a low activity against sulfur oxide and has high stability.

[0004]

Patent Document 1: Japanese Unexamined Patent Application, Publication No. 2004—275852

DISCLOSURE

[0005]

On the other hand, vanadium oxide plays a key role in the NH_3-SCR, but vanadium oxide cannot be supported in an amount of about 1 wt% or more because vanadium oxide oxidizes SO_2 into SO_3. Therefore, vanadium oxide is typically used in an amount of 1 wt% or less relative to its carrier. Furthermore, in the current NH_3-SCR, a catalyst in which vanadium oxide (and tungsten oxide in some cases) is supported on a titanium oxide carrier hardly reacts at low temperature and thus needs to be used at a high temperature of 350°C to 400°C.

[0006]

In order to increase the degree of freedom in the design of apparatuses and facilities with which the NH_3-SCR is performed and increase the efficiency, the development of a catalyst having a high nitrogen oxide reduction activity even at low temperature has been demanded.

[0007]

In view of the foregoing, embodiments provide a catalyst that exhibits a high denitration efficiency at low temperature and does not cause

oxidation of SO_2 in a selective catalytic reduction reaction that uses ammonia as a reducing agent.

[0008A] According to an aspect, there is a denitration catalyst comprising 43 wt% or more of vanadium pentoxide, wherein the denitration catalyst has a BET specific surface area of 30 m^2/g or more, wherein the denitration catalyst is used for denitration at 200℃ or lower

[0008] The present disclosure relates to a denitration catalyst containing 3.3 wt% or more of vanadium oxide in terms of vanadium pentoxide and having a BET specific surface area of 10 m^2/g or more.

[0009]

The denitration catalyst is preferably used for denitration at 200℃ or lower.

[0010]

In the denitration catalyst, an amount of NH_3 desorbed by NH_3-TPD (TPD: temperature programed desorption) is preferably 10.0 mmol/g or more.

[0011]

The present disclosure relates to a method for producing the denitration catalyst, the method including a step of thermally decomposing a vanadate at a temperature of 300℃ to 400℃.

[0012]

The present disclosure relates to a method for producing the denitration catalyst, the method including a step of dissolving a vanadate in a chelate compound, performing drying, and then performing firing.

[0013]

The denitration catalyst according to the present disclosure exhibits a high denitration efficiency particularly at 200°C or lower, which allows detoxification of NO into N_2. The selective catalytic reduction reaction that uses the denitration catalyst according to the present disclosure can be performed at 200°C or lower, and therefore oxidation of SO_2 does not occur.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

[Fig. 1] Fig. 1 illustrates the powder X-ray diffraction results of vanadium pentoxide catalysts produced in Examples 1 to 3 and Comparative Example 1.

[Fig. 2] Fig. 2 illustrates the powder X-ray diffraction results of vanadium pentoxide catalysts produced in Examples 3 to 8 and Comparative Examples 2 and 3.

[Fig. 3] Fig. 3 illustrates the NH_3-SCR activity of vanadium pentoxide catalysts produced in Examples 1 to 3 and Comparative Examples 1 and 4.

[Fig. 4] Fig. 4 illustrates the relationship between the reaction temperature and the N_2 selectivity in a selective catalytic reduction reaction that uses vanadium pentoxide catalysts produced in Example 1 and Comparative Example 1.

[Fig. 5] Fig. 5 illustrates the space velocity dependency in the case where a vanadium pentoxide catalyst produced in Example 1 is used in a NH_3-SCR reaction.

[Fig. 6] Fig. 6 illustrates a change in the NO conversion

CLAIMS

1. A denitration catalyst comprising 43 wt% or more of vanadium pentoxide, wherein the denitration catalyst has a BET specific surface area of 30 m^2/g or more, wherein the denitration catalyst is used for denitration at 200°C or lower.

2. The denitration catalyst according to Claim 1, wherein an amount of NH_3 desorbed by NH_3-TPD (TPD: temperature programed desorption) is 10.0 mmol/g or more.

3. A method for producing the denitration catalyst according to Claim 1 or 2, the method comprising a step of thermally decomposing a vanadate at a temperature of 300°C to 400°C.

4. A method for producing the denitration catalyst according to Claim 1 or 2, the method comprising a step of dissolving a vanadate in a chelate compound, performing drying, and then performing firing.