

## (Polypropylene Plastic Performance)



### Polypropylene - Glass Fibre (Filler Content: 10%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Normal Flow, Normal Impact, High Stiffness (LDG1010NT)	Normal Flow, Normal Impact, High Stiffness (LDG1015NT)	Low Flow, Normal Impact, High Stiffness (LCG1006NT)	High Flow, High Impact, High Stiffness (LCG1035NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	10	15	6	35
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	5	6	7	14
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	30	35	40	40
Specific Gravity	ASTM D792	-	0.95	0.95	0.95	0.95
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	480	480	400	400
Elongation at Break (50mm/min)	ASTM D638	%	5	2	5	3
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	760	740	700	580
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	26,000	27,000	22,000	22,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	145	160	145	155
Ashes (600°C/1hours)	ISO 3451-1	%	10	10	10	10
Mould Shrinkage (TD)	ASTM D955	%	0.8	0.8	0.8	0.8

## Polypropylene - Glass Fibre (Filler Content: 20%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Low Flow, Normal Impact, High Stiffness (LDG2009NT)	Normal Flow, Normal Impact, High Stiffness (LDG2010NT)	Low Flow, Normal Impact, High Stiffness (LCG2005NT)	Normal Flow, High Impact, High Stiffness (LCG2025NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	9	10	5	25
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	6	6	8	14
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	35	35	35	60
Specific Gravity	ASTM D792	-	1.05	1.05	1.05	1.05
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	750	560	500	580
Elongation at Break (50mm/min)	ASTM D638	%	3	1	3	2
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	1,050	890	800	900
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	34,000	40,000	35,000	36,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	150	160	150	160
Ashes (600°C/1hours)	ISO 3451-1	%	20	20	20	20
Mould Shrinkage (TD)	ASTM D955	%	0.5	0.5	0.6	0.6

## Polypropylene - Glass Fibre (Filler Content: 30%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Low Flow, Normal Impact, High Stiffness (LDG3008NT)	Normal Flow, Normal Impact, High Stiffness (LDG3010NT)	Low Flow, Normal Impact, High Stiffness (LCG3004NT)	Normal Flow, High Impact, High Stiffness (LCG3020NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	8	10	4	20
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	7	6	9	14
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	35	30	30	60
Specific Gravity	ASTM D792	-	1.15	1.15	1.15	1.15
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	860	580	600	660
Elongation at Break (50mm/min)	ASTM D638	%	2	1	2	2
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	1,200	990	850	1,000
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	48,000	59,000	45,000	52,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	155	160	155	165
Ashes (600°C/1hours)	ISO 3451-1	%	30	30	30	30
Mould Shrinkage (TD)	ASTM D955	%	0.5	0.5	0.6	0.6

## Polypropylene - Glass Fibre (Filler Content: 40%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Low Flow, Normal Impact, High Stiffness (LDG4007NT)	Low Flow, Normal Impact, High Stiffness (LDG4005NT)	Low Flow, Normal Impact, High Stiffness (LCG4003NT)	Normal Flow, High Impact, High Stiffness (LCG4015NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	7	5	3	15
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	7	6	9	14
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	30	30	25	60
Specific Gravity	ASTM D792	-	1.25	1.25	1.25	1.25
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	920	680	700	720
Elongation at Break (50mm/min)	ASTM D638	%	1	1	1	1
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	1,300	1,200	900	1,200
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	65,000	80,000	55,000	70,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	160	160	160	160
Ashes (600°C/1hours)	ISO 3451-1	%	40	40	40	40
Mould Shrinkage (TD)	ASTM D955	%	0.4	0.4	0.4	0.4

## Polypropylene - TALC (Filler Content: 10%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Normal Flow, Normal Impact, High Stiffness (LDT1015NT)	High Flow, Normal Impact, High Stiffness (LDT1045NT)	Low Flow, Normal Impact, Normal Stiffness (LCT1008NT)	High Flow, Normal Impact, Normal Stiffness (LCT1055NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	15	45	8	55
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	5	5	16	8
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	55	70	NB	NB
Specific Gravity	ASTM D792	-	0.95	0.95	0.95	0.95
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	320	340	230	220
Elongation at Break (50mm/min)	ASTM D638	%	20	10	80	15
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	480	540	300	340
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	16,000	20,000	10,000	13,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	110	125	95	100
Ashes (600°C/1hours)	ISO 3451-1	%	10	10	10	10
Mould Shrinkage (TD)	ASTM D955	%	1.2	1.2	1.2	1.2

