CLAIMS

1. A catalyst for preparing cumene, comprising a carrier and an active ingredient, wherein the active ingredient comprises:

ingredient (1) that is palladium in elemental, salt or oxide form, and

ingredient (2) comprising molybdenum and, optionally, an alkali metal, an alkaline earth metal ,or both,

wherein ingredient (2) is in salt or oxide form,

wherein, based on the weight of element metal, a content of palladium is 0.01-10 g/L and a mass ratio of ingredient (1) to ingredient (2) is in a range of (20-1):1,

and wherein g/L is a unit representing a total mass of the active ingredient loaded on one liter of the carrier.

2. The catalyst according to claim 1, wherein a content of ingredient (2) is in a range larger than 0 g/L and equal to or less than 60 g/L.

3. The catalyst according to claim 2, wherein the content of ingredient (2) is 0.5-5 g/L.

4. The catalyst according to claim 3, wherein the content of ingredient (2) is 1.0-3.5 g/L.

5. The catalyst according to claim 1, wherein a mass ratio of ingredient (1) to ingredient (2) is (15-5):1.

6. The catalyst according to claim 5, wherein the mass ratio of ingredient (1) to ingredient (2) is (12-8):1.

7. The catalyst according to claim 1, wherein ingredient (2) comprises an alkali metal and molybdenum, wherein, based on the weight of elemental metal, a mass ratio of the alkali metal to molybdenum is in a range of (0.1-10):1;

ingredient (2) comprises an alkaline earth metal and molybdenum; or

ingredient (2) comprises an alkali metal element, an alkaline earth metal element

and molybdenum.

8. A method for preparing cumene, which comprises contacting a raw material containing α-methyl styrene and hydrogen with the catalyst according to claim 7 for reaction to generate cumene.

9. The catalyst according to claim 1, wherein the alkaline earth metal element is at least one selected from the group consisting of Ca, Mg, Sr and Ba, and the alkali metal element is at least one selected from the group consisting of Li, Na and K.

10. The catalyst according to claim 1, wherein the carrier comprises at least one selected from the group consisting of alumina, zirconia, silica, titania and activated carbon.

11. The catalyst according to claim 1, wherein the carrier has a BET specific surface area in a range of 60-200 m^2/g, a pore volume in a range of 0.2-0.7 mL/g, and a most probable pore size in a range of 10-30 nm.

12. The catalyst according to claim 10, wherein the alumina comprises δ-alumina, θ-alumina, or a mixture of the δ-alumina and the θ-alumina.

13. The catalyst according to claim 12, wherein in the mixture of the δ-alumina and the θ-alumina, a mass ratio of the δ-alumina to the θ-alumina is in a range of (0.2-5.0):1.

14. A method for preparing cumene, comprising contacting a raw material containing α-methyl styrene and hydrogen with the catalyst according to claim 1 to generate cumene.

15. The method according to claim 14, wherein the reaction is carried out under a pressure in a range of 0.2-3.0 MPa, at a temperature in a range of 30-100 ^oC, at a ratio of liquid circulation of 1.0-10.0.

16. The method according to claim 14, wherein a volume space velocity of the raw material containing α-methyl styrene is in a range of 0.3-3.0 h^{-1}, and a molar ratio of hydrogen to α-methyl styrene is in a range of (0.5-8):1.

17. The method according to claim 14, wherein the raw material contains 1-25wt% of α-methyl styrene and 75-99wt% of a solvent.

18. The method according to claim 14, wherein the raw material containing α-methyl styrene is from a device for producing phenol and acetone using cumene.

19. The catalyst according to claim 1, wherein the content of ingredient (1) is 0.05-5 g/L.

20. The catalyst according to claim 1, wherein the content of ingredient (1) is 0.1-4 g/L.