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			PRODUCT STANDARD SWITCHGEAR ENGINEERING DIVISION		SG 12719 REV.00																																																																										
					PAGE 1 OF 2																																																																										
<u>GLASS FIBRE-REINFORCED POLYAMIDE MOULDINGS TYPE PA 66 GF 30</u>																																																																															
<u>1.0 INTRODUCTION</u> Glass fibre re-inforced polyamide mouldings are used as mechanical / electrical parts such as centering rings of vacuum interrupters in the assembly of vacuum circuit breakers.																																																																															
<u>2.0 MATERIAL PROPERTIES</u> The basic type of this thermoplastic material is Polyamide PA 66 reinforced with a mean glass fibre content of 30 % by weight and is designated by : PA 66 GF 30 generally conforming to guideline VDI/VDE 2479 sheet 2. The reference values of the main properties of this material are :																																																																															
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		FLAMMABILITY Group as per VDE 0304 VDE0304 II C Part 3/5.10																									
		Trade names of equivalent materials (non-reinforced) of this category are <table border="0"> <thead> <tr> <th>Trade name</th> <th>Manufacturer</th> </tr> </thead> <tbody> <tr> <td>AKULON 'R600'</td> <td>M/S AKZO, NETHERLANDS</td> </tr> <tr> <td>DURETHAN 'A'</td> <td>M/S BAYER, GERMANY</td> </tr> <tr> <td>MARANYL 'A'</td> <td>M/S ICI, UK</td> </tr> <tr> <td>SNIAVITRID</td> <td>M/S SNIA, ITALY</td> </tr> <tr> <td>TECHNYL 'A'</td> <td>M/S RHONE, FRANCE</td> </tr> <tr> <td>ULTRAMID 'A'</td> <td>M/S BASF, GERMANY</td> </tr> <tr> <td>ZYTEL 'E'</td> <td>M/S DU-PONT, USA</td> </tr> <tr> <td>NAILONPLAST 'A'</td> <td>M/S MONTEFIBRE, SNIA, ITALY</td> </tr> <tr> <td>CELANESE NYLON</td> <td>M/S</td> </tr> <tr> <td>CATALIN</td> <td>M/S CATALIN, USA</td> </tr> <tr> <td>TORAY</td> <td>M/S TOYO RAYON, JAPAN</td> </tr> </tbody> </table>			Trade name	Manufacturer	AKULON 'R600'	M/S AKZO, NETHERLANDS	DURETHAN 'A'	M/S BAYER, GERMANY	MARANYL 'A'	M/S ICI, UK	SNIAVITRID	M/S SNIA, ITALY	TECHNYL 'A'	M/S RHONE, FRANCE	ULTRAMID 'A'	M/S BASF, GERMANY	ZYTEL 'E'	M/S DU-PONT, USA	NAILONPLAST 'A'	M/S MONTEFIBRE, SNIA, ITALY	CELANESE NYLON	M/S	CATALIN	M/S CATALIN, USA	TORAY
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	3.0 COLOUR OF MOULDINGS Black unless otherwise specified on drawing																										
		4.0 DIMENSIONS AND FINISH Dimensional and finish requirements of the mouldings shall be as per the item drg.																									
		5.0 SUPPLIER APPROVAL PROCEDURE : Supplier shall send few samples of the mouldings ordered before bulk supply for dimension verification and assembly trials. Also Test certificate / Guarantee certificate / Proof of using equivalent grade material shall be submitted along-with samples for approval of materials used during mfg. After the sample approval only the bulk supplies shall be made.																									
		6.0 ACCEPTANCE CRITERION SUPPLIER'S TEST CERTIFICATE : Supplier shall send a Test Certificate of material properties / Guarantee Certificate for use of approved material grade. CHECKS AT BHEL : Tests for density, Glass content, water absorption and Hardness shall be conducted on the component and the values shall be as per para 2.																									
		7.0 IDENTIFICATION OF MARKINGS Supplier's name/logo, mfg batch no. shall be etched / marked on the flat face of the moulding surface.																									
		8.0 PACKING : The mouldings shall be packed suitably to protect against damages during transit and atmospheric effects.																									