## Polypropylene - TALC (Filler Content: 20%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Normal Flow, Normal Impact, High Stiffness (LDT2016NT)	High Flow, Normal Impact, High Stiffness (LDT2040NT)	Normal Flow, Normal Impact, Normal Stiffness (LCT2010NT)	High Flow, Normal Impact, Normal Stiffness (LCT2050NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	16	40	10	50
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	4	5	10	8
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	60	50	NB	NB
Specific Gravity	ASTM D792	-	1.05	1.05	1.05	1.05
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	370	350	226	230
Elongation at Break (50mm/min)	ASTM D638	%	10	8	50	8
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	620	580	340	370
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	22,000	25,000	16,000	17,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	115	130	105	110
Ashes (600°C/1hours)	ISO 3451-1	%	20	20	20	20
Mould Shrinkage (TD)	ASTM D955	%	1.0	1.0	1.0	1.0

## Polypropylene - TALC (Filler Content: 30%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Normal Flow, Normal Impact, High Stiffness (LDT3016NT)	Normal Flow, Normal Impact, High Stiffness (LDT3025NT)	Normal Flow, Normal Impact, Normal Stiffness (LCT3012NT)	High Flow, Normal Impact, Normal Stiffness (LCT3040NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	16	25	12	40
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	4	5	8	7
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	60	30	60	NB
Specific Gravity	ASTM D792	-	1.15	1.15	1.15	1.15
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	380	350	220	250
Elongation at Break (50mm/min)	ASTM D638	%	5	5	30	4
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	750	600	360	400
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	30,000	32,000	22,000	25,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	120	135	155	120
Ashes (600°C/1hours)	ISO 3451-1	%	30	30	30	30
Mould Shrinkage (TD)	ASTM D955	%	0.8	0.8	0.8	0.8

## Polypropylene - TALC (Filler Content: 40%)

Application: Automotive, Construction Industries, Hygiene Management, Electrical & Electronic, Motorcycle

Property	Test Method	Unit	Normal Flow, Normal Impact, High Stiffness (LDT4017NT)	Normal Flow, Normal Impact, High Stiffness (LDT4020NT)	Normal Flow, Normal Impact, High Stiffness (LCT4014NT)	High Flow, Normal Impact, High Stiffness (LCT4035NT)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	17	20	14	35
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	5	5	6	6
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	50	30	40	50
Specific Gravity	ASTM D792	-	1.25	1.25	1.25	1.25
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	400	340	210	270
Elongation at Break (50mm/min)	ASTM D638	%	2	3	10	2
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	820	600	390	430
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	38,000	40,000	31,000	31,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	125	135	121	120
Ashes (600°C/1hours)	ISO 3451-1	%	40	40	40	40
Mould Shrinkage (TD)	ASTM D955	%	0.8	0.8	0.8	0.8

## (Polypropylene Anti-Microbial Plastic Performance)



### PP-AM

Application: Hygiene Management

Property	Test Method	Unit	Normal Flow, High Impact, Normal Stiffness (PP-AM01)	Normal Flow, Normal Impact, High Stiffness (PP-AM02)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	20	14
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	15	5
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	NB	NB
Specific Gravity	ASTM D792	-	0.91	0.91
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	220	250
Elongation at Break (50mm/min)	ASTM D638	%	40	100
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	320	350
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	10,000	13,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	90	95
Ashes (600°C/1hours)	ISO 3451-1	%	N/A	N/A
Mould Shrinkage (TD)	ASTM D955	%	1.5	1.5



# (Acrylonitrile Butadiene Styrene Anti-Microbial Plastic Performance)



## ABS-AM

Application: Hygiene Management

Property	Test Method	Unit	Normal Flow, Normal Impact, High Stiffness (ABS-AM01)
Melt Flow Rate (230°C/2.16kg)	ASTM D1238	g/10min	20
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	15
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	NB
Specific Gravity	ASTM D792	-	1.05
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	480
Elongation at Break (50mm/min)	ASTM D638	%	10
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	800
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	25,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	90
Ashes (600°C/1hours)	ISO 3451-1	%	0
Mould Shrinkage (TD)	ASTM D955	%	0.5

