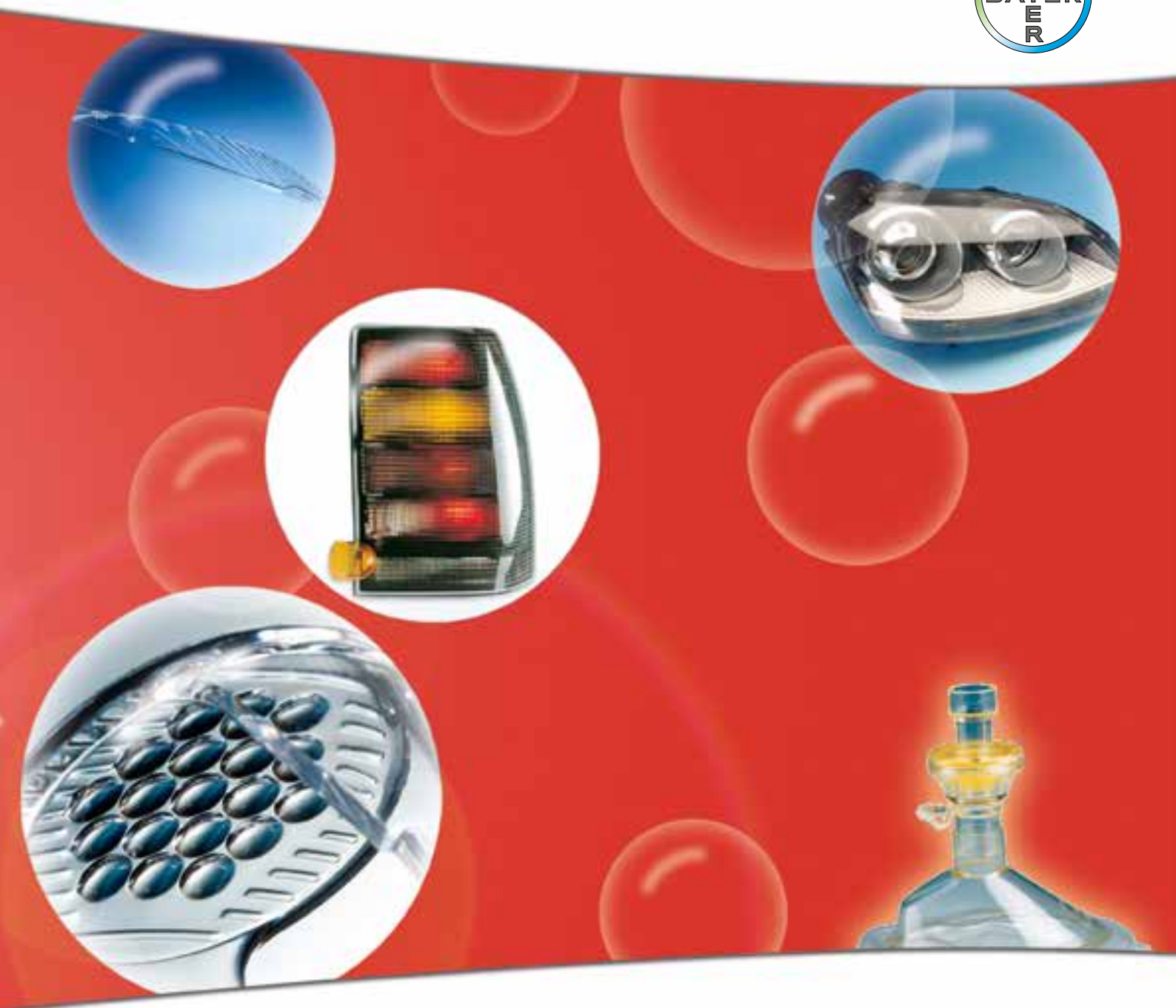




APEC®

Product Range
Typical values
Processing

Apec® Typical values

				Easy-flowing grades								Grades with elevated viscosity			Medical grades	Flame retardant grades		Reflective white
Properties	Test conditions	Units	Standards	1695	1697	1795	1797	1895	1897	2095	2097	1603	1703	1803	1745	FR1892	DP1-9354	RW1697
Rheological properties																		
• Melt volume-flow rate (MVR)	330 °C / 2.16 kg	cm³/10 min	ISO 1133	45	45	30	30	18	18	8	8	25	17	10	17	18	12	45
Melt mass-flow rate (MFR)	330 °C / 2.16 kg	g/10 min	ISO 1133	46	46	31	31	19	19	8	8	26	17	10	17	19	12	46
• Molding shrinkage, parallel	60 x 60 x 2 mm³; 500 bar holding pressure	%	ISO 2577	0.7	0.7	0.8	0.8	0.85	0.85	1.05	1.05	0.75	0.85	0.9	0.85	0.85	0.9	0.7
• Molding shrinkage, transverse	60 x 60 x 2 mm³; 500 bar holding pressure	%	ISO 2577	0.7	0.7	0.8	0.8	0.85	0.85	1.05	1.05	0.75	0.85	0.9	0.85	0.85	0.9	0.7
Mechanical properties (23 °C/50 %r. F.)																		
• Tensile modulus	1 mm/min	MPa	ISO 527-1, -2	2400	2400	2400	2400	2450	2450	2450	2450	2400	2400	2400	2400	2450	2400	2500
• Yield stress	50 mm/min	MPa	ISO 527-1, -2	68	68	71	71	74	74	76	76	68	70	72	70	74	72	68
• Yield strain	50 mm/min	%	ISO 527-1, -2	6.3	6.3	6.5	6.6	6.6	6.6	6.8	6.8	6.3	6.8	6.8	6.8	6.6	6.8	6.0
• Nominal tensile strain at break	50 mm/min	%	ISO 527-1, -2	> 50	> 50	> 50	> 50	> 50	> 50	50	> 50	> 50	> 50	> 50	> 50	> 50	50	50
• Charpy impact strength	23 °C	kJ/m²	ISO 179/1eU	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
• Charpy impact strength	-30 °C	kJ/m²	ISO 179/1eU	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
Charpy notched impact strength	23 °C, 3 mm	kJ/m²	acc. ISO 179/1eA	10	10	9	9	8	8	6	6	65	12	10	60	8	8	9
Charpy notched impact strength	-30 °C, 3 mm	kJ/m²	acc. ISO 179/1eA	10	10	9	9	8	8	6	6	12	12	10	12	8	8	9
• Puncture maximum force	23 °C	kN	ISO 6603-2	5.2	5.2	5.2	5.2	5.2	5.2	5.0	5.0	5.7	5.5	5.5	5.5	5.0	5.2	-
• Puncture maximum force	-30 °C	kN	ISO 6603-2	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	6.6	6.4	6.2	6.4	5.8	6.0	-
• Puncture energy	23 °C	J	ISO 6603-2	54	54	54	54	54	54	50	50	62	60	58	60	50	52	-
• Puncture energy	-30 °C	J	ISO 6603-2	57	57	57	57	57	57	48	48	70	68	65	68	52	56	-
Flexural modulus	2 mm/min	MPa	ISO 178	2400	2400	2400	2400	2450	2450	2450	2450	2400	2400	2400	2400	2450	2400	2500
