Claims as enclosed to IPRP

Claims:

1. A fluidized bed catalyst for gas-phase reactions which has high mechanical stability in the form of powder having a mean particle size of from 10 to 200 µm and comprises one or more active metals on a support consisting essentially of aluminum oxide as support material, wherein the aluminum oxide in the support consists essentially of alpha-aluminum oxide.

2. The catalyst according to claim 1, wherein the active metal or metals is/are selected from among the elements of groups 7-11 of the Periodic Table of the Elements.

3. The catalyst according to claim 1 or 2, wherein the active metal is ruthenium, copper and/or gold.

4. The catalyst according to any of claims 1 to 3 comprising
   a) from 0.001 to 10% by weight of ruthenium, copper and/or gold,
   b) from 0 to 5% by weight of one or more alkaline earth metals,
   c) from 0 to 5% by weight of one or more alkali metals,
   d) from 0 to 10% by weight of one or more rare earth metals,
   e) from 0 to 10% by weight of one or more further metals selected from the group consisting of palladium, platinum, osmium, iridium, silver and rhenium,

   in each case based on the total weight of the catalyst.

5. The catalyst according to any of claims 1 to 4, wherein the active metal is ruthenium.

6. A process for producing a fluidized bed catalyst according to any of claims 1 to 5 by impregnating alpha-aluminum oxide in the form of powder having a mean particle size of from 10 to 200 µm as support with one or more metal salt solutions comprising the active metal or metals and, if appropriate, one or more promoter metals, and drying and calcining the impregnated support.

7. The process according to claim 6, wherein alpha-aluminum oxide is prepared by heating gamma-aluminum oxide to temperatures above 1000°C.

8. A process for the catalytic oxidation of hydrogen chloride by means of oxygen to give chlorine over a fluidized catalyst bed comprising catalyst particles of the catalyst according to any of claims 1 to 5.

9. The process according to claim 7 or 8, wherein the catalytic oxidation is carried out at a reaction temperature of > 350°C.

10. The use of the catalyst according to any of claims 1 to 5 for catalyzing gas-phase reactions at a reaction temperature of > 300°C.

The invention claimed is:

1. A fluidized bed catalyst for gas-phase reactions which has high mechanical stability in the form of powder having a mean particle size of from 10 to 200 μm and comprises one or more active metals on a support consisting essentially of aluminum oxide as support material, wherein the aluminum oxide in the support consists essentially of alpha-aluminum oxide, and wherein the one or more active metals comprises copper.

2. The catalyst according to claim **1**, wherein the active metal is copper.

3. The catalyst according to claim **1**, wherein the aluminum oxide in the support consists of alpha-aluminum oxide.

4. The catalyst according to claim **1**, wherein the support consists of aluminum oxide.

5. The catalyst of claim **1**, wherein the one or more active metals further comprises ruthenium.

6. The catalyst of claim **1**, wherein the one or more active metals further comprises gold.

7. The catalyst of claim **1**, wherein the catalyst is doped with potassium.

8. The catalyst of claim **1**, wherein the catalyst is doped with magnesium.

9. The catalyst of claim **1**, wherein the catalyst is doped with lanthanum.

10. The catalyst of claim **1**, comprising

a) from 0.001 to 10% by weight of copper,

b) from 0 to 5% by weight of one or more alkaline earth metals,

c) from 0 to 5% by weight of one or more alkali metals,

d) from 0 to 10% by weight of one or more rare earth metals,

e) from 0 to 10% by weight of one or more further metals selected from the group consisting of palladium, platinum, osmium, iridium, silver and rhenium,

in each case based on the total weight of the catalyst.

11. A fluidized bed catalyst for gas-phase reactions which has high mechanical stability in the form of powder having a mean particle size of from 10 to 200 μm and comprises one or more active metals on a support consisting essentially of aluminum oxide as support material, wherein the aluminum oxide in the support consists essentially of alpha-aluminum oxide, and wherein the one or more active metals comprises gold.

12. The catalyst according to claim **11**, wherein the active metal is gold.

13. The catalyst of claim **11**, wherein the active metal further comprises ruthenium.

14. The catalyst of claim **11**, wherein the aluminum oxide in the support consists of alpha-aluminum oxide.

15. The catalyst of claim **11**, wherein the support consists of aluminum oxide.

16. The catalyst of claim **11**, wherein the catalyst is doped with potassium.

17. The catalyst of claim **11**, wherein the catalyst is doped with magnesium.

18. The catalyst of claim **11**, wherein the catalyst is doped with lanthanum.

19. The catalyst of claim **11**, comprising

a) from 0.001 to 10% by weight of gold,

b) from 0 to 5% by weight of one or more alkaline earth metals,

c) from 0 to 5% by weight of one or more alkali metals,

d) from 0 to 10% by weight of one or more rare earth metals,

e) from 0 to 10% by weight of one or more further metals selected from the group consisting of palladium, platinum, osmium, iridium, silver and rhenium,

in each case based on the total weight of the catalyst.

20. A fluidized bed catalyst for gas-phase reactions which has high mechanical stability in the form of powder having a mean particle size of from 10 to 200 μm and comprises one or more active metals on a support consisting essentially of aluminum oxide as support material, wherein the aluminum oxide in the support consists essentially of alpha-aluminum oxide, and wherein the catalyst is doped with at least one metal selected from the group consisting of potassium, magnesium, lanthanum, and cerium.

21. The catalyst of claim **20**, wherein the catalyst is doped with potassium.

22. The catalyst of claim **20**, wherein the catalyst is doped with magnesium.

23. The catalyst of claim **20**, wherein the catalyst is doped with lanthanum.

24. The catalyst of claim **20**, wherein the active metal comprises ruthenium.

25. The catalyst of claim **20**, wherein the active metal comprises copper.

26. The catalyst of claim **20**, wherein the active metal comprises gold.

27. The catalyst of claim **20**, wherein the aluminum oxide in the support consists of alpha-aluminum oxide.

28. The catalyst of claim **20**, wherein the support consists of aluminum oxide.

29. The catalyst of claim **20**, comprising

a) from 0.001 to 10% by weight of ruthenium, copper and/or gold,

b) from 0 to 5% by weight of one or more alkaline earth metals,

c) from 0 to 5% by weight of one or more alkali metals,

d) from 0 to 10% by weight of one or more rare earth metals,

e) from 0 to 10% by weight of one or more further metals selected from the group consisting of palladium, platinum, osmium, iridium, silver and rhenium,

in each case based on the total weight of the catalyst.