Mechanical Carbon

Typical properties by Grades

Composition	Grade	Bulk Density	Hardness	Flexural Strength	Compressive Strength	Young's Modulus	Coefficient of Thermal Expansion	Thermal Conductivity	Thermal Durability
		Mg/m^3	HSD	MPa	MPa	GPa	10^{-6}/℃	W/(m·K)	℃
Graphite	IG-11	1.77	51	39	78	10	4.5 a)	120	450
	ISO-68	1.82	80	76	172	13	5.6 a)	70	450
Carbon Graphite	KC-36	1.72	65	48	135	15	3.5	15	350
	KC-57◆	1.78	105	70	270	20	4.0	5	350
	KC-67◆	1.77	72	60	185	20	3.5	10	350
	KC-83K	1.74	80	55	160	15	4.0	10	350
	KP-001	1.72	90	70	240	17	5.0	4	350
	KP-002	1.73	60	58	170	17	3.5	7	350
Resin-Impregnated Carbon	KC-360	1.78	75	58	165	17	4.0	15	300
	KC-570	1.85	110	84	370	22	5.0	5	300
	KC-573◆	1.85	110	85	370	22	5.5	5	250
	KC-670	1.87	87	78	240	22	5.0	10	300
	KC-673◆	1.87	87	78	245	22	5.5	10	250
	KC-830K	1.84	90	70	205	17	5.0	10	250
	IKC-433	1.97	70	70	140	20	6.0	139	200
Composition	Grade	Bulk Density	Hardness	Flexural Strength	Compressive Strength	Young's Modulus	Coefficient of Thermal Expansion	Thermal Conductivity	Thermal Durability
		Mg/m^3	HSD	MPa	MPa	GPa	10^{-6}/℃	W/(m·K)	℃
Metal-Impregnated Carbon	KC-5709	2.25	110	100	430	27	5.0	5	500
	KC-6709	2.30	88	90	300	27	5.0	13	500
	IKC-6809	2.67	88	105	300	21	6.0	80	500
	PC-78A	2.90	95	110	410	27	6.5	13	350
SiC/C Composites	TS-002	2.31/2.75	63/70	113/78	300/205	18/16	4.5/5.2	80/80	500
	TS-003	2.28/1.82	83/80	116/76	410/172	30/13	5.4/5.6	70/70	400
	TS-004	2.28/1.92	83/86	116/88	410/235	30/15	5.4/7.5	70/60	200
	TS-005	2.28/2.67	83/88	116/105	410/300	30/21	5.4/6.0	70/70	500
Inorganic Compound -Impregnated Carbon	IG-11R1	1.85	55	46	92	11	4.5 a)	120	500
	IG-43R1	1.88	57	59	108	12	4.8 a)	140	500
	ISO-68R1	1.87	84	83	190	15	5.6 a)	70	500
Impermeable Carbon Graphite	TUG-105	1.67	90	60	250	20	4.0	-	350
	TUG-110	1.78	105	90	290	20	4.0	-	350
	TUG-120	1.68	95	70	245	20	4.0	-	350
	TUG-308	1.87	90	65	215	23	3.5	-	350
	TUG-309	1.85	80	55	185	20	3.5	-	350
	TUG-3095	1.81	75	50	170	20	3.5	-	350
	TUG-505	1.89	80	68	185	20	3.0	-	350
Resin-Bonded Carbon	W-1500	1.77	70	75	175	15	23.0 b)	-	150
	W-3500	1.63	85	90	250	12	30.0 b)	-	200
	LS	1.77	60	70	100	15	15.0 b)	-	150
	NLA	1.70	75	85	175	15	23.0 b)	-	150
	MR-10	1.43	78	100	230	10	35.0 b)	-	220
Metal-Bonded Carbon	GM-1	4.60	18	25	55	-	12.0	-	200
	GM-5	6.20	18	205	350	-	12.0	-	400
Composition	Grade	Mg/m^3	HSD	MPa	MPa	GPa	10^{-6}/℃	W/(m·K)	℃
		Bulk Density	Hardness	Flexural Strength	Compressive Strength	Young's Modulus	Coefficient of Thermal Expansion	Thermal Conductivity	Thermal Durability

※ The figures above are typical values, and are not guaranteed.

※ SiC/C composite values show both of the "SiC/C composite layer" and "substrate(+impregnation)".

※ SiC/C composite thermal durability shows that of the "substrate(+impregnation)".

※ Thermal durability varies with usage conditions. Values provided for reference purposes only.

