PHENOLIC MATRIX RESIN
PF-108

Indian Space Research Organisation (ISRO) at its Vikram Sarabhai Space Centre (VSSC) has developed different types of resins for catering to specific applications in Launch Vehicles and Satellites. These materials may also find potential industrial applications in bonding, sealing, coating, potting, laminating, molding, etc.

PF-108 is a special grade liquid phenolic matrix resin which is used as a precursor for production of silica phenolic throat inserts for the liquid engines of ISRO launch vehicles.

Operational Steps for Synthesising PF 108

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 to desired pH.
6. Settling of reaction mixture
7. Removal of water of reaction and sodium salt by decantation.

8. Vacuum drying of resin to remove the final traces of water and other volatiles.

Equipments

Major equipments needed are phenol melting vessel and reaction vessel.

1. Melting vessel for phenol melting.
2. Jacketed SS reactor fitted with cooling coils, stirrer, motor, condenser and receiver for polymerisation and drying. The reactor is suitably linked with the utility system during operation. It is also equipped with load cell, vacuum systems, temp controllers, cooling systems pressure/vacuum gauges etc.
3. Decanter vessel for removal of water.
4. Water jet ejector for vacuum.

PF 108 Product Specifications

Appearance	Yellowish brown to dark brown liquid
Viscosity at 30°C	400 – 600 cps
Specific gravity at 30°C	1.18 – 1.20
Refractive Index at 30°C	1.570 – 1.575
Total solids	72 – 75%

Free phenol (%)	18 – 22%
Free formalin (%)	0.5% (max.)
Ash Contact	0.5% (max.)
Point of trouble	13 – 15.5 ml of water/10 ml solution
pH (5% solution)	7.3 – 7.8
Sodium Content	0.4% (max.)
Water Content	14% (max.)

Storage conditions

Temperature	<15˚C
Shelf Life	3 months (in above condition)

ISRO is willing to offer the technology of PF-108 to capable and interested parties who are in the field of manufacturing similar items.

Interested industries/ entrepreneurs are requested to contact the address given below with all relevant particulars regarding their line of current activity, infrastructure available, market assessment of the product, financial arrangements, strength of the company, turn over and sales of their products for the past few years and a copy of their latest annual report.

For further details, please contact:

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