DESCRIPTION

Title of Invention: METHOD FOR PURIFYING HEXAFLUOROBUTADIENE

## Technical Field

[0001]

The present disclosure relates to a method for purifying hexafluorobutadiene.

## Background Art

[0002]

Hexafluorobutadiene has been widely used as an etching gas in semiconductor production processes.

[0003]

Conventionally, hexafluorobutadiene is purified by removing impurities using a solid adsorbent such as a zeolite (e.g., Patent Literature 1 and 2). However, in the conventional technique, hexafluorobutadiene reacts with zeolite to cause isomerization of hexafluorobutadiene, which reduces the purity of hexafluorobutadiene.

## Citation List

### Patent Literature

[0004]

PTL 1: Japanese Patent No. 3866663

PTL 2: Japanese Patent No. 5607354

## Summary

### Technical Problem

[0005]

An object of the present disclosure is to purify hexafluorobutadiene to a high purity while inhibiting the isomerization of hexafluorobutadiene.

### Solution to Problem

[0006]

purity of 99.99 volume% or more.

[0015]

Item 9. The composition according to Item 8, which is used as an etching gas or a building block for organic synthesis.

[0015a]

In one aspect, there is provided a method for purifying hexafluorobutadiene, comprising bringing a composition containing hexafluorobutadiene into contact with a zeolite having an $SiO_2/Al_2O_3$ ratio of 4.0 to 8.0 and having an average pore size of 5 Å to 9 Å.

[0015b]

In another aspect, there is provided a method for producing a composition containing hexafluorobutadiene, comprising bringing a composition containing hexafluorobutadiene into contact with a zeolite having an $SiO_2/Al_2O_3$ ratio of 4.0 to 8.0 and having an average pore size of 5 Å to 9 Å, wherein the purity of the hexafluorobutadiene in the composition after the contact with the zeolite is 99.99 volume% or more.

## Advantageous Effects of Invention

[0016]

According to the present disclosure, the isomerization of hexafluorobutadiene can be inhibited, and the hexafluorobutadiene can be purified to a high purity.

## Description of Embodiments

[0017]

As a result of extensive research, the present inventors found that the isomerization of hexafluorobutadiene can be inhibited by bringing a composition containing hexafluorobutadiene into contact with a zeolite having an $SiO_2/Al_2O_3$ ratio of 4.0 to 8.0, thereby purifying the hexafluorobutadiene to a high purity.

[0018]

The present disclosure was accomplished as a result of further research based on such findings.

[0019]

The present disclosure includes the following embodiments.

[0020]

In the present disclosure, hexafluorobutadiene refers to hexafluoro-1,3-butadiene.

[0021]

(1) Method for purifying hexafluorobutadiene

The method for purifying hexafluorobutadiene according to the present disclosure comprises the step of bringing a composition containing hexafluorobutadiene into contact with a zeolite having an $SiO_2/Al_2O_3$ ratio of 4.0 to 8.0.

[0022]

CLAIMS

[Claim 1]

A method for purifying hexafluorobutadiene, comprising bringing a composition containing hexafluorobutadiene into contact with a zeolite having an $SiO_2/Al_2O_3$ ratio of 4.0 to 8.0 and having an average pore size of 5 Å to 9 Å.

[Claim 2]

The purification method according to claim 1, wherein an impurity other than the hexafluorobutadiene is adsorbed onto the zeolite to remove the impurity from the composition.

[Claim 3]

The purification method according to claim 1 or 2, wherein the purity of the hexafluorobutadiene in the composition after the purification is 99.99 volume% or more.

[Claim 4]

The purification method according to claim 1 or 2, wherein the purity of the hexafluorobutadiene in the composition after the purification is 99.995 volume% or more.

[Claim 5]

A method for producing a composition containing hexafluorobutadiene, comprising bringing a composition containing hexafluorobutadiene into contact with a zeolite having an $SiO_2/Al_2O_3$ ratio of 4.0 to 8.0 and having an average pore size of 5 Å to 9 Å,

wherein the purity of the hexafluorobutadiene in the composition after the contact with the zeolite is 99.99 volume% or more.

[Claim 6]

The production method according to claim 5, wherein an impurity other than the hexafluorobutadiene is adsorbed onto the

zeolite to remove the impurity from the composition before the contact with the zeolite.

[Claim 7]

The production method according to claim 5 or 6, wherein the purity of the hexafluorobutadiene in the composition after the purification is 99.995 volume% or more.