

MATERIAL DATA SHEET		MDS P22	Rev. 3			
TYPE OF MATERIAL: PTFE (Poly-tetra-fluoro-ethylene)						
PRODUCT		Lip-seals, back-up rings and seat inserts.	TEMPERATURE RANGE		-150 °C to 200 °C	
1. SCOPE		This MDS specifies the technical requirements for the PTFE material.				
2. PURCHASE INFORMATION		The purchase order shall contain the following information: Product type, size, grade designation and/or referenced drawing.				
3. CHEMICAL COMPOSITION		Carbon and fluorine, polymeric di-fluoromethane with necessary fillers, stabilisers and process aids. Also with graphite, glass or carbon fibre fillers. The lip-seal must be energised internally by a metallic spring (UNS R30003) or similar.				
4. QUALIFICATION TEST REQUIREMENTS		The material shall satisfy the following minimum requirements. The qualification shall be repeated if there are changes in the production route, manufacturing procedures, specified composition or properties of the product which exceeds the limits defined from qualification testing:				
		Mechanical properties	Test standard	Virgin	25 % Glass	25 % Graphite
		- Tensile strength	ASTM D 638	> 25 MPa	> 15 MPa	> 15 MPa
		- Hardness	ASTM D 785	50-60 Shore D	50-60 Shore D	60-70 Shore D
		- Compressive strength, 1%	ASTM D 695	> 4 MPa	> 6 MPa	> 6 MPa
		- Compressive modulus	ASTM D 695	> 400 MPa	> 600 MPa	> 600 MPa
		- HDT @ 1,81 MPa	ASTM D 648	54 °C	110 °C	95 °C
		- Impact strength (notched)	ASTM D 256	> 145 J/m	> 130 J/m	> 140 J/m
		- Ultimate elongation	ASTM D 638	> 220 %	> 180 %	> 75 %
		Physical properties				
		- Specific gravity	ASTM D 792	2.0-2.2 g/cm³	2.0-2.3 g/cm3	1.9-2.1 g/cm3
		- Melting point	ASTM D 3418	325 °C	325 °C	325 °C
		- Water absorption (24 hrs)	ASTM D 570	0.01 %	0.02 %	0.01 %
		Properties at elevated T				
		The following properties shall be documented at 150 °C and 200 °C:				
		- Tensile strength	ASTM D 638	Manufacturer requirements	Manufacturer requirements	Manufacturer requirements
		- Ultimate elongation	ASTM D 638	Manufacturer requirements	Manufacturer requirements	Manufacturer requirements
5. DIMENSIONS		According to manufacturers written specification.				
6. PRODUCTION TEST REQUIREMENTS		The production testing shall be performed according to the requirements in ISO 10423, quality level PSL 3, and satisfy requirement for hardness as stated above and for the other parameters as stated in ISO 10423.				
7. MARKING & PACKAGING		Components shall be supplied in suitable packaging as to protect the items from physical damage prior to installation. Markings on the packaging shall clearly indicate material batch number, and such markings shall ensure traceability through the manufacturers' QC system to raw materials, formulation and manufacturing details.				
8. CERTIFICATION		The material manufacturer shall have a quality system certified in accordance with ISO 9001 and the system shall have undergone a specific assessment for the relevant materials. Inspection certificate shall be to the requirements in ISO 10423, quality level PSL 3.				