POLYPROPYLENE

TIPPLEN
TATREN

Elmer Kereskedelmi és Szolgáltató Kft.

Székhely: H-1145 Budapest, Amerikai út 98.
Tel: +36 (1) 445-1951, Fax: +36 (1) 445-1968
E-mail: elmer@ciklo-group.com
www.elmer.hu

MOLGROUP

MOL PETROCHEMICALS

Slovnaft

Homopolymers

Grade/Parameter	Melt Mass-Flow Rate (MFR) 230 °C/2.16 kg	Flexural Modulus *	Modulus of Elasticity in Tension *	Tensile Stress at Yield *	Tensile Strain at Yield *	Notched Izod Impact at 23 °C *	HDT 0.45 MPa *	Hardness Rockwell *	Special features	Special additives	Application
Units	g/10 min	MPa	MPa	MPa	%	kJ/m²	°C	R scale	-	-	-
Test methods	ISO 1133-1	ISO 178	ISO 527-1,2	ISO 527-1,2	ISO 527-1,2	ISO 180/A	ISO 75-1,2	ISO 2039/2	-	-	-
H 880	0.30	1950	1750	40	10	9	113	93	good mechanical properties, excellent long-term heat stability	SA	extrusion, pipes, thick sheets
H 781 F	0.70	1750	1450	37	10	13	104	93	excellent processability, balanced mechanical properties	SA	extrusion, blow moulding, sheets
H 681 F	1.7	1650	1500	36	10	6.5	98	96	good mechanical properties, excellent processability	SA	extrusion, sheets for thermoforming, blown bottles
H 659 F	1.7	1900	1800	40	8	6	120	102	excellent optical properties, outstanding stiffness	NA	extrusion, sheets for thermoforming, blown bottles
H 649 FH	2.5	1700	1600	38	9.5	6.5	108	99	bimodal, for high-speed production, metallizable grade, excellent optical properties	-	biaxially oriented film
H 650 F	3.0	1700	1600	38	9.5	5.5	105	100	bimodal, for high-speed production, metallizable grade, excellent optical properties	-	biaxially oriented film
H 543 F	4.0	1700	1600	38	9	5	105	101	low water carry-over	-	extrusion, weaving tapes, split film yarns
H 583 F	4.2	1700	**1500**	37.5	9.3	4.6	100	99	low water carry-over, improved tensile strength	SA	monofilaments, split film yarn, geotextile
H 483 F	6.5	1700	1550	37.5	9	4	94	98	good mechanical properties	SA	monofilaments, split film yarns
H 145 F	28	1800	1750	39	8	2.5	109	104	high gas-fading resistance	SA, AGF	low denier staple fibre, BCF and CF multifilaments
H 949 A	45	1900	1800	39.5	9	2	118	104	controlled rheology, outstanding processability for shorter cycle times	NA, AS	thin wall injection moulding, DVD shells, household and camping articles

Additives:
SA slip agent
AB antiblocking agent
NA nucleating agent
AS antistatic agent
AGF anti gas fading

Notes: * Values have been measured on standard injected moulded specimens prepared in accordance with ISO 1873-2.

Homopolymers

Grade/Parameter	Melt Mass-Flow Rate (MFR) 230 °C/2.16 kg	Flexural Modulus *	Modulus of Elasticity in Tension *	Tensile Stress at Yield *	Tensile Strain at Yield *	Notched Izod Impact at 23 °C *	HDT 0.45 MPa *	Hardness Rockwell *	Special features	Special additives	Application
Units	g/10 min	MPa	MPa	MPa	%	kJ/m²	°C	R scale	-	-	-
Test methods	ISO 1133-1	ISO 178	ISO 527-1,2	ISO 527-1,2	ISO 527-1,2	ISO 180/A	ISO 75-1,2	ISO 2039/2	-	-	-
HT 3 06	3.0	1900	1900	36	8.5	6	102	105	low water carry-over	-	high tenacity raffia, monofilaments, marine ropes, excellent for carpet backing, extrusion, injection moulding
HF 3 22	3.0	1650	1700	34	10.5	5.5	94	100	high speed BOPP lines, excellent optical properties, metallizable	-	monolayer and co-extruded biaxially oriented PP films (BOPP)
HG 10 07	10	1850	1850	36	8	4	96	105	good colour stability, superior spinning characteristics, good optics	AGF	staple fibres, cast film, core layer at co-extrusion, injection moulding of sanitary equipments, caps, closures, small technical items
HT 25 11	25	1450	1550	32	10	3.5	78	103	controlled rheology, low smoke	AGF	spun bond, extrusion coating of PP fabrics, injection moulding
HM 50 46	50	1800	1900	36	8	3	97	106	controlled rheology, enhanced stiffness and good dimensional stability	NA, AS	thin wall containers, household articles, buckets, caps and closures, lids and trays, garden furniture, boxes for food packaging

Additives:
NA nucleating agent
AS antistatic agent
AGF anti gas fading

Notes: * Values have been measured on standard injected moulded specimens prepared in accordance with ISO 1873-2.

