lithium contained in the initial solution (the lithium solution 1) was found to be 58%.

Table 1

Contents									
Li (%)	C (%)	F (ppm)	P (ppm)	Al (ppm)	Cu (ppm)	Fe (ppm)	Co (ppm)	Ni (ppm)	Mn (ppm)
18.5	16.2	400	19	17	0	0	0	0	0

(Example 2)

Lithium carbonate salt 2 was recovered in the same manner as in Example 1, except that the removal of the residue containing nickel (Ni), cobalt (Co), and manganese (Mn) at the time of preparation of the lithium solution, the removal of the solidified fluorine at the time of removal of fluorine, and the removal of the solidified calcium (calcium carbonate) at the time of removal of calcium; i.e., the filtrations before the addition of the CO_2 gas were performed collectively (at one time) and also the CO_2 gas was bubbled in the liquid at a flow rate of 100 ml/min for 70 minutes for the 5-fold evaporative concentration.

The evaluation was performed in the same manner as in Example 1. The proportion by mass of the amount of lithium in the recovered lithium carbonate salt 2 relative to the total amount of lithium contained in the above minutely granulated product was found to be 50%. In the same manner as in Example 1, the lithium carbonate salt 2 was determined for the content ratios (contents) of lithium and various impurities. Results are presented in Table 2.

Table 2

Contents									
Li (%)	C (%)	F (ppm)	P (ppm)	Al (ppm)	Cu (ppm)	Fe (ppm)	Co (ppm)	Ni (ppm)	Mn (ppm)
18.9	16.2	1,950	0	184	0	0	0	0	0

(Example 3)

Lithium carbonate salt 3 was recovered in the same manner as in Example 1, except that lithium solution 2 was prepared in the following manner and the evaporative concentration rate was changed to 38 folds. Specifically, the lithium solution 2 was prepared in the same manner as in the preparation of the lithium solution in Example 1, except that the leached liquid amount would be 56.5 L, the solid-to-liquid ratio would be 2%, the lithium concentration would be 200 mg/L, and the fluorine concentration would be 340 mg/L.

The evaluation was performed in the same manner as in Example 1. The proportion by mass of the amount of lithium in the recovered lithium carbonate salt 3 relative to the total amount of lithium contained in the above minutely granulated product was found to be 55%. In the same manner as in Example 1, the lithium carbonate salt 3 was determined for the content ratios (contents) of lithium and various impurities. Results are presented in Table 3.

Table 3

Contents									
Li (%)	C (%)	F (ppm)	P (ppm)	Al (ppm)	Cu (ppm)	Fe (ppm)	Co (ppm)	Ni (ppm)	Mn (ppm)
18.9	16.2	500	0	119	0	0	0	0	0

(Example 4)

Lithium carbonate salt 4 was recovered in the same manner as in Example 1, except that lithium solution 3 was prepared in the following manner and the

evaporative concentration rate was changed to 21 folds. Specifically, the lithium solution 3 was prepared in the same manner as in the preparation of the lithium solution in Example 1, except that the lithium solution (the first component-removed liquid) prepared in Example 2, from which the lithium carbonate had been removed, the lithium solution 2 prepared in Example 3, and the lithium solution (the first component-removed liquid) prepared in Example 3, from which the lithium carbonate had been removed, were mixed at a weight ratio of 2:1:12, to adjust the lithium concentration to 370 mg/L and the fluorine concentration to 33 mg/L.

The evaluation was performed in the same manner as in Example 1. The proportion by mass of the amount of lithium in the recovered lithium carbonate salt 4 relative to the total amount of lithium contained in the above minutely granulated product was found to be 54%. In the same manner as in Example 1, the lithium carbonate salt 4 was determined for the content ratios (contents) of lithium and various impurities. Results are presented in Table 4.

Table 4

Contents									
Li (%)	C (%)	F (ppm)	P (ppm)	Al (ppm)	Cu (ppm)	Fe (ppm)	Co (ppm)	Ni (ppm)	Mn (ppm)
18.8	16.0	1,920	0	32	0	0	0	0	0

(Example 5)

Lithium carbonate salt 5 was recovered in the same manner as in Example 1, except that the removal of fluorine (addition of calcium hydroxide, stirring of the lithium solution 1, and solid-liquid separation for removing the solidified fluorine) was not performed, and also the carbon dioxide (CO_2) gas was bubbled while adjusting the pH to 12 or higher by the addition of a 10% sodium hydroxide solution in a total of 100 ml to prevent the pH from decreasing, and the solid-liquid

separation after bubbling the carbon dioxide gas was not performed (because of no need to recover calcium carbonate as a result of the absence of calcium hydroxide added in Example 1). More specifically, in Example 5, carbon dioxide was added to the lithium solution obtained by treating the lithium ion secondary battery. Then, the lithium solution was warmed to reduce the solubility of lithium carbonate, followed by evaporative concentration, to precipitate lithium carbonate. Then, the solid-liquid separation was performed to separate the lithium carbonate, to recover lithium as lithium carbonate 5.

The evaluation was performed in the same manner as in Example 1. The proportion by mass of the amount of lithium in the recovered lithium carbonate salt 5 relative to the total amount of lithium contained in the above minutely granulated product was found to be 61%. In the same manner as in Example 1, the lithium carbonate salt 5 was determined for the content ratios (contents) of lithium and various impurities. Results are presented in Table 5.

Table 5

Contents									
Li (%)	C (%)	F (ppm)	P (ppm)	Al (ppm)	Cu (ppm)	Fe (ppm)	Co (ppm)	Ni (ppm)	Mn (ppm)
18.9	16.2	900	225	0	0	0	0	0	0

In Example 5, although fluorine had not been removed from the lithium solution, high-purity lithium carbonate having a fluorine content of less than 1000 ppm was obtained. This is likely because feeding carbon dioxide before the evaporative concentration made lithium carbonate precipitate more easily than in the below-described Comparative Example 1 in which no carbon dioxide was fed, and lithium carbonate precipitated preferentially to lithium fluoride.

The carbonate ion concentrations of the lithium solutions before the evaporative concentration of Comparative Example 1 and Example 5 were