aluminosilicate compound with a halogenated titanium compound in liquid form. (Patent Literature 5)

Citation List

Patent Literature

[0007]

[Patent Literature 1] Japanese Patent No. 4254009

[Patent Literature 2] WO2015/041137

[Patent Literature 3] JP2008-050186A

[Patent Literature 4] JP2017-057126A

[Patent Literature 5] WO2019/225549

Summary

[0007a]

In an aspect of the present disclosure, there is provided a method for producing a modified aluminosilicate, comprising

a first step of contacting gel-like silica, zeolite, and crystals (A) that is an aluminosilicate with the highest peak (α) at 22.5 to 25.0° in a region of 17.5 to 35° as measured by XRD, to obtain an aluminosilicate (A-1'),

a second step of treating the aluminosilicate (A-1') obtained in the first step with an acid,

a third step of subjecting the treated product obtained in the second step to primary calcination at 550°C to 850°C, and

a fourth step of contacting the calcined product obtained in the third step and liquid containing one or more elements selected from the group consisting of elements in Group 4 and Group 5 of the Periodic Table, followed by carrying out drying and secondary calcination.

[0007b]

In another aspect of the present disclosure, there is provided a catalyst for production of aromatic polyhydroxide compounds, comprising the modified aluminosilicate as disclosed herein.

[0007c]

In a further aspect of the present disclosure, there is provided a method for producing a modified aluminosilicate, comprising

a second step of treating an aluminosilicate (A-1) with an acid,

a third step of subjecting the treated product obtained in the second step to primary calcination at 550°C to 850°C, and

a fourth step of contacting the calcined product obtained in the third step and liquid containing one or more

elements selected from the group consisting of elements in Group 4 and Group 5 of the Periodic Table at 20 °C to 150 °C, followed by carrying out drying and secondary calcination, wherein,

the aluminosilicate (A-1) has the highest peak (β) in a region of 20° or more and less than 22.5° in a region of 17.5 to 35° as measured by XRD, wherein a peak intensity ratio of the peak (β) to the highest peak (γ) in a region of 25 to 27° is in a range of 1.7 to 5.0.

[0007d]

In another aspect of the present disclosure, there is provided a method for producing an aromatic polyhydroxide compound, comprising a step of reacting an aromatic hydroxide with hydroperoxide in the presence of the catalyst as disclosed herein.

Technical Problem

[0008]

Patent Literature 5 indicates that the aluminotitanosilicate obtained in this literature can be an excellent catalyst for production of aromatic dihydroxide compounds. The aforementioned literature discloses that among them, the aluminotitanosilicate with a titanium source introduced by using titanium tetrachloride gives an aromatic dihydroxide compound with particularly high selectivity.

Moreover, according to X-ray crystal structure analysis (X-ray diffraction (XRD) measurement) of the present inventors,

CLAIMS

[Claim 1]

A method for producing a modified aluminosilicate, comprising

a first step of contacting gel-like silica, zeolite, and crystals (A) that is an aluminosilicate with the highest peak (α) at 22.5 to 25.0° in a region of 17.5 to 35° as measured by XRD, to obtain an aluminosilicate (A-1'),

a second step of treating the aluminosilicate (A-1') obtained in the first step with an acid,

a third step of subjecting the treated product obtained in the second step to primary calcination at 550°C to 850°C, and

a fourth step of contacting the calcined product obtained in the third step and liquid containing one or more elements selected from the group consisting of elements in Group 4 and Group 5 of the Periodic Table, followed by carrying out drying and secondary calcination.

[Claim 2]

The method for producing a modified aluminosilicate according to claim 1, wherein the crystals (A) in the first step are obtained by a process including a step of contacting gel-like silica with zeolite and treating the same at 155 to 168°C for 30 to 40 hours.

[Claim 3]

A catalyst for production of aromatic polyhydroxide compounds, comprising the modified aluminosilicate according to claim 1.

[Claim 4]

A method for producing a modified aluminosilicate, comprising

a second step of treating an aluminosilicate (A-1) with an acid,

a third step of subjecting the treated product obtained in the second step to primary calcination at 550°C to 850°C, and

a fourth step of contacting the calcined product obtained in the third step and liquid containing one or more elements selected from the group consisting of elements in Group 4 and Group 5 of the Periodic Table at 20 °C to 150 °C, followed by carrying out drying and secondary calcination, wherein,

the aluminosilicate (A-1) has the highest peak (β) in a region of 20° or more and less than 22.5° in a region of 17.5 to 35° as measured by XRD, wherein a peak intensity ratio of the peak (β) to the highest peak (γ) in a region of 25 to 27° is in a range of 1.7 to 5.0.

[Claim 5]

A catalyst for production of aromatic polyhydroxide compounds, comprising the modified aluminosilicate according to claim 4.

[Claim 6]

A method for producing an aromatic polyhydroxide compound, comprising a step of reacting an aromatic hydroxide with hydroperoxide in the presence of the catalyst according to claim 3 or claim 5.