

MATERIALS

Usually composites based on polymers, carbons, and metals.

The properties of typical dry rubbing bearing materials

Type	Examples	Max. static load		Max. service temp. °C	Coeff. Exp. 10 ⁶ /°C	Heat conductivity		Special features
		MN/m ²	10 ³ lbf/in ²			W/m°C	Btu/ft h °F	
Thermoplastics	Nylon, acetal, UHMWPE	10	1.5	100	100	0.24	0.14	Inexpensive
Thermoplastics + fillers	Above + MoS ₂ , PTFE, glass, graphite, etc.	15-20	2-3	150	60-100	0.24	0.14	Solid lubricants reduce friction
PTFE + fillers	Glass, bronze, mica, carbon, metals	2-7	0.3-1	250	60-100	0.25-0.5	0.15-0.3	Very low friction
High temperature polymers (+fillers)	Polyimides polyamide-imide PEEK	30-80	4.5-12	250	20-50	0.3-0.7	0.2-0.4	Relatively expensive
Thermosets + fillers	Phenolics, epoxies + asbestos, textiles, PTFE	30-50	4.5-7.5	175	10-80	0.4	0.25	Reinforcing fibres improve strength
Carbon-graphite	Varying graphite content ; may contain resin	1-3	0.15-0.45	500	1.5-4	10-50	6-30	Chemically inert
Carbon-metal	With Cu, Ag, Sb, Sn, Pb	3-5	0.45-0.75	350	4-5	15-30	9-18	Strength increased
Metal-solid lubricant	Bronze-graphite -MoS ₂ ; Ag-PTFE	30-70	4.5-10	250-500	10-20	50-100	30-60	High temperature capability
Special non-machinable products	Porous bronze/PTFE/Pb	350	50	275	20	42	24	Need to be considered at the design stage
	PTFE/glass weave + resin	700	100	250	12	0.24	0.14	
	Thermoset + PTFE surface	50	7.5	150	10	0.3	0.2	
	Metal + filled PTFE liner	7	1	275	100	0.3	0.2	

Notes:

All values care approximate ; properties of many materials are anisotropic.

Most materials are available in various forms : rod, sheet, tube, etc.

For more detailed information, consult the supplier, or ESDU Data Item 87007.