As said in these documents, when a lithium ion secondary battery undergoes thermal runaway, gases generated by the thermal runaway raise the pressure inside the lithium ion secondary battery and may rupture the lithium ion secondary battery.

If a lithium ion secondary battery undergoes thermal runaway and ruptures during a thermal treatment, the body of the burning furnace used for the thermal treatment may be damaged.

Hence, in a preferred embodiment of the present invention, a lithium ion secondary battery is thermally treated in the thermal treatment step, while being placed in a storing container. This makes it possible to control the lithium ion secondary battery (or, for example, the atmosphere surrounding the lithium ion secondary battery or the heating temperature) in a manner that it undergoes temperature elevation more moderately, and to suppress rupture of the lithium ion secondary battery. Moreover, by thermally treating the lithium ion secondary battery by putting it in a storing container, it is possible to suppress damages on the body of the burning furnace used for the thermal treatment even if the lithium ion secondary battery ruptures in the thermal treatment.

The storing container is not particularly limited and may be appropriately selected in accordance with the intended purpose so long as the storing container can contain a lithium ion secondary battery.

The shape of the storing container is not particularly limited and may be appropriately selected in accordance with the intended purpose. A shape that surrounds the lithium ion secondary battery to be thermally treated is preferable as the shape of the storing container.

The size of the storing container is not particularly limited and may be appropriately selected in accordance with the intended purpose so long as the

lithium ion secondary battery to be thermally treated can be contained. When thermally treating a plurality of lithium ion secondary batteries collectively, a size that can contain all of the lithium ion secondary batteries that are to be treated is preferable.

It is preferable that the storing container has an opening through which a gas is circulatable. In this case, it is preferable that the storing container contain a lithium ion secondary battery in a manner that a gas does not circulate at any place other than the opening. When the storing container has an opening, it is possible to control the pressure and the atmosphere inside the storing container.

The shape of the opening is not particularly limited and may be appropriately selected in accordance with the intended purpose. The position of the opening on the storing container is not particularly limited and may be appropriately selected in accordance with the intended purpose so long as a gas is circulatable at the position during a thermal treatment. A plurality of openings may be formed in the storing container.

The size (area) of the opening is not particularly limited, may be appropriately selected in accordance with the intended purpose, and is preferably less than or equal to 12.5% and more preferably less than or equal to 6.3% of the surface area of the storing container. When the size of the opening is less than or equal to 12.5% of the surface area of the storing container, it is possible to suppress oxidization of valuable substances contained in the current collectors during a thermal treatment. In the following description, the area of the opening relative to