Claims

1. A uniform-type platinum-loaded alumina catalyst for dehydrogenating methylcyclohexane, comprising:

an alumina carrier;

sulfur or a sulfur compound dispersed over an entire cross section of the alumina carrier;

platinum dispersed and loaded over the entire cross section of the alumina carrier; and

one or more alkali metals selected from the group consisting of sodium and potassium.

2. The uniform-type platinum-loaded alumina catalyst according to claim 1, wherein the uniform-type platinum-loaded alumina catalyst excludes tin.

3. The uniform-type platinum-loaded alumina catalyst according to claim 1 or 2, wherein a content of the sulfur or the sulfur compound is 0.15 to 5.0 wt% calculated as elemental sulfur.

4. The uniform-type platinum-loaded alumina catalyst according to any one of claims 1 to 3, wherein a content of the alkali metal(s) is 0.1 to 5.0 wt% calculated as elemental alkali metal.

5. The uniform-type platinum-loaded alumina catalyst according to any one of

claims 1 to 4, wherein the alumina carrier has a surface area of 150 m^2/g or more, a pore volume of 0.40 cm^3/g or more, and an average pore diameter of 40 to 300 Å, with pores having a pore diameter in a range of ± 30 Å from the average pore diameter occupying 60 % or more of a total pore volume.

6. A method of producing a uniform-type platinum-loaded alumina catalyst for dehydrogenating methylcyclohexane, comprising:

a step of preparing a uniform-type platinum-loaded alumina catalyst including a step of obtaining an alumina carrier containing sulfur by impregnating an alumina carrier with an aqueous solution of ammonium sulfate and subsequently drying the alumina carrier containing sulfur, and obtaining the uniform-type platinum-loaded alumina catalyst by impregnating the alumina carrier containing sulfur with an aqueous solution of platinum chloride, drying the alumina carrier containing sulfur and then calcining the alumina carrier containing sulfur;

a step of impregnating the uniform-type platinum-loaded alumina catalyst with an aqueous solution of alkali metal compound and thereafter drying the impregnated catalyst; and

a step of reducing the dried uniform-type platinum-loaded alumina catalyst in a hydrogen atmosphere or calcining the dried uniform-type platinum-loaded alumina catalyst and thereafter reducing the calcined catalyst in a hydrogen atmosphere.

7. A method of dehydrogenating methylcyclohexane, comprising dehydrogenating methylcyclohexane by using the uniform-type platinum-loaded alumina catalyst according to any one of claims 1 to 5.

8. The method of dehydrogenating methylcyclohexane according to claim 7, which uses both of the uniform-type platinum-loaded alumina catalyst and an egg shell-type platinum-loaded alumina catalyst.