## (Thermoplastic Elastomer Natural Plastic Performance)



### TPE NAT (OPAQUE)

Application: Household, Electrical & Electronic, Semiconductor Product, Medical Product, Toys

Property	Test Method	Unit	Opaque (C2A50)	Opaque (C2A87)
Hardness, Shore A	ASTM D2240	-	45 – 55	84 – 90
Specific Gravity	ASTM D792	-	0.90 – 0.95	0.90 – 0.99
Melt Flow Rate (190°C/2.16kg)	ASTM D1238	g/10min	30 – 50	7 – 13
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	N/A	N/A
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	N/A	N/A
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	>16	>100
Elongation at Break (50mm/min)	ASTM D638	%	>80	>500
Tear Strength (500mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	>10	>40
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	N/A	N/A
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	N/A	N/A
Mould Shrinkage (TD)	ASTM D955	%	1.0 – 1.3	1.0 – 1.3



## TPE NAT (TRANSLUCENT)

Application: Household, Electrical & Electronic, Semiconductor Product, Medical Product, Toys

Property	Test Method	Unit	Translucent (B1A60)
Hardness, Shore A	ASTM D2240	-	55 – 65
Specific Gravity	ASTM D792	-	0.85 – 0.90
Melt Flow Rate (190°C/2.16kg)	ASTM D1238	g/10min	<5
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	N/A
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	N/A
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	>40
Elongation at Break (50mm/min)	ASTM D638	%	>500
Tear Strength (500mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	>15
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	N/A
Heat Deflection Temperature (66 psi, 6.4mm)	ASTM D648	°C	N/A
Mould Shrinkage (TD)	ASTM D955	%	1.0 – 1.3

# (Polycarbonate-Acrylonitrile Butadiene Styrene Plastic Performance)



## PC/ABS

Application: Automotive, Electrical & Electronic, Semiconductor Product

Property	Test Method	Unit	Low Flow, Normal Impact, Normal Stiffness (PC/ABS U45)	Normal Flow, Normal Impact, Normal Stiffness (PC/ABS U65)	Normal Flow, High Impact, Normal Stiffness (PC/ABS U85)
Melt Flow Rate (260°C/2.16kg)	ASTM D1238	g/10min	5	10	10
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	40	50	60
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	NB	NB	NB
Specific Gravity	ASTM D792	-	1.11	1.14	1.16
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	500	550	600
Elongation at Break (50mm/min)	ASTM D638	%	50	70	80
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	850	900	950
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	25,000	26,000	27,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	115	120	125
Ashes (600°C/1hours)	ISO 3451-1	%	N/A	N/A	N/A
Mould Shrinkage (TD)	ASTM D955	%	0.5	0.5	0.5

# ABS/GF

Application: Automotive, Electrical & Electronic, Semiconductor Product

Property	Test Method	Unit	Low Flow, Normal Impact, Normal Stiffness (AGF 10%)	Low Flow, Normal Impact, Normal Stiffness (AGF 20%)	Low Flow, Normal Impact, High Stiffness (AGF 30%)
Melt Flow Rate (220°C/10kg)	ASTM D1238	g/10min	5	5	5
Izod, Impact Strength (Notch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	5	4	4
Izod, Impact Strength (Unnotch, 3.2mm, 23°C)	ASTM D256	Kg-cm/cm	20	20	20
Specific Gravity	ASTM D792	-	1.11	1.20	1.25
Tensile Strength (50mm/min)	ASTM D638	Kgf/cm <sup>2</sup>	500	600	700
Elongation at Break (50mm/min)	ASTM D638	%	2	1	1
Flexural Strength (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	900	1,000	1,100
Flexural Modulus (3mm/min)	ASTM D790	Kgf/cm <sup>2</sup>	40,000	55,000	70,000
Heat Deflection Temperature (66psi, 6.4mm)	ASTM D648	°C	100	100	100
Ashes (600°C/1hours)	ISO 3451-1	%	10	20	30
Mould Shrinkage (TD)	ASTM D955	%	0.4	0.3	0.2