Claims

Claim 1

A hydrogen chloride gas dehydration method of dehydrating hydrogen chloride gas through a multi-step process, the method comprising:

a first dehydration step of bringing hydrogen chloride gas and concentrated sulfuric acid into contact with each other; and

a second dehydration step of bringing hydrogen chloride gas that has been obtained through the first dehydration step into contact with concentrated sulfuric acid,

wherein a concentration of the concentrated sulfuric acid used in the second dehydration step is higher than a concentration of the concentrated sulfuric acid used in the first dehydration step,

the multi-step process consists of the first dehydration step, the second dehydration step, and a third dehydration step carried out after the second dehydration step,

at least part of the concentrated sulfuric acid that has been used in the second dehydration step is reused in the first dehydration step,

at least part of concentrated sulfuric acid that has been used in the third dehydration step is reused in the second dehydration step,

a concentration of the concentrated sulfuric acid reused in the second dehydration step after having been used in the third dehydration step is not lower than 96 wt%,

a concentration of the concentrated sulfuric acid reused in the first dehydration step after having been used in the second dehydration step is not lower than 85 wt% and lower than 96 wt%, and

a concentration of the concentrated sulfuric acid after having been used in the first dehydration step is not lower than 75 wt% and lower than 85 wt%.

Claim 2

A hydrogen chloride gas dehydration method of dehydrating hydrogen chloride gas through a multi-step process, the method comprising:

a first dehydration step of bringing hydrogen chloride gas and concentrated sulfuric acid into contact with each other; and

a second dehydration step of bringing hydrogen

chloride gas that has been obtained through the first dehydration step into contact with concentrated sulfuric acid,

wherein a concentration of the concentrated sulfuric acid used in the second dehydration step is higher than a concentration of the concentrated sulfuric acid used in the first dehydration step,

the multi-step process consists of the first dehydration step and the second dehydration step,

at least part of the concentrated sulfuric acid that has been used in the second dehydration step is reused in the first dehydration step,

a concentration of the concentrated sulfuric acid reused in the first dehydration step after having been used in the second dehydration step is not lower than 96 wt%, and

a concentration of the concentrated sulfuric acid after having been used in the first dehydration step is not lower than 85 wt% and lower than 90 wt%.

Claim 3

The dehydration method according to claim 1 or 2, further comprising:

a step of removing sulfuric acid mist from hydrogen chloride gas that has been obtained through the multi-step process, by using a mist separator provided with a glass filter.

Claim 4

A method for producing trichlorosilane by reacting hydrogen chloride gas with water content that has been reduced by a dehydration method according to any one of claims 1 to 3 with metallic silicon.