

# SIGRAFINE®

## Materials for mechanical applications [imperial units]

### Material data of SIGRAFINE® die-molded carbon graphite

Typical properties	Units	EK20	EK2200 <sup>1)</sup>	EK2201 <sup>1)</sup>	EK2209	EK3205	EK24	EK2240 <sup>1)</sup>	EK2241 <sup>1)2)</sup>	EK2243 <sup>1)</sup>	EK3245
Impregnation			Resin	Resin		Antimony		Resin	Resin	Resin	Antimony
Density	g/cc	1.70	1.82	1.82	1.77	2.30	1.70	1.80	1.80	1.78	2.20
Flexural strength	psi	8000	11000	11000	9500	12500	8500	10000	10000	8500	11500
Compressive strength	psi	22500	29000	29000	27500	37500	26000	29000	29000	27500	36000
Young's modulus	psi x 10 <sup>6</sup>	3.2	3.4	3.4	3.7	4.4	2.6	2.8	2.8	2.6	3.2
Rockwell hardness	HR <sub>5/100</sub>	105	110	110	110	120	105	110	110	110	120
Thermal conductivity	Btu x hr <sup>-1</sup> x ft <sup>-1</sup> x °F <sup>-1</sup>	7	7.5	8	8.5	10.5	8	8.5	8.5	9	12
Thermal expansion	in/in/ °F x 10 <sup>-6</sup>	1.7	2.2	2.1	2.0	2.2	2.3	2.8	2.6	2.5	2.7
Open porosity	Vol. %	11.0	2.5	2.5	2.5	2.5	8.0	2.5	2.5	2.5	2.5
Temperature resistance in ox. atm.	°F	660	390	500	660	660	660	390	500	350	660
Temperature resistance in red. atm.	°F	2200	390	500	750	1000	2200	390	500	350	1000
Cylinder diameter max.	in	22 <sup>13</sup> / <sub>16</sub>	22 <sup>13</sup> / <sub>16</sub>	22 <sup>13</sup> / <sub>16</sub>	22 <sup>13</sup> / <sub>16</sub>	14 <sup>3</sup> / <sub>8</sub>	17 <sup>3</sup> / <sub>4</sub>	17 <sup>3</sup> / <sub>4</sub>	17 <sup>3</sup> / <sub>4</sub>	17 <sup>3</sup> / <sub>4</sub>	14 <sup>3</sup> / <sub>8</sub>
Cylinder height max.	in	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>
Square block X max.	in	24	12 <sup>15</sup> / <sub>16</sub>	12 <sup>15</sup> / <sub>16</sub>	12 <sup>15</sup> / <sub>16</sub>	12 <sup>15</sup> / <sub>16</sub>	24	12 <sup>15</sup> / <sub>16</sub>	12 <sup>15</sup> / <sub>16</sub>	12 <sup>15</sup> / <sub>16</sub>	12 <sup>15</sup> / <sub>16</sub>
Square block Y max.	in	12 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	12 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>
Square block Z max.	in	5 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>8</sub>
Material suitability f. spec. applications		●	●	●	●	●	●●●	●●●	●●●	●●●	●●●

### Material data of SIGRAFINE® graphite and carbon powder

Typical properties	Units	EG31	EG32	V2116	EG33	V1032	KG19	V1062
Bulk density	g/cc		0.37				0.5	
Top density	g/cc		0.63				0.90	
Real density	g/cc	1.98			2.07	2.16		2.00
Ash value [weight]	%	< 1.0	< 1.0	< 1.0	< 1.0			
Medium grain size d <sub>50</sub>	µin	630	1102	2244	669	394	748	630
Packing unit	kg	25	25			25	25	25
<b>Grain size distribution</b>								
< 4055 µin	%	100	99		99	100	100	100
< 2401 µin	%	100	87		94	100	95	96
< 1181 µin	%	76	53		76	90	67	71
< 295.3 µin	%	29	12		37	41	26	30
< 86.6 µin	%	13	1.5		17	14	8	10
< 43.3 µin	%	6	0.2		8	5	3	4
Material suitability f. spec. applications		●	●	●	●	●	●	●

<sup>1)</sup> Materials are certified for use in potable water and/or in foodstuff.

<sup>2)</sup> Materials are certified for use in oxygen atmosphere.

