



Toray PPS resin is a thermal engineering plastic. Types of PPS resin include both the cross linked and linear type. Toray engages in total production from base polymers to compounds, offering a wide variety of grades.

Features of Toray PPS Resin Torelina

Heat resistant:

Outstanding long-term heat resistance properties (UL temperature index 200-240 degrees C, UL File No. E41797).

Dimensional stability:

Minimum molding contraction rate and coefficient of linear thermal expansion with low moisture absorption means outstanding dimensional stability even at high temperature and high humidity.

Chemical resistance:

Outstanding chemical resistance on a par with fluoroethylene resin.

Mechanical properties:

The resins offer high strength and high rigidity with minimum decline in characteristics at high temperatures. Outstanding anti-fatigue and anti-creep properties.

Flame retardant:

Confirms with UL94V-0 without inclusion of flame retardant agents (UL File No. E41797).

Electrical properties:

Offers outstanding electrical properties at high temperature, high humidity and high frequencies.

Molding properties:

Outstanding fluidity allows extrusion molding on a level with standard engineering plastics.

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Overview

Type	Grade	Filler rate(%)	Characteristics
Glass fiber reinforced	A504	40	standard
	A504X90	40	high strength,high toughness
	A504X95	40	low flash,high flow
	A503	30	high flow
	A604	40	high toughness
	A604X95	40	low flash,high flow
	A604X97	40	low flash,high toughness
Glass fiber + inorganic filler reinforced	A310MX04	65	standard
	A310M	70	high rigidity,low warpage
	A400MX01	60	high flow
	A610MX03	65	high toughness
	A610M	60	high flow
	A660M	65	Improved tracking index(CTI rank0)
Special	A515	30	anti-abrasion(PTFE alloy)
	A673M	30	high impact(elastomer alloy)
	A674M2	40	high impact(elastomer alloy)
	A756MX02	65	anti-electrostatic(GF+inorganic filler)
	B672X01	20	for blow molding(elastomer alloy)
Glass fiber reinforced	AR-04	40	standard
	AR04-B	40	
Glass fiber + inorganic filler reinforced	AR10M	65	standard
	AR10M-B	65	
	AR10E	65	measuring precision, low temperature molding

A504 - Glass fiber reinforced / standard

Grade				A504
Property		Units	Test method	-
Specific Gravity		-	D792	1.70
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	155
Elongation	23 °C	%	D638	2.8
Flexural Strength	23 °C	MPa	D790	205
Flexural Modulus	23 °C	GPa	D790	13.7
Share Strength		-	D732	75
Izod Impact	V-notched	23 °C	D256	100
	Unnotched	23 °C		30
Rockwell Hardness		R-SCALE	D785	120
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.2
	Transverse direction			3.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	21
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance (W electrode)		second	D495	127
Mold Shrinkage (3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure (1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	124

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A504X90 - Glass fiber reinforced / high strength,high toughness

Grade				A504X90
Property		Units	Test method	-
Specific Gravity		-	D792	1.67
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	207
Elongation	23 °C	%	D638	3.6
Flexural Strength	23 °C	MPa	D790	275
Flexural Modulus	23 °C	GPa	D790	13.3
Share Strength		-	D732	80
Izod Impact	V-notched	23 °C	D256	130
	Unnotched	23 °C		55
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.3
	Transverse direction			3.2
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	21
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	127
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	100

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A504X95 - Glass fiber reinforced / low flash,high flow

Grade				A504X95
Property		Units	Test method	-
Specific Gravity		-	D792	1.67
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	205
Elongation	23 °C	%	D638	3.5
Flexural Strength	23 °C	MPa	D790	260
Flexural Modulus	23 °C	GPa	D790	13.4
Share Strength		-	D732	75
Izod Impact	V-notched	23 °C	D256	120
	Unnotched	23 °C		65
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.3
	Transverse direction			3.2
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	21
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	127
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	115

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A503 - Glass fiber reinforced / high flow

