

Silicone Polymer Based Low Density Syntactic Foam TPS, SSF P-70

SSF P-70 is a low density thermal protection system based on silicone polymer, with microballoon and other fillers as compounding ingredients. This TPS is room temperature curable and can be applied by brushing and spraying techniques. The remarkable features of this system include lower density of 0.38 g/cc, lower thermal conductivity, high specific heat, good ageing resistance and compatibility with wide variety of substrates. Indian Space Research Organisation (ISRO) at its Vikram Sarabhai Space Centre (VSSC) has developed a technology for processing and application of different types of silicone polymer based thermal protection systems with tailored properties to meet various mission/application requirements.

The processing involves incorporation of selected quality fillers and ingredients in specific type of silicone polymer resin and use of suitable curatives to achieve desired thermo-physical properties.

Salient Features

- Simplified and cost effective technology for processing premium quality thermal protection system.
- Room temperature curable.
- Flexibility with respect to application procedure such as spraying and brushing.
- Compatibility with wide variety of substrates including metals, composites etc.
- Excellent ageing behaviour, making it suitable for long term application with no deterioration of properties for more than 2 years.

Applications

- Useful for light weight, high quality thermal protection system for temperatures up to

- 3000C direct exposure with reasonable stability and capability to retain properties. The system also has good aging characteristics. The system can be applied to desired thickness depending upon the thermal environment envisaged. Reasonable mechanical strength and adhesive properties with large number of substrates has been demonstrated by the system. Ability to retain properties at temperatures up to 150 0C and low temperature flexibility are other highlights of the system owing to the low glass transition characteristics associated with silicone polymers.
- The product can be used for thermal protection application for protecting rocket hardware from aerodynamic heating where light weight TPS is required and also as moisture / water impermeable coatings.
- The system can be tailored for use as coating on metal substrates for outdoor use.