ARNITEL® TPE - Typical properties

PROPERTIES [1]	UNIT	TEST METHODS	EL250	EM400	EM460	EB463	EB464	EL550	EM550	EL630	EM630	EL740	EM740	PL380	PL381	PM381
APPLICATION (IM, EX, BM)[2]			IM	IM/EX	IM	BM	BM	IM	EX	IM	EX	IM	EX	IM	IM	EX
PHYSICAL PROPERTIES																
Density	g/cm³	ISO 1183	1.08	1.11	1.16	1.15	1.15	1.21	1.21	1.24	1.24	1.29	1.27	1.16	1.16	1.16
Melting point (10°C / min)	°C	ISO 11357-1/-3	180	195	185	203	210	207	207	212	212	221	221	212	212	212
Melt Volume Rate (230°C / 2.16 kg)	g/10 min	ISO 1133	35	30	50			31	31	25	25	15	4.8	28	28	4
Melt Volume Rate (230°C / 10 kg)	g/10 min	ISO 1133				10.5	10.5									
Coefficient of linear thermal expansion	E-4/°C	ISO 11357-1/-3	245	235	220	220	220	200	200	185	185	165	165	250	250	250
Temp. of deflection under load (0.45 MPa)	°C	ISO 75-1/-2								115	115	120				
Vicat softening temperature:																
50°C/h 10N	°C	ISO 306/A		140	150			190	190	200	200	210				
50°C/h 50N	°C	ISO 306/B			50			90	90	125	125	160	160			145
Moisture absorption:																
equilbrium at 50% RH/23°C	%	sim. To ISO 62	0.35	0.35	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.15	0.15	4.0	4.0	4.0
equilibrium in water	%	sim. To ISO 62	0.75	0.75	0.7	0.7	0.7	0.65	0.65	0.6	0.6	0.6	0.58	7.0	7.0	7.0
Flammability (thickness, mm)	-	UL94	HB (1.6)		HB (1.6)			HB (1.6)	HB (1.6)	HB (1.6)	HB (1.6)	HB (1.6)	HB (1.6)	HB (1.6)		
MECHANICAL PROPERTIES																
Tensile modulus	MPa	ISO 527-1/-2	25	50	100	115	90	200	200	310	310	1,000	900	60	60	60
Tensile stress:																
at 5% strain	MPa	ISO 527-1/-2	0.8	2.4	3.9	3.8	3.6	8.8	8.8	15.9	15.9	31.2	31.2	2.6	2.6	2.6
at 10% strain	MPa	ISO 527-1/-2	1.7	3.9	6.1	6.3	6.3	11.8	11.8	19	19	34.4	34.4	4.2	4.2	4.4
at 50% strain	MPa	ISO 527-1/-2	4.3	6.9	8.8	11.7	11.3	13.8	13.8					7.1	7.1	8.8
stress at break	MPa	ISO 527-1/-2	13	25	25	19	18	30	30	35	35	38	38	14	14	13.1
nominal strain at break	%	ISO 527-1/-2	>300	> 300	> 300	225	> 300	> 300	> 300	> 300	> 300	250	250	>300	>300	175
Izod impact strength :																
unnotched at +23°C	kJ/m²	ISO 180/1U	NB [3]	NB	NB	NB	NB	NB	NB	NB	NB			NB	NB	NB
unnotched at -30°C	kJ/m²	ISO 180/1U	NB	NB	NB	NB	NB	NB	NB	NB				NB	NB	NB
notched at +23°C	kJ/m²	ISO 180/1A	NB	NB	NB	NB	NB	NB	NB	NB	NB	9		NB	NB	NB
notched at -30°C	kJ/m²	ISO 180/1A	NB	NB	NB	NB	NB	NB						NB	NB	NB
Hardness Shore D	-	ISO 868	25	34	41	40	41	53	53	60	60	72	72	33	33	33
ELECTRICAL PROPERTIES																
Dielectric strength	kV/mm	IEC 60243-1		20	20			21	21	22	22	23	23	20	20	20
Volume resistivity	Ωm	IEC 60093		1.E+11	1.E+11			1.E+11	1.E+11	1.E+12	1.E+12	1.E+13	1.E+13	1.E+10	1.E+10	1.E+10
Surface resistivity	Ω	IEC 60093		>1E+14	> 1E+14			> 1E+14	>1E+14	> 1E+14	> 1E+14	> 1E+14	> 1E+14	1.E+12	1.E+12	1.E+12
Relative permittivity																
at 100 Hz	-	IEC 60250		4.8	4.7			4.4	4.4	3.8	3.8	3.7	3.7	5.5	5.5	5.5
at 1 MHz	-	IEC 60250		4.6	4.4			4.0	4.0	3.4	3.4	3.3	3.3	5.0	5.0	5.0
Dissipation factor:																
at 100 Hz	E-4	IEC 60250		30						110	110			300	300	300
at 1 MHz	E-4	IEC 60250		170	350			400	400	340	340	300	300	800	800	800
Tracking resistance:																
CTI	-	IEC 60112		600	600			600	600	600	600	600	600	600	600	600