Grade				A503
Property		Units	Test method	-
Specific Gravity		-	D792	1.55
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	155
Elongation	23 °C	%	D638	3.2
Flexural Strength	23 °C	MPa	D790	205
Flexural Modulus	23 °C	GPa	D790	10.0
Share Strength		-	D732	75
Izod Impact	V-notched	23 °C	D256	130
	Unnotched	23 °C		30
Rockwell Hardness		R-SCALE	D785	120
Taber abrasion		mg/ 1000 cycles	D1044	45
Coefficient of friction	vs. steel	-	D1894	0.22
Limit PV value		kJ/m ² hr	TORAY	900
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.9
	Transverse direction			3.4
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	15
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	127
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.25
	Transverse direction			0.80
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	180

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A604 - Glass fiber reinforced / high toughness

Grade				A604
Property		Units	Test method	-
Specific Gravity		-	D792	1.67
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	195
Elongation	23 °C	%	D638	3.7
Flexural Strength	23 °C	MPa	D790	270
Flexural Modulus	23 °C	GPa	D790	12.7
Share Strength		-	D732	80
Izod Impact	V-notched	23 °C	D256	120
	Unnotched	23 °C		65
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	55
Coefficient of friction	vs. steel	-	D1894	0.24
Limit PV value		kJ/m ² hr	TORAY	900
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.3
	Transverse direction			3.2
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	19
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	123
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	100

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A604X95 - Glass fiber reinforced / low flash,high flow

Grade				A604X95
Property		Units	Test method	-
Specific Gravity		-	D792	1.67
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	210
Elongation	23 °C	%	D638	3.6
Flexural Strength	23 °C	MPa	D790	270
Flexural Modulus	23 °C	GPa	D790	13.7
Share Strength		-	D732	75
Izod Impact	V-notched	23 °C	D256	120
	Unnotched	23 °C		65
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	900
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.3
	Transverse direction			3.2
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	19
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	127
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	165

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A604X97 - Glass fiber reinforced / low flash,high toughness

Grade				A604X97
Property		Units	Test method	-
Specific Gravity		-	D792	1.67
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	210
Elongation	23 °C	%	D638	3.6
Flexural Strength	23 °C	MPa	D790	270
Flexural Modulus	23 °C	GPa	D790	13.7
Share Strength		-	D732	75
Izod Impact	V-notched	23 °C	D256	120
	Unnotched	23 °C		65
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	900
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.3
	Transverse direction			3.2
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	19
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	127
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	140

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A310MX04 - Glass fiber + inorganic filler reinforced / standard

Grade				A310MX04
Property		Units	Test method	-
Specific Gravity		-	D792	1.96
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	140
Elongation	23 °C	%	D638	2.1
Flexural Strength	23 °C	MPa	D790	200
Flexural Modulus	23 °C	GPa	D790	17.6
Share Strength		-	D732	60
Izod Impact	V-notched	23 °C	D256	90
	Unnotched	23 °C		20
Rockwell Hardness		R-SCALE	D785	123
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.4
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	15
Dielectric Constant	10 ⁶ Hz	-	D150	5.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	180
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.55
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	90

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A310M - Glass fiber + inorganic filler reinforced / high rigidity,low warpage

Grade				A310M
Property		Units	Test method	-
Specific Gravity		-	D792	2.04
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	120
Elongation	23 °C	%	D638	1.7
Flexural Strength	23 °C	MPa	D790	185
Flexural Modulus	23 °C	GPa	D790	19.6
Share Strength		-	D732	60
Izod Impact	V-notched	23 °C	D256	90
	Unnotched	23 °C		20
Rockwell Hardness		R-SCALE	D785	123
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	15
Dielectric Constant	10 ⁶ Hz	-	D150	3.4
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	180
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.50
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	65

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A400MX01 - Glass fiber + inorganic filler reinforced / high flow

Grade				A400MX01
Property		Units	Test method	-
Specific Gravity		-	D792	1.90
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	145
Elongation	23 °C	%	D638	2.0
Flexural Strength	23 °C	MPa	D790	190
Flexural Modulus	23 °C	GPa	D790	15.1
Share Strength		-	D732	65
Izod Impact	V-notched	23 °C	D256	100
	Unnotched	23 °C		25
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.28
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.7
	Transverse direction			2.5
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	15
Dielectric Constant	10 ⁶ Hz	-	D150	5.0
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	180
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.55
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	110

