

VENDOR'S NAME & ADDRESS:		MANUFACTURING QUALITY PLAN						MQP. NO.: SMQP/PI/082014					
		CUSTOMER: BHEL, HYDERABAD PROJECT: PRODUCT: PIPING INSULATION			BHEL PO No: PO DATE: BHEL SPEC: REV:			REV NO: 00		DATE: 13/08/14			
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SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	

SILICA AEROGEL BLANKET (TYPE 3)

1.0 RAW MATERIALS & BOUGHT OUT ITEMS													
1.1	RAW MATERIAL	COMPOSITION	MAJOR	CHEMICAL LAB ANALYSIS	AS PER VENDOR STANDARD	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MATERIAL TEST CERTIFICATE	√	2	--	1	
2.0 INPROCESS INSPECTION													
2.1	FINISHED BLANKET	DIMENSIONS	MAJOR	MEASUREMENT	ONE SAMPLE PER HOUR	VENDOR STANDARD	1500mm X 80m X 5mm & 1500mm X 47m X 10mm (± 0.5% on length & width)	MATERIAL TEST CERTIFICATE	√	2	--	1	
2.2		THICKNESS	MAJOR	MEASUREMENT	ONE SAMPLE PER HOUR	ASTM C 1728	5 & 10 mm (- 0 mm tolerance)	MATERIAL TEST CERTIFICATE	√	2	--	1	
2.3		DENSITY	MAJOR	MEASUREMENT	ONE SAMPLE PER HOUR	ASTM C 1728	176 Kg/m ³ (- 0 / +5% Tolerance)	MATERIAL TEST CERTIFICATE	√	2	--	1	
3.0 FINAL INSPECTION & TESTING													
3.1	BLANKET	DIMENSIONS	MAJOR	MEASUREMENT	10 SAMPLES PER DAY	VENDOR STANDARD	1500mm X 80m X 5mm & 1500mm X 47m X 10mm (± 0.5% on length & width)	MATERIAL TEST CERTIFICATE	√	2	1	--	REFER NOTE - 1

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3.2		BULK DENSITY	MAJOR	MEASUREMENT	10 SAMPLES PER DAY	ASTM C 1728	176 Kg/m ³ (-0 / +5% Tolerance)	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.3		THICKNESS	MAJOR	MEASUREMENT	10 SAMPLES PER DAY	ASTM C 1728	5 & 10 mm (-0 mm tolerance)	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.4		SHOT CONTENT	ROUTINE	LAB TEST	10 SAMPLES PER DAY	VENDOR STANDARD	250 Microns: 10% Max. 500 Microns: 5% Max.	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.5		pH CONTENT	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	VENDOR STANDARD	7 TO 8	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.6		CHLORIDE CONTENT	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	VENDOR STANDARD	14 mg/kg max.	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.7		COMPRESSION RESISTANCE @ 10% DEFORMATION	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	ASTM C 1728	Minimum 3 psi	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.8		RESISTANCE TO VIBRATION	TYPE TEST	LAB TEST	1 TEST PER 25MT PRODUCTION	BS 2972, 16 hrs test	1% Max.	MATERIAL TEST CERTIFICATE	√	2	1	--	NO EVIDENCE OF BREAKDO

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		<p>BHEL QA SIGNATURE & STAMP</p>	<p>--NA--</p> <p>CUSTOMER'S SIGNATURE & STAMP (IF APPLICABLE)</p>

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3.9		RESISTANCE TO JOLTING	TYPE TEST	LAB TEST	1 TEST PER 25MT PRODUCTION	BS 2972, 16 hrs test	3% Max.	MATERIAL TEST CERTIFICATE	√	2	1	--	WN / LAMINATION ALLOWED
3.10		TEST FOR NON COMBUSTIBILITY	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	ISO 1182	0% of mass loss	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.11		WATER VAPOUR ABSORPTION	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	ASTM C 1728	2% max by weight	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.12		BINDER CONTENT	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	Vendor Standard	Minimum 2-2.5%	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.13		SULPHUR CONTENT	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	Vendor Standard	0.2% Max.	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.14 (a)		HEAT RESISTANCE AT 650°C	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	ASTM C 1728	ASTM C 1728 Clause 7.1	MATERIAL TEST CERTIFICATE	√	2	1	--	
3.14 (b)		CLASSIFICATION TEMP. AT 650°C	TYPE TEST	LAB TEST	ONE SAMPLE PER ORDER	AGI Q132 / Equivalent standard	Change in thickness less than 5% when subjected to load of 0.5 KN/m ² at 650°C	Third Party TC	√	2	--	1	

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3.15		CORROSION TEST & CHEMICAL ANALYSIS FOR USE OVER AUSTENITIC STEEL	TYPE TEST	LAB TEST	ONE SAMPLE PER ORDER	ASTM C 795 ASTM C 871	Acceptable values as per ASTM C 795 & stress corrosion cracking as per ASTM C 871	Third Party TC	√	2	--	1	
3.16		THERMAL CONDUCTIVITY	TYPE TEST	LAB TEST	ONE SAMPLE PER ORDER	ASTM C 1728	At 371°C mean temperature max. 0.043 W/m ⁰ K	Third Party TC	√	2	--	1	REFER NOTE - 2
3.17		WATER ABSORPTION (WATER REPELLENCY)	ROUTINE	LAB TEST	ONE SAMPLE PER DAY	ASTM C 1728	Max. 2% by weight	MATERIAL TEST CERTIFICATE	√	2	1	--	
4.0	PRESERVATION & PACKING												
4.1	BAGS	PROTECTION	MAJOR	LAB TEST	5 samples per 500 bags	As per vendor standard	As per vendor standard	MATERIAL TEST CERTIFICATE	√	2	--	1	REFER NOTE - 3
4.2	MARKING	IDENTIFICATION	MAJOR	VISUAL	5 samples every 100 bags	As per vendor standard	As per vendor standard	MATERIAL TEST CERTIFICATE	√	2	1	--	

NOTE:-

- 1. SAMPLES SHALL BE TAKEN 1-2 hrs. INTERVAL FROM VARIOUS BLANKET ROLLS SUBJECT OT MAX. 10 SAMPLES PER DAY. PRODUCTION OFFERED FOR ONE TIME WILL BE CONSIDERED AS ONE LOT. FOR LONG DURATION TEST – 4 DAYS TESTING – WILL BE CONSIDERED AS ONE BATCH. MATERIAL OF LOTS WILL BE CLEARED FOR DISPATCH SUBJECT TO PENDING BATCH RESULT.**

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2. TYPE TEST SHALL BE DONE FOR SAME GROUP AT ONE MEAN TEMPERATURE & K – VALUE TO BE TESTED AT PIBCO, R&D (NEW DELHI).
3. THE BLANKET ROLL SHALL BE PACKED IN POLYTHENE LAMINATED HDPE BAGS. BLANKET ROLL OF ONE THICKNESS ONLY SHALL BE PACKED IN ONE BAG.
4. This standard MQP should be read along with specification (latest revision), approved drawings & approved data sheet.
5. Drawing/data sheet shall prevail over quality plan for contradiction if any between quality plan and drawing/specification.
6. All test certificates/reports reviewed and certified by TPI/BHEL shall be submitted to BHEL as documentation package.
7. All type test reports submitted shall not be older than 5 yrs from the date of purchase order.
8. Any project/customer specific requirements which shall be notified have to be fulfilled by the vendor at the time of execution of order.

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