of the regulation it is stated incorrectly that the unit of measurement must be mAh.

Common to all battery types and substance groups is that the level of accuracy must follow the requirements stated in the standards.

### Minimum size and location of capacity labels

In addition to requirements for measurement methods there are also requirements for design of the label on the product or the equipment. A distinction is made between the different battery types (individual batteries, battery packs and automotive battery), and between batteries with or without packaging.

Table 3: Requirements for the physical appearance of the label

Type	Notes	Minimum size (Height x Width)	Exemptions
Individual batteries	On the battery	1,0 x 5,0 mm	Button cells and memory back-up batteries*.
The packaging	The packaging (front)	5,0 x 12, 0 mm	On the battery and on the packaging Batteries sold without packaging only on the battery*
Button cells and memory back-up batteries	The packaging (front)	5,0 x 12,0 mm	
Battery packs	Where the largest side is below 70 cm <sup>2</sup>	1,0 x 5,0 mm	Only on the external housing of the cell and not on each individual cell.
Battery packs	Where the largest side is equal to or above 70 cm <sup>2</sup>	2,0 x 5,0 mm	Only on the external housing of the cell and not on each individual cell.
Automotive batteries	Shall cover at least 3 % of the area of the largest side.	Up to a maximum of 20 x 150 mm	Must not be located on the bottom side.

\* Memory back-up batteries as described in section 39(3) of the Battery Order.

\*\* Note that the word *packaging* is translated incorrectly in the Danish version of the regulation with the word *battery pack*.

Where the size of the battery is such that a label of a minimum size cannot be shown upon it, and where the battery is not supplied with its own packaging, the capacity shall be marked on the packaging of the appliance with which the batteries are sold.

### **General exemption**

Rechargeable batteries incorporated or designed to be incorporated in appliances before being provided to end-users are exempt from the scope of application of the regulation.

### **Primary batteries (non-rechargeable)**

Calculation methods for the capacity measurement of primary (non-rechargeable) batteries are yet to be determined.

### **Information for end-users**

Dealers/distributors shall ensure that end-users of batteries and accumulators are informed of the following in sales and information material at the point of sale:

- The potential effects on the environment and human health of the substances used in batteries;
- The desirability of not disposing of waste batteries as unsorted municipal waste and of participating in their separate collection;
- The collection and recycling schemes available to them;
- Their role in contributing to the recycling of waste batteries;
- The meaning of the symbol of the crossed-out wheeled bin.

The Danish Environmental Protection Agency has prepared a number of standard texts to be used by producers to inform their end-users. A standard text is available to producers only dealing in batteries, and another text has been prepared regarding batteries incorporated into appliances. The texts have been approved so as to comply with section 37 of the Battery Order.

### **Text for information material – only portable and automotive batteries**

At the end of this document you can find an English translation for your information only.

*"Batterier indeholder stoffer, der kan være skadelige for menneskers sundhed og for miljøet, hvis de ikke håndteres korrekt.*

*Batterier er mærket med den overkrydsede skraldespand. Den symboliserer, at udtjente batterier ikke må bortskaffes sammen med usorteret husholdningsaffald, men skal indsamles særskilt.*

*Nogle batterier er også mærket med den kemiske betegnelse Hg (kviksølv), Cd (cadmium) eller Pb (bly). Dette er særligt skadelige stoffer, og det er derfor vigtigt, at disse batterier bliver indsamlet. (Denne er kun nødvendig, hvis batteriet indeholder de pågældende stoffer)*

*Det vigtigt, at du afleverer dine udtjente batterier til de indsamlingsordninger, der er etableret. På denne måde er du med til at sikre, at batterierne genanvendes i overensstemmelse med lovgivningen og ikke unødigt belaster miljøet".*

\* Vælg som afslutning én af følgende tre tekster (overskrift medtages ikke)\*

*Bærbare batterier:*

*Alle kommuner har etableret indsamlingsordninger, hvor udtjente bærbare batterier bliver afhentet direkte fra husholdningerne, eller gratis kan afleveres af borgerne på genbrugsstationer og andre indsamlingssteder. Nærmere information kan fås hos kommunens tekniske forvaltning.*  
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*Bilbatterier:*

*Udtjente bilbatterier kan bl.a. afleveres til værksteder, der tilbagetager bilbatterier, kommuner, der har etableret indsamling på fx genbrugspladser, eller til modtagepladser etableret af batteriproducenterne rundt om i landet.*

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*Industribatterier:*

*Udtjente industribatterier kan afleveres til den producent eller importør, der oprindeligt har markedsført batteriet, eller til den producent eller importør, hvor der købes et nyt industribatteri.*

**Text for information material – portable batteries incorporated into electrical and electronic appliances**

At the end of this document you can find an English translation for your information only.