Random
Copolymers

Grade/Parameter	Melt Mass-Flow Rate (MFR) 230 °C/2.16 kg	Flexural Modulus *	Modulus of Elasticity in Tension *	Tensile Stress at Yield *	Tensile Strain at Yield *	Notched Izod Impact at 23 °C *	HDT 0.45 MPa *	Hardness Rockwell *	Haze **	Special features	Special additives	Application
Units	g/10 min	MPa	MPa	MPa	%	kJ/m²	°C	R scale	%	-	-	-
Test methods	ISO 1133-1	ISO 178	ISO 527-1,2	ISO 527-1,2	ISO 527-1,2	ISO 180/A	ISO 75-1,2	ISO 2039/2	ISO 14782	-	-	-
R 780	0.50	1050	900	30	12	21	82	75		excellent processability, good heat stability, expandable	-	automotive components, foamed sheets
R 660	2.0	1000	900	28	12	25	78	75	11	excellent clarity and gloss	CA	extrusion, blow moulded bottles, injection stretch blow moulding
R 351 F	8.5	900	850	27	12	5	74	77		excellent transparency, gloss and very good heat weldability	SA, AB	cast and blown film for foodstuffs, stationery, clothes packaging
R 359	12	1100	1050	29	13	5	80	81	11	very good transparency and excellent gloss	CA	injection moulding for packaging cosmetics, herbs, household articles
R 959 A	45	1150	1050	30	12	4	84	80	8.5	reactor grade, excellent organoleptic properties, very good transparency and excellent gloss	AS, CA, OW	thin wall injection moulding for packaging cosmetics, sweets, household articles
R 1059 A	85	1100	1000	29	12	3	89	80	10	controlled rheology, excellent optical properties, good resistance to warping	AS, CA, OW	thin wall injection moulding for packaging cosmetics, sweets, household articles
RM 60 57	60	1300	1350	30	12	4	78	92	12	controlled rheology, excellent processing stability, good transparency, high gloss	CA, AS	thin wall injection moulding, food packaging, media boxes, household articles
RM 45 55 CLEAR	45	1250	1300	30	12	4	72	90	9.5	reactor grade, excellent organoleptic properties, excellent transparency, high gloss, very good processing stability	CA, AS	thin wall injection moulding especially food packages, household articles, cups, closures, media boxes
RM 85 82 CLEAR	85	1300	1300	30	12	3.5	72	90	10	reactor grade, excellent organoleptic properties, excellent transparency, high gloss, very good processing stability	CA, AS	thin wall injection moulding especially food packages, household articles, cups, closures, media boxes

CLEAR:
C - Clarified by last generation clarifying agent
L - Low odor and C-emissions
E - Economical processing conditions
A - Attractive appearance, fresh look of packed products
R - Reactor grade

Additives:
SA slip agent
CA clarifying agent
AB antiblocking agent
AS antistatic agent
NA nucleating agent
OW optical whitener

Notes: * Values have been measured on standard injected moulded specimens prepared in accordance with ISO 1873-2.