QUALITY ASSURANCE PLAN

QA PLAN FOR - INSULATION CAP (INJECTION MOULDED)			P.I. NO.-			SHEET- 1 OF 1				
QA PLAN NO.- QSP/HG/565			REV.-00			DT.- 18-03-2019				
SL. NO.	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	CLASS	TYPE	QUANTUM OF CHECK	REF. DOC.	RECORD FORMAT	INSPECTION		REMARKS
								P	W	
1.0	Inspection at supplier's works									
1.1	Material Identification.	Identification w. r. t. lot no./batch no.	Maj	Review	100%	SG12719	Supp. QC record	1	-	Record Reviewed By BHEL/TPIA
1.2	Insulation cap	(a) Visual & dimensional checks .	Maj	V & D	Sample	BHEL Drawing	Supp. QC record	1	2	Witness on 5 % of Random selected samples.
		(b) Specific Gravity Test	Maj	Physical	Sample	SG12719	Supp. QC record	1	2	
		(c) HV Test	Maj	Elect	Sample	BHEL Drawing	Supp. TC	1	2	
		(d) Finish Color	Maj	Visual	Sample	BHEL Drawing	Supp. QC record	1	2	
		(e) Marking, Packing & Dispatch	Maj	Visual	100%	BHEL drawing	Supp. QC record	1	-	
Certification - Supplier shall furnish number of copies of test certificates as called in P.O. duly countersigned by BHEL or its authorised representative incorporating the following before dispatch:- (a) Lot / Batch identification. (b) Test results for physical, chemical, electrical, proof test. (c) Dimensional record.										
Abbreviations- P: Perform, W: Witness, R: Review. 1- Supplier, 2. BHEL/TPIA, Maj- Major, V -Visual, D- Dimension, Crl - Critical, TC- Test Certificate, Supp- Supplier, Mech- Mechanical, Elect- Electrical, QC- Quality Control.										
 HGE (M. GOPAL) A (A. DIXIT) NARENDRA (NARENDRA AGRAWAL) QA-HYDRO आधार शर्मा / AADHAR SHARMA वरि. अभियंता (क्यू.डब्ल्यू.टी.एम.) गुणता नियंत्रण-जल टरबाइन बी.एच.ई.एल.भारत/ BHEL for (QWT) Control-WTM GOPAL										

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HYDRO GENERATOR ENGINEERING DIVISION

DOCUMENT NO: HGG- 1904, Rev 01

Mandatory Technical Pre-Qualification Requirements (T-PQR)

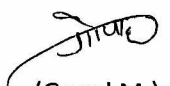
Mandatory Pre-Qualification Requirements for Injection Moulded Insulation Caps for hydro-generators/ motors.

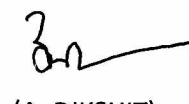
S. No.	Description of pre-qualification requirement	Vendor Response	
		Complied/Not complied	Supporting Documents required to accept compliance
1	Only Manufacturers can quote.		
2	Supplier Should have at least 1 purchase orders for supply of similar injection Moulded Components in last 5 years.		Copy of PO/invoice.
3	Vendor to have Manufacturing facility for Injection Molding with Capacity to produce minimum 100 Caps per day.		Self-Confirmation.
4	After Placement of PO, L1 Supplier to submit 10 Nos. free samples of Insulation Cap for BHEL approval before mass manufacturing.		Confirmation.

Note:

1. Compliance to above Pre-qualification requirements are mandatory. In absence of compliance of above requirements vendor PQ application is liable to be rejected.
2. BHEL has right to verify information/ confirmation furnished, by asking additional documents proofs etc


(Anil Pure) 11/11/2019
MGR./HGE


(Gopal M.)
DGM/HGE


(A. DIKSHIT)
AGM/HGE