

# RF MATERIALS

## Standard Grade Selection

PROPERTIES	ISO	Unit	Standard grades											Radome grades				
			PPE260	PPE300	PPE320	PPE350	PPE400	PPE440	PPE500	PPE650	PPE800	PPE950	PPE1200	RS260	RS260HI	RB260	RB260HI	
<b>Dielectric properties</b>																		
Dielectric constant	2.4 GHz		2.6	3.0	3.2	3.5	4.0	4.4	5.0	6.5	8.0	9.5	12.0	2.58	2.58	2.61	2.60	
	tolerance		±0.05	±0.1	±0.1	±0.1	±0.1	±0.15	±0.15	±0.2	±0.25	±0.35	±0.5	±0.05	±0.05	±0.05	±0.05	
Loss tangent	2.4 GHz		0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0010	0.0009	0.0010	0.0012	0.0011	
<b>Physical properties</b>																		
Specific gravity		g/cm <sup>3</sup>	1.07	1.18	1.21	1.27	1.43	1.50	1.62	1.86	2.10	2.20	2.40	1.06	1.06	1.08	1.04	
Melt flow index	300 °C, 5 kg	1130	15	15	16	14	14	14	15	11	10	4	2	21	21	16	7	
Flammability, 3 mm		UL94	V1	V1	V1	-	-	-	-	-	-	-	-	V1	V1	V1	V1	
Mold shrinkage		%	0.7	0.8	1.0	0.7	0.7	0.8	0.9	0.7	0.6	0.4	0.3	1.0	0.8	0.7	1.0	
Water absorption, max.		62	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	
<b>Mechanical properties</b>																		
Tensile strength		527	40	45	47	50	50	48	45	43	37	37	36	50	48	42	47	
Yield strength		527	75	65	55	62	59	62	63	47	40	-	-	63	61	68	54	
Elongation at break		527	25	30	30	25	16	16	18	8	6	3	3	16	17	20	22	
Elongation at yield		527	6	6	10	6	6	6	6	4	4	-	-	6	6	6	6	
Flexural modulus		178	2700	2400	2000	2600	2800	2700	2600	2600	2300	2600	2600	2200	2200	2200	2100	
<b>Impact properties</b>																		
Unnotched Izod	23 °C/73 °F	180	NB	NB	NB	NB	NB	NB	NB	NB	NB	50	28	24	NB	NB	NB	NB
	-20 °C/-4 °F	180	NB	NB	NB	NB	NB	NB	NB	NB	NB	50	47	25	NB	NB	NB	NB
Notched Izod	23 °C/73 °F	180	8	55	69	35	22	20	15	9	8	5	4	19	52	14	35	
	-20 °C/-4 °F	180	8	15	20	14	12	10	9	8	8	5	4	10	23	12	25	
<b>Thermal properties</b>																		
Deflection temperature	0.45 MPa	75	176	173	176	170	166	165	163	146	131	126	120	169	175	176	169	
	1.8 MPa	75	160	149	155	148	146	142	139	112	97	107	100	149	151	148	148	

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PROPERTIES				PEEK grades				Flex grades			H grades		FR grades			
				PEEK700	PEEK900	PEEK1000	PEEK1200	FLX400	FLX700	FLX1100	H1500HF	H2300HF	RS265FR	PPE400FR	PPE700FR	PPE1200FR
ISO	Unit															
<b>Dielectric properties</b>																
Dielectric constant	2.4 GHz tolerance			7.0 ±0.25	9.0 ±0.3	10 ±0.4	12.0 ±0.5	4.0 ±0.15	7.0 ±0.2	11 ±0.5	15.0 ±0.6	23.0 ±1.5	2.65 ±0.05	4.0 ±0.1	7.0 ±0.2	12.0 ±0.5
Loss tangent	2.4 GHz			0.0024	0.0025	0.0024	0.0027	0.0010	0.0009	0.0012	0.0010	0.0037	0.0032	0.0030	0.0039	0.0045
<b>Physical properties</b>																
Specific gravity			g/cm <sup>3</sup>	1.94	2.20	2.30	2.40	1.52	1.93	2.50	2.60	3.40	1.09	1.44	1.97	2.5
Melt flow index	300 °C, 5 kg	1130	g/10 min	15	13	10	6	11	2	0.3	5	8	25	17	12	5
Flammability, 3 mm		UL94		V0	V0	V0	V0	-	-	-	-	-	V0, 1.5mm	V0, 3mm	V0, 3mm	V1, 3mm
Mold shrinkage			%	0.5	0.5	0.5	0.5	-	1.5	1.1	0.6	0.3	0.9	0.7	0.6	0.5
Water absorption, max.		62	%	0.4	0.4	0.4	0.4	0.1	0.1	0.1	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
<b>Mechanical properties</b>																
Tensile strength		527	MPa	64	62	65	67	11	17	25	23	40	52	47	52	45
Yield strength		527	MPa	-	-	-	-	17	20	26	-	-	68	66	53	-
Elongation at break		527	%	2	2	2	2	63	14	4	3	1	17	14	6	1
Elongation at yield		527	%	-	-	-	-	4	7	4	-	-	6	6	5	-
Flexural modulus		178	MPa	6200	7600	9200	11000	1400	1600	2900	2100	5000	2600	3100	4500	9300
<b>Impact properties</b>																
Unnotched Izod	23 °C/73 °F	180	kJ/m <sup>2</sup>	28	25	18	15	NB	NB	NB	17	10	NB	NB	42	9
	-20 °C/-4 °F	180	kJ/m <sup>2</sup>	-	-	-	-	-	-	-	17	10	NB	-	-	-
Notched Izod	23 °C/73 °F	180	kJ/m <sup>2</sup>	6	4	4	4	59	23	13	5	4	11	14	6	3
	-20 °C/-4 °F	180	kJ/m <sup>2</sup>	-	-	-	-	-	-	-	5	4	10	-	-	-
<b>Thermal properties</b>																
Deflection temperature	0.45 MPa	75	°C	158	168	160	159	78	72	94	116	128	155	158	128	120
	1.8 MPa	75	°C	151	161	151	155	48	45	57	94	120	131	141	119	100



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