1) Most properties determined in accordance with CAMPUS standards and specifications.
2) IM = Injection Molding Grade, EX = Extrusion Grade, BM = Blow Molding Grade
3) NB = No break

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ARNITEL® TPE - Typical properties

PROPERTIES	UNIT	TEST METHODS	PL461	PM460	PL471	PM471	PL581	PM581	PB582-H	PL650	PM650	UM551	UM551-V	UM552
APPLICATION (IM, EX, BM)			IM	EX	IM	IM/EX	IM	EX	BM	IM	EX	EX	EX	EX
PHYSICAL PROPERTIES														
Density	g/cm³	ISO 1183	1.21	1.21		1.20	1.23	1.23	1.23	1.26	1.26	1.26	1.28	1.26
Melting point (10°C / min)	°C	ISO 11357-1/-3	220	216	224	217	218	218	220	221	221	195	200	195
Melt Volume Rate (230°C / 2.16 kg)	g/10 min	ISO 1133	30	7	27	9	11	3.5		30	4	16	15	7
Melt Volume Rate (230°C / 10 kg)	g/10 min	ISO 1133							3					
Coefficient of linear thermal expansion	E-4/°C	ISO 11357-1/-3	215	215	225	225	195	195	195	170	170			
Temp. of deflection under load (0.45 MPa)	°C	ISO 75-1/-2		65			100	100	100			80	85	80
Vicat softening temperature:														
50°C/h 10N	°C	ISO 306/A					205	205	205			170	180	175
50°C/h 50N	°C	ISO 306/B					105	105	105			85	90	85
Moisture absorption:														
equilbrium at 50% RH/23°C	%	sim. To ISO 62										0.25	0.25	0.25
equilibrium in water	%	sim. To ISO 62					2.5	2.5				0.6	0.6	0.6
Flammability (thickness, mm)	-	UL94								HB (1.6)		HB (0.75)	V-2 (1.5)	HB (0.75)
MECHANICAL PROPERTIES														
Tensile modulus	MPa	ISO 527-1/-2	165	165	240	175	300	300	300	570	520	200	250	250
Tensile stress:														
at 5% strain	MPa	ISO 527-1/-2	5.3	6.4	8.7	6.6	10	9.3	11.3	17.1	16.6	8	8	8
at 10% strain	MPa	ISO 527-1/-2	8.4	9.9	11.3	9.3	13.7	13.1	16.5	22.9	22.7	12	13	13
at 50% strain	MPa	ISO 527-1/-2	12.4	13.7	14	12.8	16.8	17	22.3	23.2	25.6	15	17	17
stress at break	MPa	ISO 527-1/-2	22.4	21.1	21.5	16	24	24.5	30	34.4	26.8	33	27	33
nominal strain at break	%	ISO 527-1/-2	>300	215	>300	200	300	200	150	>300	175	> 300	>300	>300
Izod impact strength:														
unnotched at +23°C	kJ/m²	ISO 180/1U	NB	NB	NB	NB	NB	NB	NB			NB	NB	NB
unnotched at -30°C	kJ/m²	ISO 180/1U	NB	NB	NB	NB								
notched at +23°C	kJ/m²	ISO 180/1A	NB	NB	NB	NB	NB	NB	NB	23	37	NB	NB	NB
notched at -30°C	kJ/m²	ISO 180/1A	NB	NB	NB	NB	15	25	12	7	8	4	4	6
Hardness Shore D	-	ISO 868		46	45	45	55	55	56	63	63	55	55	55
ELECTRICAL PROPERTIES														
Dielectric strength	kV/mm	IEC 60243-1					21	21					20	
Volume resistivity	Ωm	IEC 60093					1.E+11	1.E+11					1.E+13	
Surface resistivity	Ω	IEC 60093					1.E+13	1.E+13					>1E+14	
Relative permittivity														
at 100 Hz	-	IEC 60250					4.7	4.7					5.2	
at 1 MHz	-	IEC 60250					4.4	4.4					4.4	
Dissipation factor:														
at 100 Hz	E-4	IEC 60250											100	
at 1 MHz	E-4	IEC 60250					600	600					500	
Tracking resistance:														
CTI	-	IEC 60112					600	600					600	

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