● Wet running ● Dry running ● Mixed running ● High loaded ● Fillers for compounds

## Material data of SIGRAFINE® carbon graphite PTS (high volume)

Typical properties	Units	EK2230 <sup>1)</sup>	EK2239	EK3235	EK25	EK2250	EK3255
Impregnation		Resin		Antimony		Resin	Antimony
Density	g/cc	1.85	1.80	2.47	1.69	1.80	2.15
Flexural strength	psi	8500	8000	9500	6500	7000	11000
Compressive strength	psi	23000	21500	30500	18000	23000	32000
Young's modulus	psi x 10 <sup>6</sup>	3.2	2.9	4.4	2.3	2.5	3.0
Rockwell hardness	HR <sub>5/100</sub>	110	105	105	100	110	120
Thermal conductivity	Btu x hr <sup>-1</sup> x ft <sup>-1</sup> x °F <sup>-1</sup>	8	9	12	5	6	7
Thermal expansion	in/in/ °F x 10 <sup>-6</sup>	3.6	2.5	2.8	2.5	2.8	2.9
Open porosity	Vol. %	2.5	2.5	2.5	7.0	2.5	2.5
Temperature resistance in ox. atm.	°F	390	660	660	660	390	660
Temperature resistance in red. atm.	°F	390	750	1000	1750	390	1000
Cylinder diameter max.	in	3 ½	3 ½	3 ½	3 ½	3 ½	3 ½
Cylinder height max.	in	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾
Square block X max.	in	4 ⅝	4 ⅝	4 ⅝			
Square block Y max.	in	4 ½	4 ½	4 ½			
Square block Z max.	in	1 ⅝	1 ⅝	1 ⅝			
Material suitability f. spec. applications		●	●	●	● ●	● ●	● ●

## Material data of SIGRAFINE® graphite and resin bonded graphite

Typical properties	Units	EK40 <sup>2)</sup>	EK200 <sup>1)</sup>	EK201 <sup>1)2)</sup>	EK203 <sup>1)</sup>	EK204	EK305 <sup>2)</sup>	V1626	EK60
Impregnation			Resin	Resin	Resin	Salt	Antimony	Salt	
Density	g/cc	1.70	1.82	1.82	1.80	1.78	2.55	1.85	1.73
Flexural strength	psi	5000	7000	7000	6000	6000	11500	8500	11500
Compressive strength	psi	14500	29500	29500	23000	20500	42000	21500	17500
Young's modulus	psi x 10 <sup>6</sup>	1.5	1.9	1.9	1.9	1.9	3.0	1.9	3.2
Rockwell hardness	HR <sub>5/100</sub>	95	115	115	115	105	115	90	80
Thermal conductivity	Btu x hr <sup>-1</sup> x ft <sup>-1</sup> x °F <sup>-1</sup>	14	15	15	15	16	19	46	3.5
Thermal expansion	in/in/ °F x 10 <sup>-6</sup>	2.5	3.7	3.4	3.1	2.6	3.3	2.2	6.1
Open porosity	Vol. %	14.0	2.5	2.5	2.5	12.0	2.5	10.0	No
Temperature resistance in ox. atm.	°F	930	390	500	350	1100	950	1100	350 <sup>3)</sup>
Temperature resistance in red. atm.	°F	4700	390	500	350	2200	1000	2200	350 <sup>3)</sup>
Cylinder diameter max.	in	8 ⅝	8 ⅝	8 ⅝	8 ⅝	8 ⅝	8 ⅝		
Cylinder height max.	in	10 ⅜	10 ⅜	10 ⅜	10 ⅜	10 ⅜	10 ⅜		
Square block X max.	in	12 ¼	12 ¼	12 ¼	12 ¼	12 ¼	12 ¼	12 1 ⅝	15 ⅝
Square block Y max.	in	5 ⅝	5 ⅝	5 ⅝	5 ⅝	5 ⅝	5 ⅝	9 ⅜	9 ¼
Square block Z max.	in	2 ⅞	2 ⅞	2 ⅞	2 ⅞	2 ⅞	2 ⅞	¼	⅝
Material suitability f. spec. applications		●	●	●	●	●	● ● ●	●	●

<sup>1)</sup> Materials are certified for use in potable water and/or in foodstuff.

<sup>2)</sup> Materials are certified for use in oxygen atmosphere.

<sup>3)</sup> Brief maximum application temperature. Physical values can change with lasting temperature load.

● Wet running ● Dry running ● Mixed running ● High loaded ● Vanes



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