# CLAIMS

[Claim 1]

A method for producing polybutylene terephthalate comprising a step (a) of subjecting a diol component containing biomass-derived raw material 1,4-butanediol having a nitrogen content of 0.01 to 50 ppm by mass and a dicarboxylic acid component containing terephthalic acid or an alkyl terephthalate to esterification reaction or ester-exchange reaction, and a polycondensation reaction step (b) of subjecting the reactant obtained in the step (a) to polycondensation reaction and obtaining polybutylene terephthalate,

wherein the content of gamma butyrolactone in the raw material 1,4-butanediol is 1 to 100 ppm by mass.

[Claim 2]

The method for producing polybutylene terephthalate according to claim 1 which further comprises a step of obtaining the raw material 1,4-butanediol by purifying biomass-derived crude 1,4-butanediol, wherein the step is conducted before the step (a).

[Claim 3]

The method for producing polybutylene terephthalate according to claim 2, wherein the content of gamma butyrolactone in the crude 1,4-butanediol is 101 ppm by mass to 2% by mass.

[Claim 4]

The method for producing polybutylene terephthalate according to any one of claims 1 to 3, wherein the content of 1-acetoxy-4-hydroxybutane in the raw material 1,4-butanediol is 1 to 99 ppm by mass.

[Claim 5]

The method for producing polybutylene terephthalate according to any one of claims 1 to 4 which further comprises a step of directly producing the raw material 1,4-butanediol or the crude 1,4-butanediol from at least one carbon source selected from the group consisting of glucose, fructose, xylose and saccharose by a fermentation method.

[Claim 6]

The method for producing polybutylene terephthalate according to any one of claims 1 to 5 which further comprises a step of producing the raw material 1,4-butanediol or the crude 1,4-butanediol from a biomass material using the following non-natural microorganism biocatalyst:

non-natural microorganism biocatalyst: a microorganism biocatalyst which contains a microorganism containing at least one extrinsic nucleic acid fragment coding 4-hydroxybutanoic acid dehydrogenase, succinyl-CoA synthetase, CoA-dependent succinate-semialdehyde dehydrogenase or α-ketoglutarate decarboxylase and having 4-hydroxybutanoic acid biosynthesis pathway and in which the microorganism contains the extrinsic nucleic acid fragment in an amount sufficient to secrete a monomer of 4-hydroxybutanoic acid.

## Claims

1. A method for producing polybutylene terephthalate, the method comprising:

(a) subjecting a diol component comprising a biomass-derived raw material 1,4-butanediol having a nitrogen content of from 0.01 to 20 ppm by mass and a dicarboxylic acid component comprising terephthalic acid or an alkyl terephthalate to an esterification reaction or ester-exchange reaction,

(b) subjecting the reactant obtained in (a) to a polycondensation reaction, thereby obtaining polybutylene terephthalate, and

further comprising directly producing the biomass-derived raw material 1,4-butanediol or a biomass-derived crude 1,4-butanediol from at least one carbon source selected from the group consisting of glucose, fructose, xylose, and saccharose by a fermentation method, and

obtaining the biomass-derived raw material 1,4-butanediol by purifying the biomass-derived crude 1,4-butanediol before the subjecting (a),

wherein a content of gamma butyrolactone in the biomass-derived raw material 1,4-butanediol is from 1 to 100 ppm by mass.

2. The method according to claim 1, wherein the content of gamma butyrolactone in the crude 1,4-butanediol is from 101 ppm by mass to 2% by mass.

3. The method according to claim 1, wherein a content of 1-acetoxy-4-hydroxybutane in the raw material 1,4-butanediol is from 1 to 99 ppm by mass.

4. The method according to claim 1, further comprising producing the biomass-derived raw material 1,4-butanediol or the biomass-derived crude 1,4-butanediol from a biomass material using a non-natural microorganism biocatalyst, wherein the non-natural microorganism

biocatalyst comprises a microorganism containing at least one exogenous nucleic acid fragment coding 4-hydroxybutanoic acid dehydrogenase, succinyl-CoA synthetase, CoA-dependent succinate-semialdehyde dehydrogenase or α-ketoglutarate decarboxylase and having a 4-hydroxybutanoic acid biosynthesis pathway and in which the microorganism comprises the exogenous nucleic acid fragment in an amount sufficient to secrete a monomer of 4-hydroxybutanoic acid.

5. The method according to claim 1, wherein a content of the terephthalic acid or alkyl terephthalate based on the total of the dicarboxylic acid component is 80 mol % or more.

6. The method according to claim 1, wherein a content of the biomass-derived raw material 1,4-butanediol is 80 mol % or more based on the total of the diol component.

7. The method according to claim 1, wherein the dicarboxylic acid component further comprises at least one other dicarboxylic acid.

8. The method according to claim 1, wherein the diol component further comprises at least one other diol.

9. The method according to claim 4, wherein the microorganism is selected from the group consisting of *Escherichia coli, Anaerobiospirillum, Actinobacillus*, filamentous fungi and yeast.

10. The method according to claim 1, wherein the content of nitrogen in the biomass-derived raw material 1,4-butanediol is from 0.1 to 5 ppm by mass.

11. The method according to claim 1, wherein the content of the gamma butyrolactone in the biomass-derived raw material 1,4-butanediol is from 1 to 50 ppm by mass.

12. The method according to claim 1, wherein the content of the gamma butyrolactone in the biomass-derived raw material 1,4-butanediol is from 5 to 20 ppm by mass.

13. The method according to claim 1, wherein the content of the gamma butyrolactone in the biomass-derived raw material 1,4-butanediol is from 150 ppm to 2% by mass.

14. The method according to claim 3, wherein the content of 1-acetoxy-4-hydroxybutane in the raw material 1,4-butanediol is from 5 to 80 ppm by mass.

15. The method according to claim 1, wherein the polycondensation reaction is conducted at a temperature from 180°C to 260°C and a pressure from 10 kPa to 133 kPa for 0.5 hours to 5 hours in the presence of an esterification catalyst in a single step or multiple steps.