

HYPERGOL IGNITION FOR LIQUID ENGINES

Rocketdyne has been engaged in hypergol ignition research, development, and production programs related to liquid engine systems for the past three years. A hypergol ignition capability has evolved from the experience accumulated and the facilities constructed. The capability is versatile and applicable to all phases of liquid engine hypergol ignition systems.

Some of the programs which have been conducted include: the ignition of a LOX/Hydrocarbon propellant system for which a mixed metal alkyl hypergol igniter was developed, the ignition of a NTO/NH₂ propellant system for which a metallic lithium igniter was developed, the development of a chlorine trifluoride igniter for storable or cryogenic propellant system applications, and the design and development of a multi-start hypergol igniter. A majority of the igniter configurations developed have been incorporated in large engine systems.

The hypergol ignition capabilities include the selection of candidate hypergol materials through literature research and the complete evaluation of these materials with respect to chemical and physical properties, the design of igniter components and hardware configurations, and the integration of the hypergol material and hardware combinations to meet specific requirements for developed engine ignition systems. Facilities are available which accommodate the storage and handling of storable and cryogenic propellants in any desired atmosphere, the compatibility studies related to hypergol materials and respective hardware components, the production of developed hypergol igniters, and the surveillance of hypergol materials and igniter assemblies in complete conformance to specification MIL-E-5272. A hypergol ignition delay test stand, with a proven reliability obtained from over three thousand tests, is available for determining ignition delay with an accuracy of ± 2 milliseconds. The ignition test stand can accommodate both storable and cryogenic propellant combinations and operate at simulated altitude conditions.

Due to the wide scope of the hypergol igniter capability, Rocketdyne is qualified for all phases of research, development, and production efforts pertaining to hypergol ignition for liquid engines.

Ex. 34 - 5243

GURICAN
000159