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A610MX03 - Glass fiber + inorganic filler reinforced / high toughness

Grade				A610MX03
Property		Units	Test method	-
Specific Gravity		-	D792	1.96
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	155
Elongation	23 °C	%	D638	2.2
Flexural Strength	23 °C	MPa	D790	210
Flexural Modulus	23 °C	GPa	D790	19.0
Share Strength		-	D732	65
Izod Impact	V-notched	23 °C	D256	90
	Unnotched	23 °C		30
Rockwell Hardness		R-SCALE	D785	123
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.4
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	16
Dielectric Constant	10 ⁶ Hz	-	D150	5.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	180
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.55
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	65

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A610M - Glass fiber + inorganic filler reinforced / high flow

Grade				A610M
Property		Units	Test method	-
Specific Gravity		-	D792	1.87
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	150
Elongation	23 °C	%	D638	2.2
Flexural Strength	23 °C	MPa	D790	180
Flexural Modulus	23 °C	GPa	D790	16.7
Share Strength		-	D732	65
Izod Impact	V-notched	23 °C	D256	90
	Unnotched	23 °C		-
Rockwell Hardness		R-SCALE	D785	121
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.26
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.4
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	15
Dielectric Constant	10 ⁶ Hz	-	D150	5.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	180
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.55
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	120

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A660M - Glass fiber + inorganic filler reinforced / Improved tracking index(CTI rank0)

Grade				A660M
Property		Units	Test method	-
Specific Gravity		-	D792	1.82
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	100
Elongation	23 °C	%	D638	1.5
Flexural Strength	23 °C	MPa	D790	130
Flexural Modulus	23 °C	GPa	D790	15.8
Share Strength		-	D732	50
Izod Impact	V-notched	23 °C	D256	90
	Unnotched	23 °C		20
Rockwell Hardness		R-SCALE	D785	123
Taber abrasion		mg/ 1000 cycles	D1044	100
Coefficient of friction	vs. steel	-	D1894	0.20
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.0
	Transverse direction			3.0
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	16
Dielectric Constant	10 ⁶ Hz	-	D150	4.4
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	180
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.60
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	100

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A515 - Special / anti-abrasion(PTFE alloy)

Grade				A515
Property		Units	Test method	-
Specific Gravity		-	D792	1.68
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	135
Elongation	23 °C	%	D638	3.2
Flexural Strength	23 °C	MPa	D790	165
Flexural Modulus	23 °C	GPa	D790	10.0
Share Strength		-	D732	60
Izod Impact	V-notched	23 °C	D256	80
	Unnotched	23 °C		25
Rockwell Hardness		R-SCALE	D785	120
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.15
Limit PV value		kJ/m ² hr	TORAY	1630
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.3
	Transverse direction			3.0
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	16
Dielectric Constant	10 ⁶ Hz	-	D150	3.4
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	90
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.22
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	120

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A673M - Special / high impact(elastomer alloy)

Grade				A673M
Property		Units	Test method	-
Specific Gravity		-	D792	1.50
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	150
Elongation	23 °C	%	D638	3.7
Flexural Strength	23 °C	MPa	D790	210
Flexural Modulus	23 °C	GPa	D790	9.1
Share Strength		-	D732	68
Izod Impact	V-notched	23 °C	D256	170
	Unnotched	23 °C		-
Rockwell Hardness		R-SCALE	D785	114
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	250
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	3.3
	Transverse direction			3.8
UL-94 Flame Class		-	UL-94	V-0 equivalent
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	17
Dielectric Constant	10 ⁶ Hz	-	D150	6.0
Dissipation factor	10 ⁶ Hz	-	D150	0.004
Arc resistance(W electrode)		second	D495	120
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.90
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	174

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A674M2 - Special / high impact (elastomer alloy)

