

# TENAC™ (Homopolymer) Datasheet-1

			Standard						High durability		Weatherability				High cycle			
			High viscosity		Medium viscosity			High flow	High viscosity	Medium viscosity	High viscosity		Medium viscosity		Medium viscosity	High flow		Ultra high flow
Item	Test Method	Unit	2010	3010	4010	4060	5010	7010	MG210	4050	2013A	3013A	4013A	5013A	5050	7050	7054	9054
Melt Mass-Flow Rate	ISO 1133	g/10min	1.7	2.8	10	17	22	34	1.7	7	1.7	2.8	10	22	21	34	39	70
Density	ISO 1183	g/cm <sup>3</sup>	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
Tensile Strain at Yield	ISO 527	MPa	70	70	71	70	72	73	75	76	68	69	70	71	73	73	74	74
Tensile Stress at Break	ISO 527	MPa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tensile Strain at Break	ISO 527	%	55	50	40	40	30	20	40	30	50	45	40	30	25	20	15	12
Tensile Modulus	ISO 527	MPa	2900	3000	3200	3000	3300	3400	3150	3300	2800	2900	3000	3100	3300	3400	3400	3500
Flexural Modulus	ISO 178	MPa	2700	2800	2900	2900	3100	3200	2900	3000	2500	2600	2700	2900	3100	3200	3200	3300
Charpy Notched Impact Strength	ISO 179	kJ/m <sup>2</sup>	15	13	10	9	8	7	10	11	15	13	10	8	7	6	6	4
Coefficient of Linear Thermal Expansion	ISO 11359	×10 <sup>-5</sup> /K	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Deflection Temperature Under Load, 1.8MPa	ISO 75	deg.-C	100	100	105	100	105	105	103	110	97	97	102	102	105	105	105	105
Flame Rating	UL-94	—	HB	HB	HB	HB	HB	HB	HB	—	—	—	—	—	HB	HB	HB	HB
Surface Resistivity	IEC 60093	ohms	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Volume Resistivity	IEC 60093	ohms·cm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Molding Shrinkage (Flow / Across Flow)	Internal Method	%	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.7~2.1	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.7~2.1	1.7~2.1	1.7~2.1	1.7~2.1

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# TENAC™ (Homopolymer) Datasheet-2

Item			Low VOC			Lubricant								Glass fiber reinforced			Soft
			High viscosity	Medium viscosity	High viscosity	Medium viscosity				High flow		Medium viscosity		High flow	Medium viscosity		
						Z3010	Z4060	LT802	LT804	LT200	FS410	LP402	LA543			LMS11	LS701
Test Method	Unit	Z3010	Z4060	LT802	LT804	LT200	FS410	LP402	LA543	LMS11	LS701	LL700	GA510	GA520	GN705	4012	
Melt Mass-Flow Rate	ISO 1133	g/10min	2.4	17	2.5	12	25	9	9	17	22	34	35	17	15	10	10
Density	ISO 1183	g/cm <sup>3</sup>	1.42	1.42	1.42	1.42	1.40	1.46	1.42	1.38	1.42	1.42	1.39	1.50	1.56	1.59	1.42
Tensile Stress at Yield	ISO 527	MPa	70	70	68	68	61	65	61	63	65	65	64	62	54	—	66
Tensile Stress at Break	ISO 527	MPa	—	—	—	—	—	—	—	—	—	—	—	—	—	110	—
Tensile Strain at Break	ISO 527	%	50	40	50	45	35	18	45	30	25	20	24	15	10	2	40
Tensile Modulus	ISO 527	MPa	3000	3000	2700	2900	2700	3100	2700	2800	3000	3100	2950	3400	4300	9000	2700
Flexural Modulus	ISO 178	MPa	2800	2900	2600	2700	2600	3000	2500	2600	2800	2700	2850	3200	4100	8500	2500
Charpy Notched Impact Strength	ISO 179	kJ/m <sup>2</sup>	13	9	13	10	6	4	9	7	7	6	5	4	4	7	10
Coefficient of Linear Thermal Expansion	ISO 11359	×10 <sup>-5</sup> /K	10	10	10	10	10	10	10	10	10	10	10	8	7	4~9	10
Deflection Temperature Under Load, 1.8MPa	ISO 75	deg.-C	100	100	90	90	92	100	85	100	95	100	102	110	118	171	80
Flame Rating	UL-94	—	—	—	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
Surface Resistivity	IEC 60093	ohms	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Volume Resistivity	IEC 60093	ohms·cm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Molding Shrinkage (Flow / Across Flow)	Internal Method	%	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.8~2.2	1.5~1.8/ 1.0~1.3	1.5~1.8/ 1.0~1.3	0.4~0.6/ 1.0~1.2	1.8~2.2

