

Table 1: Temperature Limits for **Liquiflo Centrifugal Pumps**

ATEX Temperature Class	Maximum Surface Temperature	Maximum Product Temperature	Centrifugal Pump Series (includes all models)
T2	300°C (572°F)	260°C (500°F)	Centry® Series *
T3	200°C (392°F)	177°C (350°F)	Endura® MC & AB Series (Normal Temperature)
T4	135°C (275°F)	--	--
T5	100°C (212°F)	--	--
T6	85°C (185°F)	37.8°C (100°F)	Endura® MC-LT Series (Low Temperature)

* Centry Sealed models operating at temperatures over 40°C (104°F) require long-coupled configuration with the Power Frame ancillary device to isolate the pump shaft from the motor shaft.

Note: For pumps with heating jackets, the temperature of the heat transfer fluid must not exceed the Maximum Product Temperature.

Table 2: Temperature Limits for **Bearings**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Silicon Carbide	260°C (500°F)	271°C (520°F)	T2
Carbon	260°C (500°F)	271°C (520°F)	T2
G. F. Teflon®	82°C (180°F)	93°C (200°F)	T5

Table 3: Temperature Limits for **Thrust Washers**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Silicon Carbide	260°C (500°F)	271°C (520°F)	T2
Carbon	260°C (500°F)	271°C (520°F)	T2
G. F. Teflon®	127°C (260°F)	138°C (280°F)	T3

Table 4: Temperature Limits for **Shafts**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Tungsten Carbide Coated	260°C (500°F)	271°C (520°F)	T2
Chrome Oxide Coated	260°C (500°F)	271°C (520°F)	T2
Silicon Carbide	260°C (500°F)	271°C (520°F)	T2

Table 5: Temperature Limits for **O-Rings & Gaskets**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Graphoil	454°C (850°F)	271°C (520°F)	T2
Kalrez® (FFKM)	316°C (600°F)	271°C (520°F)	T2
Teflon® (PTFE)	260°C (500°F)	271°C (520°F)	T2
Viton® (FKM)	204°C (400°F)	216°C (420°F)	T2
EPDM	149°C (300°F)	160°C (320°F)	T3

Table 6: Temperature Limits for **Mechanical Seals (Face-Seal-Wedge)**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Carbon / SiC / Graphoil	260°C (500°F)	271°C (520°F)	T2
SiC / SiC / Graphoil	260°C (500°F)	271°C (520°F)	T2
Carbon / SiC / FKM*	204°C (400°F)	216°C (420°F)	T2
Carbon / SiC / PTFE	177°C (350°F)	188°C (370°F)	T3
SiC / SiC / PTFE	177°C (350°F)	188°C (370°F)	T3
PTFE / SiC / PTFE	82°C (180°F)	93°C (200°F)	T5

* Viton flexible bellows of Type 21 seal.

Table 7: Temperature Limits for **Packing Rings**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Graphoil	260°C (500°F)	271°C (520°F)	T2
Braided Teflon®	177°C (350°F)	188°C (370°F)	T3

Table 8: Temperature Limits for **Bearing Pins**

Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Metal	260°C (500°F)	271°C (520°F)	T2
Teflon® (PTFE)	149°C (300°F)	160°C (320°F)	T3

Table 9: Temperature Limits for **Magnetic Couplings**

Magnet Material	Material Temperature Limit	Surface Temperature Limit	ATEX Temperature Class
Samarium Cobalt (SmCo)	260°C (500°F)	271°C (520°F)	T2
Ceramic (Ferrite)	249°C (480°F)	260°C (500°F)	T2
Neodymium Iron Boron (NdFeB)	121°C (250°F)	132°C (270°F)	T4

Table 10: Material Descriptions for **Nonmetal Components**

Material	Composition	Component(s)
G. F. Teflon®	PTFE Plastic, 25% Glass-Filled	Bearing & Thrust Washer
Teflon® (PTFE)	Poly-Tetra-Fluoro-Ethylene (Fluoropolymer) Plastic, 100%; FDA Grade	Seal Face, Seal Wedge, O-Ring & Bearing Pins
Braided Teflon®	PTFE with lubricant	Packing Ring
Graphoil	Graphite Flake, 97-98%, with oxidation/corrosion inhibitors	Packing Ring, Seal Wedge & Gasket
Carbon	Graphite, 100% (Acid Grade); Carbon 60 is Liquiflo designation	Bearing, Thrust Washer & Seal Face
Silicon Carbide	α -SiC, 100% (Self-Sintered)	Shaft, Bearing, Thrust Washer, Seal Face & Seal Seat
Tungsten Carbide	73% WC/20% Chromium Carbide (Cr ₃ C ₂)/7% Nickel	Coating for Metal Shaft
Chrome Oxide	99.88% Cr ₂ O ₃ /0.01% free Cr/0.11% other Oxides	
Kalrez® (FFKM)	Perfluorinated Elastomer; 4079 Grade or equivalent is standard; 1050LF Grade or equivalent is optional	O-Ring
Viton® (FKM)	Fluorocarbon Elastomer; Type A is Standard Grade	
EPDM	Ethylene-Propylene-Diene Monomer (Elastomer); Sulfur-free	