Grade				A674M2
Property		Units	Test method	-
Specific Gravity		-	D792	1.56
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	160
Elongation	23 °C	%	D638	3.3
Flexural Strength	23 °C	MPa	D790	220
Flexural Modulus	23 °C	GPa	D790	11.0
Share Strength		-	D732	65
Izod Impact	V-notched	23 °C	D256	216
	Unnotched	23 °C		83
Rockwell Hardness		R-SCALE	D785	114
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	3.0
	Transverse direction			3.8
UL-94 Flame Class		-	UL-94	V-0(1/8")
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	17
Dielectric Constant	10 ⁶ Hz	-	D150	6.0
Dissipation factor	10 ⁶ Hz	-	D150	0.004
Arc resistance(W electrode)		second	D495	120
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.75
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	80

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

A756MX02 - Special / anti-electrostatic(GF+inorganic filler)

Grade				A756MX02
Property		Units	Test method	-
Specific Gravity		-	D792	1.84
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	120
Elongation	23 °C	%	D638	1.6
Flexural Strength	23 °C	MPa	D790	145
Flexural Modulus	23 °C	GPa	D790	15.7
Share Strength		-	D732	75
Izod Impact	V-notched	23 °C	D256	80
	Unnotched	23 °C		15
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.4
	Transverse direction			2.9
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ⁶
Dielectric Strength		MV/m	D149	-
Dielectric Constant	10 ⁶ Hz	-	D150	-
Dissipation factor	10 ⁶ Hz	-	D150	-
Arc resistance(W electrode)		second	D495	-
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.60
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	60

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

B672X01 - Special / for blow molding (elastomer alloy)

Grade				B672X01
Property		Units	Test method	-
Specific Gravity		-	D792	1.34
Water Absorption	23 °,24hr in water	%	D570	0.02
Tensile Strength	23 °C	MPa	D638	85
Elongation	23 °C	%	D638	3.9
Flexural Strength	23 °C	MPa	D790	125
Flexural Modulus	23 °C	GPa	D790	4.5
Share Strength		-	D732	50
Izod Impact	V-notched	23 °C	D256	125
	Unnotched	23 °C		60
Rockwell Hardness		R-SCALE	D785	118
Taber abrasion		mg/ 1000 cycles	D1044	-
Coefficient of friction	vs. steel	-	D1894	0.20
Limit PV value		kJ/m ² hr	TORAY	980
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	190
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	-
	Transverse direction			-
UL-94 Flame Class		-	UL-94	V-0 equivalent
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	-
Dielectric Constant	10 ⁶ Hz	-	D150	-
Dissipation factor	10 ⁶ Hz	-	D150	-
Arc resistance(W electrode)		second	D495	-
Mold Shrinkage(3mm)	Machine direction	%	TORAY	-
	Transverse direction			-
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320 °C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	-

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

AR-04 - Glass fiber reinforced / standard

Grade				AR-04
Property		Units	Test method	-
Specific Gravity		-	D792	1.65
Water Absorption	23°,24hr in water	%	D570	0.02
Tensile Strength	23°C	MPa	D638	170
Elongation	23°C	%	D638	1.7
Flexural Strength	23°C	MPa	D790	245
Flexural Modulus	23°C	GPa	D790	13.5
Shear Strength		-	D732	70
Izod Impact	V-notched	23°C	D256	95
	Unnotched	23°C		35
Rockwell Hardness		R-SCALE	D785	121
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.2
	Transverse direction			3.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	17
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	123
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320°C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	122

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

AR04-B - Glass fiber reinforced / standard

Grade				AR04-B
Property		Units	Test method	-
Specific Gravity		-	D792	1.65
Water Absorption	23°,24hr in water	%	D570	0.02
Tensile Strength	23°C	MPa	D638	120
Elongation	23°C	%	D638	1.4
Flexural Strength	23°C	MPa	D790	180
Flexural Modulus	23°C	GPa	D790	11.5
Shear Strength		-	D732	70
Izod Impact	V-notched	23°C	D256	70
	Unnotched	23°C		25
Rockwell Hardness		R-SCALE	D785	121
Taber abrasion		mg/ 1000 cycles	D1044	50
Coefficient of friction	vs. steel	-	D1894	0.25
Limit PV value		kJ/m ² hr	TORAY	815
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	2.2
	Transverse direction			3.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	15
Dielectric Constant	10 ⁶ Hz	-	D150	3.8
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	121
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.70
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320°C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	120

