

LIQUID MATERIAL COMPRISING HYDROGEN AND OXYGEN, REGASIFIED GAS
COMPRISING HYDROGEN AND OXYGEN PRODUCED FROM THE LIQUID
MATERIAL, PROCESS AND APPARATUS FOR PRODUCING THE LIQUID MATERIAL
AND REGASIFIED GAS, AND FUEL THAT DOES NOT EVOLVE CARBON DIOXIDE
AND COMPRISES THE LIQUID MATERIAL AND REGASIFIED GAS

ABSTRACT

A liquid material comprising hydrogen and oxygen is produced by electrolyzing an electrolysis solution containing 5 to 30% by weight of an electrolyte in an electrolysis tank using a group of electrodes disposed, within the electrolysis tank, while maintaining a spacing of 3 to 10 mm between adjacent electrodes under conditions of a current density of 5 to 20 A/dm², a bath temperature of 200 to 70°C, and pH 14 or more (strongly alkaline) while applying vibration stirring, bringing the pressure of the resultant gas comprising hydrogen and oxygen to 0.1 to 0.5 MPa, and cooling gas to -190 to -250 °C to liquefy the gas. The liquid material is stored, is returned to room temperature, and is gasified to produce a regasified gas comprising hydrogen and oxygen.

Figure 1