

NCSX

Product Requirements List For the Vacuum Vessel System Blanket Insulation

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Controlled Document

This is a controlled document. Check the NCSX Engineering Web prior to use to assure that this document is current.

Record of Revisions

| Revision | Date | ECP | Description of Change |
|----------|----------|-----|---|
| Rev. 0 | 8/9/06 | | Initial Release |
| Rev. 1 | 10/24/07 | 058 | Revised Section 1.2.1(Insulation Material) - Substitution of insulation material since original no longer made. |

SCOPE

This requirements list covers the procurement of flexible insulation blankets (Insulation) for the National Compact Stellarator Experiment (NCSX), including the supply of all required labor and materials, machining, fabrication, and factory acceptance inspections. The Seller shall deliver the Insulation to the Princeton Plasma Physics Laboratory (Laboratory).

1 REQUIREMENTS

1.1 Item Definition

The Insulation is intended as for use in a cryogenic chamber to isolate hot vacuum vessel components from cryogenically cooled magnetic coils.

1.2 Characteristics

1.2.1 Insulation Material

All Insulation shall be Pyrogel, type 6671

Supplier:

Aspen Aerogels
184 Cedar Hill Street
Marborough, MA 01752

1.2.2 Dimensions and Tolerances

The insulation shall be supplied in a nominal thickness of 0.24 inches, in roll stock 57 inches wide.

Color

Beige

Insulation Construction

The Insulation shall be in the form of a blanket formed of silica aerogel, reinforced with a non-woven glass-fiber batting. The nominal density shall be 11 lbs per cubic foot.

1.3 Cleaning

After completion of fabrication, the Insulation shall be free of oils, lubricants, dyes, or any other contaminants.

1.4 Operation Parameters

1.4.1 Media

Nitrogen gas.

1.4.2 Pressure

atmospheric

1.3.3 Temperature

77 K to 380 C. The Insulation shall be rated for use up to 650 C.

2 QUALITY ASSURANCE PROVISIONS

2.1 General

2.1.1 Responsibility for Inspection

Inspection shall be conducted at the Seller's facility or otherwise suitable location. The responsibility for performing all inspection rests with the Seller. The Laboratory reserves the right to witness or separately perform all inspections specified.

2.1.2 Inspection Documentation

Actual data and accept/reject status for each inspection shall be documented. The reports shall contain sufficient information to accurately locate the Insulation involved. The reports shall be dated and verified by authorized personnel.

2.2 Quality Conformance Inspections

2.2.1 Verification of Cleaning

Insulation shall be visually inspected and records examined for compliance with Section 1.3.

2.2.2 Verification of Workmanship

The Insulation shall be visually inspected for defects i.e. tears, cuts, voids, etc. and abnormalities reported in a Non-Conformance Report (NCR) to the Laboratory for evaluation

3 PREPARATION FOR DELIVERY

3.1 Labeling

Insulation packages shall be marked with unique serial numbers to provide positive identification, and shall include the material thickness.

3.2 Packing and Skidding

All material shall be sealed, packaged, and skidded to provide protection against contamination, deterioration and damage during shipment. A plan shall be provided to the Laboratory prior to shipment which includes a description of methods to be used to preserve, package, skid, and identify equipment. Tags with adhesive/gum backing shall not be applied to the surfaces of the material. The Seller shall contact the Laboratory ten days prior to shipment of the machine to confirm shipping method and route.

3.3 Marking

Each shipping skid shall be marked with the name of the Seller, Laboratory Purchase Order Number, the component name, and gross weight. Boxes containing loose parts, attachments, and accessories shall be marked identifying the assembly to which they belong, and where possible, boxes are to be secured to the skid of the unit.