Flexural strength	5 mm/min	MPa	ISO 178	100	100	105	105	108	108	110	110	103	105	108	105	108	108	110
Ball indentation hardness	-	N/mm²	ISO 2039-1	120	120	124	124	127	127	130	130	120	120	121	120	127	121	-
Thermal properties																		
• Deflection temperature under load, Af	1.80 MPa	°C	ISO 75-1, -2	138	137	146	147	158	157	173	172	137	149	159	148	158	159	137
• Deflection temperature under load, Bf	0.45 MPa	°C	ISO 75-1, -2	150	149	161	160	173	172	192	191	150	161	174	160	173	174	149
Vicat softening temperature	50 N, 120 K/h	°C	ISO 306	158	157	173	172	183	182	203	202	159	171	184	170	183	185	157
Relative temperature index (tensile strength)	1.5 mm; 3.0 mm	°C	UL 746B	140	140 ^{a)}	140	140 ^{a)}	150	150	150	150	140 ^{a)}	140	150	-	140 ^{a)}	140	-
Relative temperature index (tensile impact strength)	1.5 mm; 3.0 mm	°C	UL 746B	130	130 ^{a)}	130	130 ^{a)}	130	130	130	130	130 ^{a)}	130	130	-	130 ^{a)}	130	-
Relative temperature index (electric strength)	1.5 mm; 3.0 mm	°C	UL 746B	140	140 ^{a)}	140	140 ^{a)}	150	150	150	150	140 ^{a)}	140	150	-	140 ^{a)}	140	-
• Coefficient of linear thermal expansion, parallel	23 to 55 °C	10 ⁻⁴ /K	ASTM E 831	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
• Coefficient of linear thermal expansion, transverse	23 to 55 °C	10 ⁻⁴ /K	ASTM E 831	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Burning behavior UL 94	Thickness: 1.5 mm	Class	UL 94	HB	HB ^{a)}	HB	HB ^{a)}	HB	HB	HB	HB	HB ^{a)}	HB	HB	HB	V2	V0	V2 ^{a)}
Burning behavior UL 94	Thickness: 3.0 mm	Class	UL 94	HB	HB ^{a)}	HB	HB ^{a)}	HB	HB	HB	HB	HB ^{a)}	HB	HB	HB	V0	V0	HB ^{a)}
Burning behaviour FMVSS	Thickness: 1.0 mm	mm/min	ISO 3795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
• Oxygen index	Method A	%	ISO 4589	26	26	26	26	26	26	25	25	26	25	25	25	30	38	-
Glow wire temperature (GWI)	Thickness: 2.0 mm	°C	IEC 695-2-12	900	900	850	850	850	850	800	800	900	850	850	850	960	960	-
Electrical properties (23 °C/50 % r. F.)																		
• Relative permittivity	100 Hz	-	IEC 250	3	3	3	3	2.9	2.9	2.9	2.9	3	3	2.9	3	2.9	2.9	-
• Relative permittivity	1 MHz	-	IEC 250	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.9	2.9	2.8	2.9	2.8	2.8	-
• Dissipation factor	100 Hz	10 ⁻⁴	IEC 250	10	10	10	10	10	10	10	10	10	10	10	10	10	10	-
• Dissipation factor	1 MHz	10 ⁻⁴	IEC 250	90	90	90	90	90	90	90	90	90	80	80	80	90	90	-