*Elektrisk og elektronisk udstyr samt medfølgende batterier indeholder materialer, komponenter og stoffer, der kan være skadelige for menneskers sundhed og for miljøet, hvis affaldet ikke håndteres korrekt.*

*Elektrisk og elektronisk udstyr og batterier er mærket med nedenstående overkrydsede skraldespand. Den symboliserer, at elektrisk og elektronisk udstyr og batterier ikke må bortskaffes sammen med usorteret husholdningsaffald, men skal indsamles særskilt.*

*Nogle batterier er også mærket med den kemiske betegnelse Hg (kviksølv), Cd (cadmium) eller Pb (bly). Dette er særligt skadelige stoffer og det er derfor specielt vigtigt, at disse batterier bliver indsamlet. (Denne er kun nødvendig, hvis batteriet indeholder de pågældende stoffer)*

*Som slutbruger er det vigtigt, at du afleverer dine udtjente batterier til de ordninger, der er etableret. På denne måde er du med til at sikre, at batterierne genanvendes i overensstemmelse med lovgivningen og ikke unødigt belaster miljøet.*

*Alle kommuner har etableret indsamlingsordninger, hvor kasseret elektrisk og elektronisk udstyr samt bærbare batterier gratis kan afleveres af borgerne på genbrugsstationer og andre indsamlingssteder eller bliver afhentet direkte fra husholdningerne. Nærmere information kan fås hos kommunens tekniske forvaltning.*

**English translation of text for information material – only portable and automotive batteries**

*"Batteries contain materials that may present a risk to human health and the environment when they are not handled correctly.*

*Batteries are marked with a crossed-out wheeled bin symbol indicating that waste batteries*

*should not be discarded together with unseparated household waste, but must be collected separately.*

*Some batteries are also marked with the chemical symbols Hg (mercury), Cd (cadmium) or Pb (lead). These are particularly harmful substances and it is therefore important that these batteries are collected. (This clause only necessary if the battery contains those substances).*

*It is important that you dispose of your waste batteries to the available collection schemes. In this way you help ensure that batteries are recycled in accordance with current legislation and do not cause unnecessary adverse environmental impacts.*

\* Choose one of the following texts for last paragraph (excluding heading)\*

#### *Portable batteries*

*All local authorities have established collection schemes under which waste portable batteries are collected from the households, or residents may be dispose of them at recycling centres and other collection points. More detailed information is available from the technical administration of the relevant local authority.*

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#### *Automotive batteries*

*Waste automotive batteries may, for instance, be disposed at workshops taking back automotive batteries, local authorities having established collection at, for instance, recycling centres, or at reception centres established by battery producers around the country.*

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#### *Industrial batteries*

*Waste industrial batteries may be disposed with the producer or the importer who originally placed the battery on the market or with the producer or importer where a new industrial battery is purchased.*

### **English translation of text for information material – portable batteries incorporated into electrical and electronic appliances**

*"Electrical and electronic equipment and incorporated batteries contain materials, components and substances that may present a risk to human health and the environment when derived waste is not handled correctly.*

*Electrical and electronic equipment and batteries are marked with the below crossed-out wheeled bin symbol indicating that they should not be discarded together with unseparated household waste, but must be collected separately.*

*Some batteries are also marked with the chemical symbols Hg (mercury), Cd (cadmium) or Pb (lead). These are particularly harmful substances and it is therefore important that these batteries are collected. (This clause only necessary if the battery contains those substances).*

*It is important that you dispose of your waste batteries to the available collection schemes. In this way you help ensure that batteries are recycled in accordance with current legislation and do not cause unnecessary adverse environmental impacts.*

*All local authorities have established collection schemes under which residents can dispose waste electrical and electronic equipment and portable batteries free of charge at a recycling centre or other collection points, or they will be collected directly from households. More detailed information is available from the technical administration of the relevant local authority.*

In case of doubt further information may be found on the DPA-System website; [www.dpa-system.dk](http://www.dpa-system.dk). You can also contact DPA-System on tel. +45 3377 9191 or by e-mail; [info@dpa-system.dk](mailto:info@dpa-system.dk)

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