** Values have been measured on specimens with 1 mm wall thickness

Impact Copolymers

Grade/Parameter	Melt Mass-Flow Rate (MFR) 230 °C/2.16 kg	Flexural Modulus *	Modulus of Elasticity in Tension *	Tensile Stress at Yield *	Tensile Strain at Yield *	Notched Izod Impact at 23 °C *	Notched Izod Impact at -20 °C *	HDT 0.45 MPa *	Hardness Rockwell *	Special features	Special additives	Application
Units	g/10 min	MPa	MPa	MPa	%	kJ/m²	kJ/m²	°C	R scale	-	-	-
Test methods	ISO 1133-1	ISO 178	ISO 527-1,2	ISO 527-1,2	ISO 527-1,2	ISO 180/A	ISO 180/A	ISO 75-1,2	ISO 2039/2	-	-	-
K 850	0.23	2000	1800	36	8	42	5	116	85	excellent heat and detergent resistance, very high stiffness and good weldability	SA, NA	extrusion, corrugated sewage pipes, gigapipes, sheets
K 880	0.35	1500	1300	30	10	56	8	97	76	excellent heat and detergent resistance, very high impact strength	SA	extrusion, pipes, sheets, blow moulding
K 793	0.70	1450	1300	30	9	57	7	88	76	very high impact strength	SA	corrugated cardboards, corrugated pipes, extrusion, sheets, blow moulding
K 691	1.3	1600	1450	30	7	56	6	100	82	high impact strength and stiffness	SA, NA	corrugated cardboards
K 693	2.0	1450	1250	29	8	20	5	88	79	high impact strength and stiffness	SA	corrugated cardboards, corrugated pipes, extrusion, sheets, blow moulding, injection moulding
K 695	2.0	1400	1300	30	9	20	4.5	88	83	good mechanical properties, low gel content	SA	cast film, corrugated cardboards, sheet for thermoforming
K 597	4.0	1150	1100	24	7	48	7	77	70	outstanding high impact strength	SA	injection moulding, automotive components, battery cases
K 499	6.5	1300	1200	28	6	14	5	94	83	excellent resistance to heat and chemicals	SA	injection moulding, automotive components, battery cases, crates, boxes, dowels
K 395 A	12	1500	1400	29	5	7	4	106	90	high stiffness	NA, AS	injection moulding, household articles, pails, boxes, garden furniture
K 295 A	20	1600	1550	29	4	5	4	115	92	high stiffness	NA, AS	thin wall injection moulding, household articles
K 199	30	1400	1350	26	5	5	3.5	105	87	reactor grade, low C-emmisions and odour, good flow	NA	thin wall injection moulding, automotive components
K 948	45	1450	1400	27	4	4	3	97	88	reactor grade, excellent organoleptic properties, low C-emmisions	NA	high-speed injection moulding, thin-walled packaging containers, pails, covers, garden furniture, automotive components
TPO 12 76	12	900	1000	18	11.5	45**	32**	68	-	controlled rheology, extra high impact strength, good impact/stiffness balance	NA	compounding, automotive applications and bumpers, injection moulding
TPO 20 77	20	950	1000	18.5	10	42**	30**	70	-	controlled rheology, extra high impact strength, good impact/stiffness balance	NA	compounding, automotive applications and bumpers, injection moulding
IM 6 56	6.0	1500	1550	28	6	10	4	94	90	excellent long-term heat stability, high stiffness and good impact resistance	AS	injection moulding of parts for household appliances, auto battery cases and technical items where long term heat resistance is required
IM 12 59	12	1400	1400	24.5	5	10	5	88	80	high stiffness, good impact resistance	NA	injection moulding of rigid packaging, storage and transport boxes, household articles and technical items
IM 22 63	22	1350	1350	24	5.5	10	4.5	82	80	controlled rheology, high stiffness, good impact resistance	NA, AS	injection moulding of rigid packaging, household articles, garden furniture and technical items
IM 25 75	25	1150	1200	21	5.5	40**	6**	80	63	controlled rheology, excellent impact resistance and good stiffness	NA, AS	heavy duty injection moulded products, medical and transport containers, crates, boxes, technical items, compounding
IM 55 80	55	1400	1450	23	4	7	4	88	82	reactor grade, excellent organoleptic properties, high stiffness, good impact resistance, good flow	NA, AS	high-speed thin wall injection moulding of rigid packaging, household articles, garden articles and technical items
IM 75 81	75	1400	1450	23	4	6	3.5	88	85	reactor grade, excellent organoleptic properties, high stiffness, good impact resistance, good flow	NA, AS	high-speed thin wall injection moulding of rigid packaging, household articles, garden articles and technical items
IM 100 85	100	1450	1500	24	4	4	3	92	85	reactor grade, excellent organoleptic properties, high stiffness, good impact resistance, very good flow and good dimensional stability	NA, AS	high-speed thin wall injection moulding of rigid packaging, products of complicated shapes, household articles, garden articles and technical items

Additives:
SA slip agent
NA nucleating agent
AS antistatic agent

Notes: * Values have been measured on standard injected moulded specimens prepared in accordance with ISO 1873-2
** Values have been measured on standard injected moulded specimens prepared in accordance with internal method