• Volume resistivity	-	Ohm·m	IEC 93	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 15	1E + 14	1E + 14	-
• Surface resistivity	-	Ohm	IEC 93	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 16	1E + 15	1E + 15	-
• Electric strength	-	kV/mm	IEC 243-1	35	35	35	35	35	35	35	35	35	35	35	35	35	35	-
• Comparative tracking index CTI	Solution A	Rating	IEC 112	250	250	250	250	250	250	600	600	250	250	450	250	225	225	-
Comparative tracking index CTI M	Solution B	Rating	IEC 112	125	125	125	125	100	100	100	100	125	125	100	125	100	100	-
Electrolytic corrosion	-	Rating	IEC 426	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	A1	-
Other properties (23 °C)																		
• Water absorption (saturation value)	in water at 23 °C	%	ISO 62	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
• Water absorption (equilibrium value)	23 °C; 50 % r.h.	%	ISO 62	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
• Density	-	kg/m³	ISO 1183	1180	1180	1170	1170	1150	1150 ^{a)}	1130	1130	1180	1170	1150	1170	1150	1150	-
Material-specific properties																		
Refractive index (n _d)	-	-	ISO 489-A	1.578	1.578	1.576	1.576	1.573	1.573	1.566	1.566	1.578	1.578	1.573	1.578	1.573	4)	4)
Light transmittance (cd or -no. 551022)	1 mm	%	DIN 5036-1	89	89	89	89	89	89	3)	89	89	89	89	88	90 ^{a)}	4)	4)
• Light transmittance (cd or -no. 551022)	2 mm	%	DIN 5036-1	89	88	88	88	89	89	3)	89	88	88	88	87	90 ^{a)}	4)	4)
Light transmittance (cd or -no. 551022)	4 mm	%	DIN 5036-1	88	87	87	87	88	88	3)	88	87	87	87	86	89 ^{a)}	4)	4) 95 ^{a)}
Processing conditions for test specimen																		
• Injection molding-melt temperature	-	°C	ISO 294	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330
• Injection molding-mold temperature	-	°C	ISO 294	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
• Injection molding-flow front velocity	-	mm/s	ISO 294	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200

* These property characteristics are taken from the CAMPUS plastics data bank and are based on the international catalog of basic data for plastics according to ISO10350.
1) Expected RTI 2) Not available in clear transparent color 551022; please use alternatively Apec 2097 551022. 3) Natural colored
4) According to own measurement 5) Only opaque colors 6) Light reflection acc. to JIS8722 (color-no. 010226)