※ Measurement temperature range for the coefficient of thermal expansion is :

a) 350~450℃ b) 50~150℃ and others: 100~200℃

※ Unit conversion: MPa=kgf/cm2 ×0.098、 GPa=kgf/mm2 ×0.0098、 W/(m·K)=kcal/h·m · ℃ ×1.16

◆Grades are considered Generally Recognized as Safe by the Food and Drug Administration(FDA).

Product selection table by usage

Composition	Grade	Bearings										Seal Rings																Vanes		Slider			Special Applications	
		Non-Lubricated					Lubricated					Mechanical Seal					Joint Seal					Compressors			Shaft Seals		Valve sheet	Non-lubricated	Lubricated	Trolley wheels and shoes	For trains	For brakes	Jigs for glass production	Structural materials for high temperatures
		For high temperatures	For high loads	For low loads	For high load mass production	For low load mass production	For high loads	For low loads	For high load mass production	For low load mass production	For Slurry resistance	For high loads	For low loads	For high load mass production	For low load mass production	For blister resistance	For high loads	For low loads	For high load mass production	For low load mass production	For large sizes	For air	For special gas	For dry gas	For steam	For hydropower								
Graphite	IG-11	○																					◎		◎					○				
	ISO-68	○																																○
Carbon Graphite	KC-36			◎																								◎						
	KC-57						○	◎																						◎				
	KC-67			○				○																										
	KC-83K			○				○																										
	KP-001								◎																									
	KP-002									◎																			○					
Resin-Impregnated carbon	KC-360		○	◎																		◎			○			◎						
	KC-570、KC-573						◎					◎					○				○													
	KC-670、KC-673							◎					◎					◎																
	KC-830K							◎					○					◎			◎	○				○		○	○					
Metal-Impregnated carbon	KC-5709						◎				○	◎				○	◎									◎								
	KC-6709						○	◎					○				○										○							
	IKC- 6809						○																				◎		○					
	PC-78A																													◎	◎			
SiC/C Composites	TS-002						◎				◎	◎				◎																		
	TS-003						◎				◎																							
	TS-004											◎				◎																		
	TS-005						◎				◎	◎				◎																		
Composition	Grade	Bearings										Seal Rings																Vanes		Slider			Special Applications	
		Non-Lubricated					Lubricated					Mechanical Seal					Joint Seal					Compressors			Shaft Seals		Valve sheet	Non-lubricated	Lubricated	Trolley wheels and shoes	For trains	For brakes	Jigs for glass production	Structural materials for high temperatures
		For high temperatures	For high loads	For low loads	For high load mass production	For low load mass production	For high loads	For low loads	For high load mass production	For low load mass production	For Slurry resistance	For high loads	For low loads	For high load mass production	For low load mass production	For blister resistance	For high loads	For low loads	For high load mass production	For low load mass production	For large sizes	For air	For special gas	For dry gas	For steam	For hydropower								
Inorganic Compound-Impregnated	IG-11R1	○																															◎	
	ISO-43R1	◎																																
	ISO-68R1	◎																										◎					◎	◎
Impermeable Carbon Graphite	TUG-105								◎																									
	TUG-110													◎		○																		
	TUG-120								◎										○															
	TUG-308													◎		○																		
	TUG-309								○					○																				
	TUG-3095				○														○															
	TUG-505													○																				
Resin-Bonded Carbon	W-1500					○				○					○					○									○					
	W-3500					◎				◎					◎					◎														
	LS					○														○						◎								
	NLA									◎																								
	MR-10																					○		◎				○						
Metal-Bonded Carbon	GM-1																															◎		
	GM-5		◎																											◎		○		
Composition	Grade	For high temperatures	For high loads	For low loads	For high load mass production	For low load mass production	For high loads	For low loads	For high load mass production	For low load mass production	For Slurry resistance	For high loads	For low loads	For high load mass production	For low load mass production	For blister resistance	For high loads	For low loads	For high load mass production	For low load mass production	For large sizes	For air	For special gas	For dry gas	For steam	For hydropower	Valve sheet	Non-lubricated	Lubricated	Trolley wheels and shoes	For trains	For brakes	Jigs for glass production	Structural materials for high temperatures
		Non-Lubricated					Lubricated					Mechanical Seal					Joint Seal					Compressors			Shaft Seals									
		Bearings										Seal Rings																Vanes		Slider			Special Applications	

＊◎...Most appropriate ○...Appropriate

＊ A variety of stock sizes are available. Please contact our sales team for details.

＊ There are additional products for special applications that are not shown in the table.

Before actually using one of our products, please be sure to contact our sales department to consult on selecting the most appropriate grade.