Technical documentation

Technical documentation according to Battery Regulation 2023/1542,

Article 17, Annex VIII

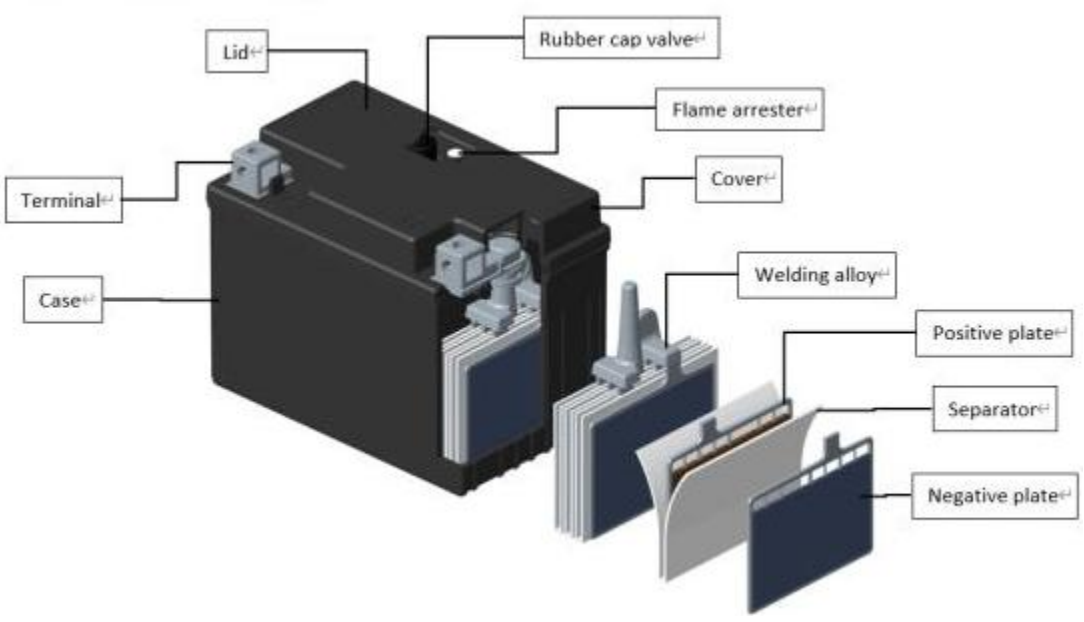
1. General description and intended usage

SLA (Sealed Lead Acid) are lead acid batteries that can output and store electrical energy. It is a lead-acid battery whose electrodes are mainly made of lead and its oxides, and the electrolyte is sulfuric acid solution. There are two terminals on the battery, positive and negative, which are the connection joints for charging and discharging with the vehicle.

For 12V battery = The battery is composed of 6 single cells, each with a nominal voltage of about 2V, which are connected in series to form a 12V lead-acid battery.

For 6V battery = The battery is composed of 3 single cells, each with a nominal voltage of about 2V, which are connected in series to form a 6V lead-acid battery.

2. Conceptual design and manufacturing drawings



BS Battery Sas – 30 Rue Pasteur – 92150 SURESNES - FRANCE Tél. : +33 (1) 83 62 45 60 - Fax : +33 (1) 83 62 45 46 S.A.S. au capital de 700 000 € - RCS Nanterre B 305 933 681 – Numéro Intracommunautaire : FR 53 305 933 68
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3. Explanations necessary for the understanding of the drawings referred to the point 2

① **Positive plate:** As the positive electrode of the battery, select the appropriate plate size according to the external dimensions of the battery. According to the capacity requirements, design the required amount of active material. According to the CCA requirements, the positive plates are evenly distributed in 6 single cells. Use a lead alloy grid and coat the required amount of active material on the grid to make the required positive plate.

② **Negative plate:** As the negative electrode of the battery, select the appropriate plate size according to the external dimensions of the battery. According to the capacity requirements, design the required amount of active material. According to the CCA requirements, the negative plates are evenly distributed in 6 single cells. Use a lead alloy grid and coat the required amount of active material on the grid to make the required negative plate.

