
EPBA Comments on Bio Intelligence Services Final Proposals for Capacity Marking of Primary Batteries

1. Background:

European Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators requires that the capacity of all portable and automotive batteries and accumulators is indicated on them by September 26, 2009. The European Union is looking to ensure that clear and transparent information would be provided and that consumers would be informed about the capacity of the batteries at the time of their purchase.

2. Directive requirements:

Article 21.2 of Directive 2006/66/EC states:

Member States shall ensure that the capacity of all portable and automotive batteries and accumulators is indicated on them in a visible, legible and indelible form by 26 September 2009. Detailed rules for the implementation of this requirement, including harmonized methods for the determination of capacity and appropriate use, shall be laid down in accordance with the procedure referred to in Article 24(2) no later than 26 March 2009.

3. Battery capacity:

It is worth pointing out that the Directive does not offer any definition of the term "capacity". Within the industry the following terms are used:

Rated Capacity can be defined as a measure of the energy contained within a battery under set conditions. The value is dictated mainly by the nature of the chemicals used e.g. zinc and manganese dioxide and their amount i.e. the battery size. This is a theoretical value and is measured in ampere-hours.

Delivered Capacity is also measured in ampere-hours and is the actual energy available to the consumer in the specific circumstances that the batteries are being used. This value is highly dependent on the device, operating temperature, voltage below which the device will not operate properly and the period and duration the device is used by a consumer. For these reasons International Standards do not define any method for measuring capacity of general purpose primary batteries, the type that make up over 90% of primary batteries sold today.

For rechargeable batteries however the International Standards do define test regimes that allow determination of a rated capacity. This is possible because due to the design of rechargeable batteries the variation between rated and delivered capacity is small. In addition capacity of rechargeable batteries allows consumers to take into account the time between charges into their purchase decision; the higher the capacity the longer the period between charges for the same application. As a result most of rechargeable batteries are marked with the rated capacity by manufacturers.

4. Bio Intelligence proposals:

Since there are a very large number of appliances that use batteries and since the conditions of their use by consumers are variable, there is no single capacity number that can be applied to all batteries in advance of their purchase. This is acknowledged by Bio in sections 4.2.3.1, 4.3.1.1. and elsewhere in their report.

In consequence they recommend a system of labelling that replaces "capacity" with "performance" based on the tests given in IEC standard 60086-2. Furthermore they propose the label to provide information on up to 4 applications.

5. EPBA comments:

EPBA welcomes the recommendations from Bio Intelligence Services to restrict capacity marking to the five common sizes (C, D, AA, AAA and 9V) of portable primary batteries since they account for more than 90% of sales. We also agree that primary batteries sold without packaging and with equipment, as well as speciality and watch batteries should be exempted from capacity marking requirements.

However we do not agree with their recommendation to apply IEC tests across chemistries. Specifically, the Nickel Oxyhydroxide and Lithium Iron Disulfide chemistries are emerging technologies for which there are no defined IEC tests. Furthermore they are designed for specific applications; to compare them with Zinc Carbon and Alkaline Manganese tests would not give consumers fair information on their capabilities. We would therefore recommend that these batteries, which account for less than 1% of primary batteries sold, should also be exempted from capacity labeling.

Our comments on their recommendations to substitute capacity with performance and the use of up to 4 selected test applications displayed as icons on the battery packaging are as follows:

a. Complexity of consumer information:

- i. We agree that the concept of capacity marking for primary batteries is complex and involves many technical issues.
- ii. To be technically feasible at all, any marking system would be far too complex to be of any practical value to the consumer.
- iii. Capacity or the alternative labeling of performance chosen by Bio Intelligence below the application icons may seldom equate to the performance actually achieved in the real devices the icons refer to. Furthermore, a number of the IEC tests are extremely *accelerated* in order to cut down required testing time. Corresponding MAD values would be confusing or meaningless, or seemingly way too short from a consumer perspective.
- iv. Even inside the different groups identified for IEC tests there is a vast variability in between the appliances. For example for toys the average current requirement is 300 mA, but ranges from 50 to 1100 mA. The performance would therefore also vary significantly.

b. Inconsistency with Directive and regulatory framework issues:

- i. In view of the above Bio Intelligence have had to resort to a deviation from the Directive's requirement from capacity labeling to performance labeling.
- ii. It is not at all clear how Bio's proposals may be transposed into a regulatory framework that would be able to keep current with developments in battery technology and powered devices.
- iii. A further difficulty is how the link to IEC standards should be legally maintained and reviewed as the standards change.
- iv. Member States will require complicated statistics, quality control and testing schedule to monitor the labeling requirements resulting in increased costs and delayed enforcement; for example the tests would have to be carried out on samples that are 12 months old, the results would have to fall within a predefined tolerance and the tests repeated regularly to make sure the information provided is current. Provided that tests to back up the performance data below the icons would have to be carried out by accredited labs, there is not sufficient testing capacity available in the market to facilitate a timely introduction.

c. Technical considerations:

- i. Multiple performance indicators are misleading and incomplete since they do not cover the vast array of devices that consumers could want to power with batteries.
- ii. Environmental considerations are not accounted for (extended age, temperature, humidity, etc) in real world performance. Due to these factors the data display proposed by Bio IS (option 1) is very difficult to manage by producers as well as by enforcement authorities.

- iii. Intermittency of use is a large factor in performance. This is especially true as the battery application moves toward increased power driven devices such as digital cameras and electronic toys. Variable consumer usage patterns will provide significantly different levels of performance than the label can cover.
- iv. Standardized test conditions are seldom the conditions under which consumers use batteries. Furthermore since consumers in northern Europe will naturally operate their devices in different temperature and climatic conditions compared to those in southern Europe a single performance indicator for both consumers may not be relevant.
- v. Battery producers already provide a great deal of information to consumers including: safety information, certification marking, country of origin, voltage, producer identity, environmental labels, disposal information, caution statements, polarity markings, best use by date, battery designation, bar code and recommended usage. The available space for new information is therefore limited, while Bio's proposals make excessive space demands. This could lead to manufacturers having to increase the size of packaging which would conflict with EU packaging and packaging waste reduction policy.
- vi. Increased labeling space demands would also jeopardize the trend towards simpler (e.g. shrink wrap) packaging design.

6. Conclusion:

In view of the complexity of these issues which will have a significant bearing on the drafting of the legal instrument, its implementation by producers and enforcement by Member States the EPBA recommends that a simplified approach be adopted for capacity labelling of portable primary batteries.