Study of Erosive Burning Correlation of Composite Solid Propellants Based on the Experiments with Sub-Scale Motors

by

Hiroshi HASEGAWA[*1], Shinichiro TOKUDOME[*2] and Masahisa HANZAWA[*3]

(Received on Sep. 28, 2001, accepted on Nov. 21, 2001)

Abstract

Although a number of erosive burning correlations of solid propellants have been proposed, there is no decisive one. Therefore, a simple correlation such as Dickinson's one is preferred from practical point of view.

In this study, another simple correlation expressed in terms of the ratio of mass flow rate to mass burning rate is examined based on the experiments using sub-scale double slab motors. As a result, the present correlation is shown to have the advantage that the threshold value beyond which erosive burning occurs can be treated as a constant value.

Keywords: *Solid propellants, Erosive burning, Rocket motor*

*1 Research Student, Course of Aeronautics and Astronautics.

*2 The Institute of Space and Astronautical Sciences, Ministry of Education, Culture, Sports, Science and Technology.

*3 Professor, Department of Aeronautics and Astronautics.