

## ABSTRACT

A burner includes a fuel gas supply pipe configured to supply a fuel gas containing ammonia and eject the fuel gas from a fuel gas ejection hole at a tip thereof, a first combustion-supporting gas supply pipe provided radially outward from the fuel gas supply pipe so as to surround the fuel gas supply pipe and configured to supply a first combustion-supporting gas and eject the first combustion-supporting gas from a first combustion-supporting gas ejection hole at a tip thereof, and a second combustion-supporting gas supplier configured to supply a second combustion-supporting gas and eject the second combustion-supporting gas from a second combustion-supporting gas ejection hole so that the second combustion-supporting gas joins a burner flame downstream from the first combustion-supporting gas ejection hole. An oxygen concentration of a combustion-supporting gas that is a combination of the first combustion-supporting gas and the second combustion-supporting gas is 30 % or more, an oxygen concentration of the second combustion-supporting gas is 90 % or more, and  $0.38 \leq (V_1 + V_2)/V_3 \leq 1.1$ , where  $V_1$  is a volumetric flow rate of oxygen at the first combustion-supporting gas ejection hole,  $V_2$  is a volumetric flow rate of oxygen at the second combustion-supporting gas ejection hole, and  $V_3$  is a volumetric flow rate of ammonia at the fuel gas ejection hole.