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FOAM GLASS INSULATION FOR GT FOUNDATION

1. INTRODUCTION

This ordering specification applies to supply of foam glass insulation and related items required for Gas turbine foundation.

2. SCOPE

Scope of supply includes

1. FOAMGLAS ONE (PITTSBURGH CORNING product)
2. PC 85 Cell filler (PITTSBURGH CORNING product)
3. GLASS CLOTH 7628
4. Hi-Temperature Silicone Form-in-place sealant/adhesive

3. FOAMGLAS ONE

The foam glass insulation shall be lightweight, rigid material composed of millions of completely sealed glass cells without any binder. The insulation shall be non-combustible, non-absorbent, shall have excellent resistance towards water and shall be impervious to water vapor.

The foam glass insulation must be in accordance with the following requirements:

- a) Thermal conductivity ≤ 0.04 W/mK.
- b) Be able to support the floating concrete slab weight during the pouring phase and during normal operation (long term service).
- c) No deterioration of the physical and thermal characteristics due to the power train vibration (160 μ m peak to peak & 50 to 100 Hz frequency range).
- d) No deterioration of the physical characteristic in case of oil or water penetration.
- e) Temperature in normal operation from -50°C to +400°C.
- f) High compressive strength and long term dimensional stability.
- g) Constant insulating efficiency.

FOAMGLASS PROPERTIES

Density	115 kg/m ³
Thermal conductivity	≤ 0.04 W/mK
Service Temperature	-50°C to +400°C
Product type	100mm thick Flat Slab of size 600mm x 450mm
Flexural strength	480 kPa average
Flexural modulus of elasticity	8000 kg/cm ²
Coefficient of linear thermal expansion	9×10^{-6} /K, 25 to 300°C
Modulus of Elasticity	900 MPa
Specific heat	0.20 kcal/kg°C
Compressive strength	620 kPa average
Composition	Soda lime glass. Inorganic, no fibers or binders
Chemical resistance	Impervious to common acids and fumes
Absorption of Moisture	<0.2% by vol

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4. **PC 85 Cell filler**

PC 85 Cell filler powder is a mineral-based, totally inorganic powder that has been designed for filling the open surface cells of FOAMGLAS cellular glass.

Type	Mineral in impalpable powder form, one component
Consistency	powder
Service temperature	-200°C to +350°C
Application temperature (air + basis surface)	min. +5°C to +40°C
Mass density	0.7 kg/dm ³
Color	white
Solvents	none
Reaction to fire (EN 13501-1)	Non-combustible
VOC	free
Coverage	1.2 kg/m ²

5. **FIBER GLASS CLOTH 7628**

Fiber glass cloth of ASTM Style 7628 is required for thermal insulation.

Weight	201 g/m ²
Thickness	0.178 mm
Temperature	371° C
Warp Breaking strength	438 N/cm minimum
Weft Breaking strength	350 N/cm minimum
Weave type	plain
Warp count	44 EPI
Fill count	31 PPI
Warp Yarn Type	ECG 75 1/0
Fill Yarn Type	ECG 75 1/0
Color	White
Roll Splice	Max - 2 splices / roll Minimum 50 LY between splices

6. **Hi-Temperature Silicone Form-in-place sealant/adhesive (SILICONE CSL-503 or equivalent)**

Hi-Temp Silicone sealant shall be a one part, moisture curing room temperature vulcanizing (RTV) silicone sealant that cures to a tough rubber gasket and is ideal for high temperature applications. It shall be designed to maintain maximum performance in a continuous temperature environment of up to 315°C (600°F) and intermittent exposure up to 343°C (650°F). It shall remain permanently flexible even after 7-day continuous exposure to maximum temperatures. It shall resist aging, weathering and thermal cycling without hardening, shrinking or cracking.

Type	100% silicone, one-part RTV
Appearance	Smooth, non-slump red past
Colors	Red
Application Temperature Range	Ambient to 50°C (120°F)
Service Temperature Range	-60°C to 315°C (-76°F to 600°F); Intermittently up to 343°C (650°F)
Drying Time	
Skin-Over Time	10-20 minutes
Cure Time	24 hours

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Full Physical Characteristics	7 days
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7. DOCUMENTATION

Vendor shall submit the OEM product specification / datasheet for evaluation of the offer. Vendor to submit compliance certificate along with the material.

8. Test Certificates

The supplier shall submit 3 copies of the relevant test certificates.

9. Packing

All the materials shall be packed as per BHEL specification GT14024. The shipping containers are expected to be put in open environment at site before taken for erection. Packing to be done accordingly to avoid any damage / malfunctioning of the material at site. All the materials shall be wrapped in 3-layer wrapping and shall be packed in closed packing cases as specified in BHEL specification GT14024 clause 2.0(7) & 2.0(32).

10. Marking

Each of the shipping containers shall be identified with the details listed below.

- a) "Gas Turbine Items – Foundation insulation"
- b) Work Order No:
- c) BHEL Purchase Order No:
- d) Package "___" of "___"
- e) Description:
- f) Gross Weight:
- g) Packing Dimension (LxBxH):
- h) Upright position marking

Each shipping container shall have two packing lists – one inside the container and second outside the container.

11. Guarantee Certificate

Guarantee certificates must be provided for the items.

VARIANT TABLE

VAR NO	DESCRIPTION	MATERIAL CODE	REMARKS
01	FOAMGLAS ONE (600mm X 450mm X 100mm thk)	GT9854760014	100 mm thick slabs 600mmx450mm size
02	POWDER PC 85 (25 KG BAG)	GT9854760022	PC 85 Cell filler
03	FIBER GLASS CLOTH 0.178 MM (thk)	GT9854760030	FIBER GLASS CLOTH 7628
04	SILICONE CSL-503 SEALANT	GT9854760049	Hi-Temperature Silicone Form-in-place sealant/adhesive

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