③ **Electrolyte:** It functions as a medium for electrochemical reactions. The ions of the electrolyte participate in the charge and discharge reactions of the battery. The electrolyte is generally prepared

from sulfuric acid and distilled water in a certain proportion. This battery is a flooded design, and the electrolyte inside the battery is flowing.

④ **Separator:** The function of the separator is to prevent short circuit caused by direct contact between positive and negative plates. Because the separator is required to be porous, acid and high temperature resistant, no oxidation deformation, and has good insulation.

⑤ **Welding alloy:** After the plates required for each cell of the battery are assembled, the positive plates or negative plates are connected through welding as a path for current conduction.

⑥ **Plastic parts** (including battery case, battery cover, rubber cap valve): used to hold the plates and electrolyte. The battery slot is an integral structure. The 12V battery is divided into 6 mutually exclusive cells (batteries). Each cell is covered with a cover. The cover and the shell are sealed by glue. The valve is installed on the upper part of the battery cover. (Prevent external gas from entering the inside of the battery).

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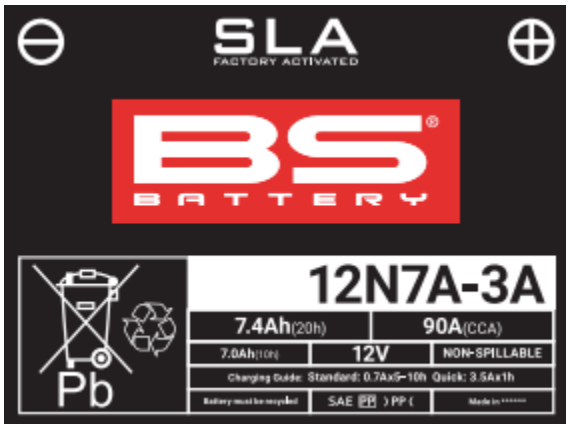
⑦ **Flame arrestor**: During the use of a battery, gas is produced, which is a mixture of hydrogen and oxygen gas to prevent external sparks from igniting the hydrogen and oxygen gas inside the battery. An air filter is installed at the exhaust hole, which can discharge the internal gas of the battery and prevent external flames from entering the battery.

4. Marking specimen according to Article 13



The marking requirements are derived from:

- Article 4, Article 21 and Annex 2 of the EU Battery Directive 2006/66 and
- Article 6, Article 13 and Annex 6of the EU Battery Regulation 2023/1542

5. List of the harmonized standards

No harmonized standards are available. Article 6 (Restriction on substance) and Article 13(labelling and marking of batteries) compliance requirements don't need specific measurement or calculations.

6. Description of the solutions adopted to meet the applicable requirements

For the restriction on substances requirement, below comment specifications are applied to this product:

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Restriction regulation	Requirement	
Restrictions set out in Annex I to Regulation (EU) 2023/1542	Designation of the substance or group of substances	Conditions of restriction
	1. Mercury CAS No 7439-97-6 EC No 231-106-7 and its compounds	Batteries, whether or not incorporated into appliances, light means of transport or other vehicles, shall not contain more than 0,0005 % of mercury (expressed as mercury metal) by weight.
	2. Cadmium CAS NO 7440-43-9 EC No 231-152-8	Portable batteries, whether or not incorporated into appliances, light means of transport or other vehicles, shall not contain more than 0,002 % of cadmium (expressed as cadmium metal) by weight.
	3. Lead CAS No 7439-92-1 EC No 231-100-4 and its compounds	1. From 18 August 2024, portable batteries, whether or not incorporated into appliances, shall not contain more than 0,01 % of lead (expressed as lead metal) by weight. 2. The restriction set out in point 1 shall not apply to portable zinc-air button cells until 18 August 2028

7. Results of design calculations and the examinations carried out

NA

8. Test reports

NA

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