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# TENAC™-C (Copolymer) Datasheet-1

			Standard						High function standard				Lubricant				
			High viscosity	Medium viscosity		High flow			High viscosity	Medium viscosity		High flow	High viscosity	Medium viscosity	High flow		
Item	Test Method	Unit	3510	4520	5520	7520	8520	9520	HC350	HC450	HC550	HC750	LT350	LV450	LX750	LZ750	LD755
Melt Mass-Flow Rate	ISO 1133	g/10min	2.8	9	15	30	45	70	2.8	8	15	30	3	9	30	30	25
Density	ISO 1183	g/cm <sup>3</sup>	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.39	1.39	1.52
Tensile Stress at Yield	ISO 527	MPa	62	63	63	64	65	65	66	67	67	68	58	61	61	62	53
Tensile Stress at Break	ISO 527	MPa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tensile Strain at Break	ISO 527	%	40	35	33	30	25	20	40	35	33	30	45	20	20	15	10
Tensile Modulus	ISO 527	MPa	2500	2700	2700	2800	2850	2800	2650	2800	2850	3000	2500	2700	2850	2700	3500
Flexural Modulus	ISO 178	MPa	2400	2500	2500	2600	2700	2700	2550	2650	2700	2800	2300	2600	2750	2700	3400
Charpy Notched Impact Strength	ISO 179	kJ/m <sup>2</sup>	9	7	6	5	4.5	3.5	9	7	6	5	8	5	4	3	3
Coefficient of Linear Thermal Expansion	ISO 11359	×10 <sup>-5</sup> /K	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8
Deflection Temperature Under Load, 1.8MPa	ISO 75	deg.-C	95	100	100	100	100	100	102	105	105	105	85	100	100	100	110
Flame Rating	UL-94	—	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	—	HB	HB	HB	HB
Surface Resistivity	IEC 60093	ohms	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Volume Resistivity	IEC 60093	ohms·cm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Molding Shrinkage (Flow / Across Flow)	Internal Method	%	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.4~1.6

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# TENAC™-C (Copolymer) Datasheet-2

			Low VOC									Weatherability			Anti scratch		
			High viscosity	Medium viscosity	Weatherability			High function		Lubricant	Metallic appearance	High viscosity	Medium viscosity	High flow	Medium viscosity	High flow	
Item	Test Method	Unit	Z3510	Z4520	Z3513	Z4513	Z4563	ZH450	ZH760	ZLV40	ZM413	3513	4513	4563	7513	HC460	HC760
Melt Mass-Flow Rate	ISO 1133	g/10min	2.8	9	3	9	9	8	30	9	9	3	9	9	30	8	30
Density	ISO 1183	g/cm <sup>3</sup>	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.42	1.41	1.41	1.41	1.41	1.41	1.41
Tensile Strain at Yield	ISO 527	MPa	62	63	62	63	61	67	67	61	57	62	63	61	64	66	67
Tensile Stress at Break	ISO 527	MPa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tensile Strain at Break	ISO 527	%	40	35	40	35	35	35	30	20	20	40	35	35	30	40	30
Tensile Modulus	ISO 527	MPa	2500	2700	2500	2550	2500	2800	2900	2700	2500	2500	2550	2500	2750	2750	2900
Flexural Modulus	ISO 178	MPa	2400	2500	2400	2450	2350	2650	2750	2600	2400	2400	2450	2350	2600	2600	2750
Charpy Notched Impact Strength	ISO 179	kJ/m <sup>2</sup>	9	7	8	7	6	7	6	5	4	8	7	6	5	7	6
Coefficient of Linear Thermal Expansion	ISO 11359	×10 <sup>-5</sup> /K	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Deflection Temperature Under Load, 1.8MPa	ISO 75	deg.-C	95	100	93	97	91	106	103	100	90	93	97	91	100	102	103
Flame Rating	UL-94	—	—	—	—	—	—	HB	HB	HB	—	HB	HB	—	—	HB	HB
Surface Resistivity	IEC 60093	ohms	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Volume Resistivity	IEC 60093	ohms·cm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Molding Shrinkage (Flow / Across Flow)	Internal Method	%	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.8~2.2	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0	1.6~2.0