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

AR10M - Glass fiber + inorganic filler reinforced / standard

Grade				AR10M
Property		Units	Test method	-
Specific Gravity		-	D792	2.00
Water Absorption	23°,24hr in water	%	D570	0.02
Tensile Strength	23°C	MPa	D638	120
Elongation	23°C	%	D638	1.0
Flexural Strength	23°C	MPa	D790	165
Flexural Modulus	23°C	GPa	D790	16.5
Shear Strength		-	D732	60
Izod Impact	V-notched	23°C	D256	80
	Unnotched	23°C		30
Rockwell Hardness		R-SCALE	D785	123
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	800
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	16
Dielectric Constant	10 ⁶ Hz	-	D150	4.9
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	128
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.55
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320°C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	70

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

AR10M-B - Glass fiber + inorganic filler reinforced / standard

Grade				AR10M-B
Property		Units	Test method	-
Specific Gravity		-	D792	2.00
Water Absorption	23°,24hr in water	%	D570	0.02
Tensile Strength	23°C	MPa	D638	110
Elongation	23°C	%	D638	0.9
Flexural Strength	23°C	MPa	D790	150
Flexural Modulus	23°C	GPa	D790	16.5
Shear Strength		-	D732	60
Izod Impact	V-notched	23°C	D256	80
	Unnotched	23°C		20
Rockwell Hardness		R-SCALE	D785	123
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	810
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	13
Dielectric Constant	10 ⁶ Hz	-	D150	4.9
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	129
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.15
	Transverse direction			0.55
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320°C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	-

Notes: These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

AR10E - Glass fiber + inorganic filler reinforced / measuring precision, low temperature molding

Grade				AR10E
Property		Units	Test method	-
Specific Gravity		-	D792	2.00
Water Absorption	23°,24hr in water	%	D570	0.03
Tensile Strength	23°C	MPa	D638	115
Elongation	23°C	%	D638	1.0
Flexural Strength	23°C	MPa	D790	160
Flexural Modulus	23°C	GPa	D790	16.5
Shear Strength		-	D732	60
Izod Impact	V-notched	23°C	D256	70
	Unnotched	23°C		20
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	810
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	19
Dielectric Constant	10 ⁶ Hz	-	D150	4.3
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	182
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.50
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320°C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	95

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.

AR10E-B - Glass fiber + inorganic filler reinforced / measuring precision, low temperature molding

Grade				AR10E-B
Property		Units	Test method	-
Specific Gravity		-	D792	2.00
Water Absorption	23°,24hr in water	%	D570	0.03
Tensile Strength	23°C	MPa	D638	100
Elongation	23°C	%	D638	0.8
Flexural Strength	23°C	MPa	D790	130
Flexural Modulus	23°C	GPa	D790	16.5
Shear Strength		-	D732	60
Izod Impact	V-notched	23°C	D256	60
	Unnotched	23°C		15
Rockwell Hardness		R-SCALE	D785	122
Taber abrasion		mg/ 1000 cycles	D1044	70
Coefficient of friction	vs. steel	-	D1894	0.30
Limit PV value		kJ/m ² hr	TORAY	810
Melting Point		°C	DSC	278
Heat Deformation Temperature	1.82MPa	°C	D648	>260
Liner Thermal Expansion	Machine direction	×10 ⁻⁵ /K	D696	1.6
	Transverse direction			2.3
UL-94 Flame Class		-	UL-94	V-0
Volume Resistivity		Ω·m	D257	10 ¹⁶
Dielectric Strength		MV/m	D149	14
Dielectric Constant	10 ⁶ Hz	-	D150	4.3
Dissipation factor	10 ⁶ Hz	-	D150	0.002
Arc resistance(W electrode)		second	D495	181
Mold Shrinkage(3mm)	Machine direction	%	TORAY	0.20
	Transverse direction			0.50
Minimum injection pressure(1/8"t)		MPa	TORAY	-
Bar flow 320°C ,98MPa, 1mmt		×10 ⁻³ m	TORAY	-

Notes:These values are typical data for this product under specific test conditions and not intended for use as limiting specifications.