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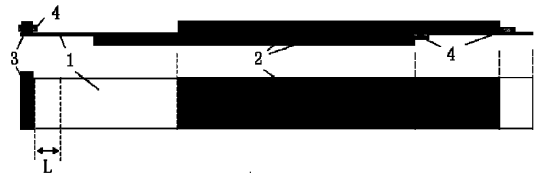
Claims: 1 Page Description: 2 Pages Drawings: 1 page

(54) Title of the Invention

Method for Controlling Burrs at Leading and Trailing Ends
of Battery Electrode Sheets

(57) Abstract

The present invention discloses a method for controlling burrs at leading and trailing ends of battery electrode sheets. It primarily involves first preparing an electrode sheet composed of a current collector and a coating applied to the current collector. A bare current collector area is provided on both sides of one end of the electrode sheet. A tab is welded to this bare current collector area, wrapped 360 degrees around the current collector, and then pressed flat. Finally, a tape is applied to the current collector and the inner side of the tab at the tail of the double-sided coating area of the electrode sheet. In the present invention, because the leading end utilizes a tab wrapped 360 degrees around the current collector and pressed flat, the edge of the current collector is folded inward. The corresponding opposite position remains the current collector, which avoids the danger caused by short circuits. Similarly, the trailing end utilizes a taping method to prevent the burrs at the trailing end of the current collector from piercing the separator and contacting the other electrode to form a short circuit, thus averting danger.



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1. A method for controlling burrs at leading and trailing ends of battery electrode sheets, characterized by comprising the following steps:

(1) Preparing an electrode sheet composed of a current collector and a coating applied to both sides of the current collector;

(2) Providing a bare current collector area on both sides of one end of the electrode sheet, welding a tab to the bare current collector area, bending and wrapping the tab 360 degrees around the current collector, and then pressing it flat;

(3) Applying tape to the current collector and the inner surface of the tab at the trailing end of the double-sided coating area on the other end of the electrode sheet.

2. The method for controlling burrs at the leading and trailing ends of battery electrode sheets according to claim 1, characterized in that the tab is wrapped 360 degrees around the current collector and pressed flat, and the edge of the current collector is folded inward.

3. The method for controlling burrs at the leading and trailing ends of battery electrode sheets according to claim 1, characterized in that the tape is selected from high-temperature tape or green tape, the length of the applied tape is equal to the width of the current collector, and the width of the applied tape is 5 mm to 50 mm.

Method for Controlling Burrs at Leading and Trailing Ends of Battery Electrode Sheets

Technical Field

[0001] The present invention relates to a method for controlling burrs at leading and trailing ends of battery electrode sheets and belongs to the technical field of lithium batteries.

Background Art

[0002] With the rise of pure electric vehicles, also known as new energy sources, a global wave of research, development, and production of pure electric buses and passenger cars has surged. However, current electric vehicle manufacturing technology is not mature, and many deficiencies remain. Among these, the most urgent issue to address is the safety of electric vehicles. The safety of electric vehicles originates from battery safety and the reliability of external connections.

[0003] Currently, most electric vehicles use lithium-ion secondary batteries. In existing battery production technologies, electrolytes are mostly composed of esters and ethers. Due to the flammability and high-temperature decomposition characteristics of esters and ethers, batteries manufactured with such electrolytes inevitably face the risk of cell ignition and explosion when encountering external short circuits or internal cell short circuits. Although such situations are difficult to completely avoid, battery manufacturers can optimize designs to prevent internal battery short circuits, thereby reducing the probability of cell ignition and explosion.

[0004] The structure of a battery consists of a positive electrode and a negative electrode with a separator sandwiched in between. The thickness of the separator generally ranges from 25 to 40 micrometers. When burrs on the edges of the positive or negative current collectors exceed the thickness of the separator, or when the sum of the two at a specific point reaches the separator thickness, an internal micro-short circuit will occur inside the battery. Batteries with micro-short circuits are highly prone to developing internal cell short circuits during handling and assembly, leading to cell ignition and explosion. Therefore, current collector burrs must be strictly controlled during the battery manufacturing process.

Summary of the Invention

[0005] The purpose of the present invention is to control burrs at leading and trailing ends of battery electrode sheets to reduce the probability of internal cell short circuits and improve battery safety, and provide a method for controlling burrs at the leading and trailing ends of battery electrode sheets.