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# TENAC™-C (Copolymer) Datasheet-3

			Conductive					Glass fiber reinforced			Mineral Reinforced		Carbon Fiber Reinforced	
								Medium viscosity	High flow		Medium viscosity	High flow		
Item	Test Method	Unit	TFC64	TFC84	TFC77	EF750	EF850	GN455	GN752	GN755	NS556	MT754	CF452	CF454
Melt Mass-Flow Rate	ISO 1133	g/10min	—	1	1	10	15	4	15	8	9	20	5	4
Density	ISO 1183	g/cm <sup>3</sup>	1.37	1.38	1.41	1.41	1.41	1.59	1.47	1.59	1.62	1.58	1.43	1.46
Tensile Stress at Yield	ISO 527	MPa	—	35	—	52	—	—	—	—	42	—	—	—
Tensile Stress at Break	ISO 527	MPa	35	—	38	—	50	120	90	120	—	61	110	130
Tensile Strain at Break	ISO 527	%	2	31	3	10	5	2	2	2	25	5	2	1
Tensile Modulus	ISO 527	MPa	2200	2700	3200	2600	3300	8000	5000	8000	4300	4800	7500	13000
Flexural Modulus	ISO 178	MPa	2100	2600	3100	2500	3200	7500	4800	7500	4100	4800	7000	12500
Charpy Notched Impact Strength	ISO 179	kJ/m <sup>2</sup>	1.5	3	1.5	3	1.5	7	6	7	6	3	4	5
Coefficient of Linear Thermal Expansion	ISO 11359	×10 <sup>-5</sup> /K	10	—	—	6	9	4~10	5~10	4~10	10	6	6~9	4~9
Deflection Temperature Under Load, 1.8MPa	ISO 75	deg.-C	85	83	85	100	95	163	165	163	124	131	161	163
Flame Rating	UL-94	—	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
Surface Resistivity	IEC 60093	ohms	10 <sup>0</sup> ~10 <sup>1</sup>	10 <sup>0</sup> ~10 <sup>1</sup>	10 <sup>0</sup> ~10 <sup>1</sup>	10 <sup>1</sup> ~10 <sup>2</sup>	10 <sup>1</sup> ~10 <sup>2</sup>	—	—	—	—	—	—	—
Volume Resistivity	IEC 60093	ohms·cm	10 <sup>0</sup> ~10 <sup>1</sup>	10 <sup>0</sup> ~10 <sup>1</sup>	10 <sup>0</sup> ~10 <sup>1</sup>	10 <sup>1</sup> ~10 <sup>2</sup>	10 <sup>1</sup> ~10 <sup>2</sup>	—	—	—	—	—	—	—
Molding Shrinkage (Flow / Across Flow)	Internal Method	%	1.3~1.6	1.2~1.6	1.2~1.6	1.6~2.0	1.4~1.8	0.4~0.6/ 1.0~1.2	0.5~0.7/ 1.6~1.8	0.4~0.6/ 1.0~1.2	1.4~1.8	1.0~1.2	0.3~0.6/ 0.8~1.2	0.1~0.2/ 0.6~0.8

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