TECHNOLOGY TRANSFER

Interest Exploratory Note

Phenolic Resin (PF-106)

Phenolic resin (PF-106) is a resol type thermosetting phenol- formaldehyde polymer used for processing high temperature resistant ablative materials such as carbon phenolic and silica phenolic composites. PF 106 is a high temperature curing resin which has excellent ablative properties and char strength.

The production of PF-106 involves the following steps:

1. Melting of Phenol
2. Charging of formalin and molten phenol into the reactor in the desired mole ratio
3. Addition of catalyst
4. Condensation polymerization of phenol and formalin
5. Neutralization of reaction mixture with acid
6. Settling of reaction mixture
7. Removal of water of reaction and salt
8. Drying of resin to remove traces of water and other volatiles
9. Addition of required quantity of alcohol
10. Filtration and product packing
11. Storage

Salient Features

Appearance : Yellowish brown to dark brown liquid

Viscosity : 150 -250

Specific gravity : 1.12 -1.16

Total solid content : 60–65 for ½ hr. (%)

Freephenol (%) : 6 max.

Free formalin (%) : 3 max.

Point of trouble : 6–10 ml of water of resin

Storage conditions

Temperature : 10-20 °C

Shelf Life : 3 months

Applications

The resin finds application as binder for high temperature resistant ablative composites materials such as carbon phenolic, silicaphenolic and epoxy phenolic systems.

Department of Space has authorised NSIL for Technology Transfer of Phenolic Resin (PF-106) to suitable entrepreneurs/ Industry in India. Interested Parties may please fill the enclosed form and send by email to contact-nsil@isro.gov.in