[0006] To achieve the above purpose, the present invention adopts the following technical solutions:

[0007] A method for controlling burrs at leading and trailing ends of battery electrode sheets, characterized by comprising the following steps:

[0008] (1) Preparing an electrode sheet composed of a current collector and a coating applied to both sides of the current collector;

[0009] (2) Providing a bare current collector area on both sides of one end of the electrode sheet, welding a tab to the bare current collector area, bending and wrapping the tab 360 degrees around the current collector, and then pressing it flat;

[0010] (3) Applying tape to the current collector and the inner surface of the tab at the trailing end of the double-sided coating area on the other end of the electrode sheet.

[0011] The method for controlling burrs at the leading and trailing ends of battery electrode sheets is characterized in that the tab is wrapped 360 degrees around the current collector and then pressed flat, and the edge of the current collector is folded inward.

[0012] The tape is selected from high-temperature tape or green tape, the length of the applied tape is equal to the width of the current collector, and the width of the applied tape is 5 mm to 50 mm.

[0013] Beneficial effects of the present invention:

[0014] Because the leading end utilizes a tab wrapped 360 degrees around the current collector and pressed flat, and the edge of the current collector is folded inward, the corresponding position remains the current collector, whereas in traditional designs, the corresponding position is the separator. Traditional current collector edge burrs easily pierce through the separator and contact the other electrode of the battery, forming a short circuit and causing danger. Similarly, the trailing end utilizes a taping method to prevent burrs on the trailing end of the current collector from piercing the separator and contacting the other electrode to form a short circuit, thus averting danger.

Brief Description of the Drawings

[0015] Figure 1 is a schematic structural diagram of the battery electrode sheet of the present invention:

[0016] 1. Current collector, 2. Coating, 3. Tab, 4. Tape

Detailed Description of the Embodiment

[0017] As shown in Figure 1, a design for controlling battery electrode sheets includes an electrode sheet composed of a current collector 1 and a coating 2 applied to the current collector. One end of the electrode sheet is provided with a bare current collector area, and a tab 3 is welded to this bare current collector area, wherein the length L is twice the tab width. The tab is wrapped 360 degrees around the current collector and pressed flat. Then, tape 4 is applied to the current collector and the inner surface of the tab at the trailing end of the double-sided coating area on the electrode sheet. The tape can be high-temperature tape or green tape. The length of the applied tape is equal to the width of the current collector, and the width of the applied tape is 5 mm to 50 mm.

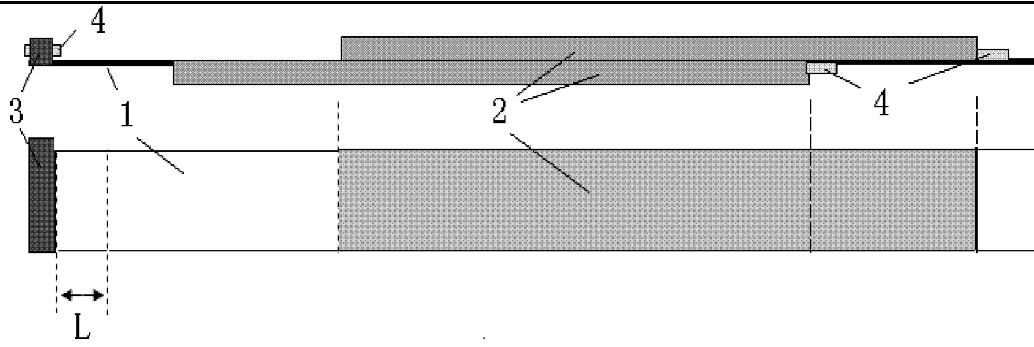


FIG. 1

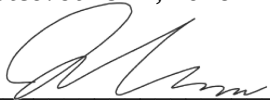


DECLARATION OF TRANSLATOR

I, Johnson Wong, hereby declare as follows:

1. I personally performed the attached translation from Chinese into English of Chinese Patent, application publication No. CN 102208590 A, published/issued 2011.10.05, and entitled "一种控制电池极片头尾部毛刺的方法" ("Method for Controlling Burrs at Leading and Trailing Ends of Battery Electrode Sheets").
2. The attached translation is, to the best of my knowledge and belief, a true, full, and accurate English translation of the above-identified Chinese-language document.
3. I am competent to perform this translation because I have a B. Eng bachelor's degree and 20 years' experience translating technical documents from Chinese to English.
4. I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct, and I further declare that I am aware that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of any patent or proceeding resulting therefrom.

Dated: June 11, 2026



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