CLAIMS

1. A 1,3-butadiene separation and recovery method for separating and recovering 1,3-butadiene from a mixed fluid containing 1,3-butadiene, comprising:

an extractive distillation step of performing extractive distillation of the mixed fluid to obtain a fraction containing crude 1,3-butadiene; and

a dividing wall distillation step of performing dividing wall distillation of the fraction containing crude 1,3-butadiene to obtain a fraction (F) containing an impurity having a higher boiling point than 1,3-butadiene, a fraction (E) containing an impurity having a lower boiling point than 1,3-butadiene, and a fraction (G) containing high-purity 1,3-butadiene by using a dividing wall column to distill the fraction (E) from the top of the column, drain the fraction (F) from the bottom of the column, and distill the fraction (G) from the region of the center of the column.

2. The 1,3-butadiene separation and recovery method according to claim 1, wherein an extractant used in the extractive distillation step is an amide compound.

3. The 1,3-butadiene separation and recovery method according to claim 2, wherein the amide compound is dimethylformamide.

4. The 1,3-butadiene separation and recovery method according to claim 1, wherein the dividing wall distillation in the dividing wall distillation step is performed in the presence of not less than 1 mass ppm and not more than 100 mass ppm of a polymerization inhibitor relative to the crude 1,3-butadiene.

5. The 1,3-butadiene separation and recovery method according to claim 1, wherein

the dividing wall distillation in the dividing wall distillation step is performed in a dividing wall column, and

a polymerization inhibitor is fed from a vertical direction upper part of the dividing wall column.

6. The 1,3-butadiene separation and recovery method according to claim 1, wherein the fraction containing high-purity 1,3-butadiene is a gas.

7. The 1,3-butadiene separation and recovery method according to claim 1, further comprising a step of removing a polymerization inhibitor from the fraction containing high-purity 1,3-butadiene.

8. A 1,3-butadiene separation and recovery apparatus comprising:

an extractive distillation section that includes a feeding port for feeding of a mixed fluid containing 1,3-butadiene and that performs extractive distillation of the mixed fluid to obtain a fraction containing crude 1,3-butadiene; and

a dividing wall distillation section that includes a dividing wall column that includes a feeding port for feeding of the fraction containing crude 1,3-butadiene and that performs dividing wall distillation of the fraction containing crude 1,3-butadiene to obtain a fraction (F) containing an impurity having a higher boiling point than 1,3-butadiene, a fraction (E) containing an impurity having a lower boiling point than 1,3-butadiene, and a fraction (G) containing high-purity 1,3-butadiene, wherein

the dividing wall column distills the fraction (E) from the top of the column, drains the fraction (F) from the bottom of the column, and distills the fraction (G) from the region of the center of the column.