

ABSTRACT

HYDROTREATING CATALYST, PROCESS FOR PRODUCING SAME, AND
PROCESS FOR HYDROTREATING HYDROCARBON OIL

A hydrotreating catalyst that exhibits excellent levels of both desulfurization activity and denitrification activity. The hydrotreating catalyst is prepared by supporting molybdenum, cobalt and nickel on a carrier comprising aluminum, silicon, phosphorus and boron, and then performing a presulfiding treatment, and has an average stacking number for molybdenum sulfide slab that is greater than 1.0 but not more than 1.9. Also, a process for producing a hydrotreating catalyst that enables a hydrotreating catalyst having excellent levels of both desulfurization activity and denitrification activity to be produced with comparative ease. The process includes a first step of mixing an acidic aluminum salt aqueous solution and a basic aluminum salt aqueous solution in the presence of phosphate ions and silicate ions to achieve a pH of 6.5 to 9.5, thereby obtaining a hydrate, a second step of adding boron to the hydrate to prepare a carrier-forming material, a third step of molding and calcining the carrier-forming material to obtain a carrier, a fourth step of supporting molybdenum, cobalt and nickel on the carrier to obtain a catalyst precursor, and a fifth step of performing a presulfiding treatment by bringing the catalyst precursor into contact with a mixed gas containing hydrogen and hydrogen sulfide under conditions including a pressure of not less than 2.0 MPa and a maximum temperature of 240 to 380°C.

No Figure