CLAIMS

[Claim 1]

A method for producing propylene oxide, comprising:

supplying a peroxide(-containing liquid) and propylene to a fixed bed reactor filled with a catalyst to produce propylene oxide;

stopping the supplying of the peroxide(-containing liquid);

contacting a liquefied gas with the catalyst in the fixed bed reactor after the stopping of the supplying of the peroxide(-containing liquid); and

supplying an inert gas to the fixed bed reactor,

wherein the production of propylene oxide is carried out under a pressurized condition, and the method comprises depressurizing an inside of the fixed bed reactor after the contact.

[Claim 2]

The method according to claim 1, wherein the liquefied gas comprises at least one selected from the group consisting of propylene, propane, butane, butene, propylene oxide, and pentane.

[Claim 3]

The method according to claim 1 or 2, wherein the supplying of the inert gas is carried out before, after, or simultaneously with the contacting of the liquefied gas with the catalyst in the fixed bed reactor.

[Claim 4]

The method according to any one of claims 1 to 3, wherein the production of propylene oxide is carried out at a gauge pressure of 0.1-10 MPa, and the depressurizing is to decrease the gauge pressure from 0.1-10 MPa to 0-0.5 MPa.

[Claim 5]

The method according to any one of claims 1 to 4, wherein the depressurizing is carried out before, after, or simultaneously with the supplying of the inert gas.

[Claim 6]

The method according to any one of claims 1 to 5, wherein the depressurizing is carried out before, after, or simultaneously with the contacting of the liquefied gas with the catalyst in the fixed bed reactor.

[Claim 7]

The method according to any one of claims 1 to 6, wherein a temperature of the liquefied gas used for the contacting with the catalyst in the fixed bed reactor is 10-200°C.

[Claim 8]

The method according to any one of claims 1 to 7, wherein the catalyst is a titanium-containing silicon oxide.

[Claim 9]

The method according to any one of claims 1 to 8, wherein the inert gas comprises at least one selected from the group consisting of helium, neon, argon, nitrogen, water vapor, and carbon dioxide.

[Claim 10]

The method according to any one of claims 1 to 9, wherein the peroxide is at least one selected from the group consisting of an organic peroxide and hydrogen peroxide.

[Claim 11]

The method according to any one of claims 1 to 10, wherein the peroxide is at least one selected from the group consisting of cumene hydroperoxide, ethylbenzene hydroperoxide, tert-butyl hydroperoxide, and hydrogen peroxide.