

PRODUCT CATALOGUE

POLYPROPYLENE





MOLGROUP
CHEMICALS | Working together
to win tomorrow's
challenges

WHY CHOOSE MOL GROUP?



WE PROVIDE RELIABILITY OF SUPPLY

As an integrated oil, gas and petrochemicals company, we can rely on the efficiency benefits of the refinery integration process:

- ▶ Secured feedstock supply
- ▶ Robust financial background
- ▶ Strong position in the regional markets
- ▶ **High-quality** products provided by **state-of-the-art technologies**



WE INTEND TO BE YOUR PARTNER IN CARBON FOOTPRINT REDUCTION

- ▶ By offering **sustainable materials**
- ▶ By converting ~2 m tons of fuels to more valuable petrochemical feedstock by 2030
- ▶ Through **investments using highly efficient technologies** that integrate circular economy technologies into our core business
- ▶ Through bio and waste-based streams in production and scaling-up recycling



YOU CAN FIND US EVERYWHERE

- ▶ Due to our **offices located in nine European countries**, including Hungary, Slovakia, Austria, Germany, Italy, Poland, Romania, Croatia and Ukraine

POLYPROPYLENE

GENERAL INFORMATION

Polypropylene is a colourless and odourless thermoplastic polymer, translucent in the natural state and can be pigmented in a number of colours and shades. All types of TIPPLEN and TATREN grades are first of all characterized by high polymer purity and consistent quality. This is due to the highly sophisticated production process in which non-phthalate Ziegler-Natta catalysts are used.

THE MOST IMPORTANT PROPERTIES OF THE POLYPROPYLENE GRADES ARE THE FOLLOWING

- ▶ Low density
- ▶ High hardness, abrasion resistance and rigidity
- ▶ Good heat resistance (*up to 100°C if not subjected to mechanical stresses*)
- ▶ Versatile, easily processable
- ▶ Outstanding resistance to several chemicals
- ▶ Good impact strength
- ▶ Low water absorption and water-vapour permeability

These properties, which vary according to certain parameters (*melt flow rate, etc.*), differ between homopolymers and copolymers. The essential difference between copolymers and homopolymers is that copolymers have good impact strength even at low temperatures.

Polypropylene has very good mechanical properties which result from regular structure and molecular weight distribution. Polypropylene is a good insulator with very low dielectric constant and low dissipation factor. Dielectric strength depends on the temperature and the wall thickness of an item. Dielectric strength of thin wall items is very high.

Chemical resistance of polypropylene is excellent. Diluted and concentrated mineral acids and bases, polar solvents, high-molecular aliphatic compounds and inorganic salts and their solutions practically have no effect on polypropylene. This property is preserved even at high temperatures. However, it is swollen by low-molecular aliphatic, aromatic and chlorinated hydrocarbons. Strong oxidizing agents attack it at room temperature.

UV radiation and higher temperatures of the environment negatively affect physical and mechanical properties of polypropylene. Therefore it is necessary to protect PP products against these effects, mainly in outdoor applications.

APPLICATION

The wide range of grades and the consequent variation of their characteristics allow MOL Petrochemicals Co. Ltd. and SLOVNAFT, a.s. polypropylene to be used in highly different fields of application, which are briefly described as follows:

- ▶ Pipes (*rigid and flexible, pressure pipes, corrugated, etc.*) and their relative fittings
- ▶ Extruded and cast sheets, corrugated sheets, profiles
- ▶ Extruded sheets for the thermoforming of containers
- ▶ Rigid and flexible straps
- ▶ Monofilaments, fibres, staple fibre, slit and split film yarn, ropes and twines
- ▶ Non-woven fabrics (*spun bonded*)
- ▶ Household articles, toys
- ▶ Parts for household appliances, battery cases
- ▶ Articles and parts for the electrical, automotive, electronics and textile industries
- ▶ Injected or blow moulded containers for foodstuffs, cosmetics, toiletries, detergents and pharmaceuticals, bottles
- ▶ High speed injection moulded food-grade containers
- ▶ Transparent cast and blown films, bi-oriented films
- ▶ Furnishing (*chairs and chair backs, table tops, etc.*)



CODING SYSTEM

TATREN

TATREN IS THE REGISTERED TRADEMARK OF SLOVNAFT, A.S.
TATREN COMMERCIAL GRADES ARE CODED BY TWO LETTERS AND TWO GROUPS OF DIGITS.

The first letter represents the structure of the material
H = Homopolymer
I = Impact copolymer
TPO = Thermoplastic Olefin
R = Random copolymer

The first group of digits represents the MFR.

HT 25 11

The second letter represents typical application

G = General purpose
M = Moulding
T = Textile
F = Film
S = Spun bond

The second group of digits represents internal code.

TIPPLEN

TIPPLEN IS THE REGISTERED TRADEMARK OF MOL PETROCHEMICALS CO. LTD.
TIPPLEN COMMERCIAL GRADES ARE CODED USING A SYSTEM OF A LETTER, THREE OR FOUR DIGITS AND ONE / TWO LETTERS.

The first letter denotes the chemical nature of the polymer:

H = Homopolymer
K = Impact copolymer
R = Random copolymer

Internal code

H 145 F

The first digit in three-digit numbers and the first two-digits in four-digit numbers indicate the melt flow rate (MFR) range in [g/10 min] at 230°C and 2.16 kg

1 = 25 – 35
2 = 15 – 25
3 = 7.5 – 15
4 = 5.0 – 7.5
5 = 3.5 – 5.0
6 = 1.0 – 3.5
7 = 0.45 – 1.0
8 = 0.20 – 0.45
9 = 35 – 60
10 = 60 – 100

The last letters indicate the specific properties of the polymer.

POSSIBLE SPECIFIC PROPERTIES

A = Antistatic
F, FH = Film or fibre grade

HOMOPOLYMERS

TYPICAL PROPERTIES, CANNOT BE CONSIDERED AS SPECIFICATION

Grade/ Parameter	Melt Mass – Flow Rate (MFR) 230°C/2.16 kg	Flexural Modulus ¹	Modulus of Elasticity in Tension ¹	Tensile Stress at Yield ¹	Tensile Strain at Yield ¹	Notched Izod Impact Strength at 23°C ¹	HDT (0.45 MPa, flatwise) ¹	Hardness Rockwell ¹	Special features	Special additives	Application
Unit	g/10 min	MPa	MPa	MPa	%	kJ/m ²	°C	R scale	–	–	–
Test method	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	–	–	–
TIPPLEN H 880	0.25	1950	1750	40	11	9	130	93	Good mechanical properties, excellent long-term heat stability	SA	Extrusion, pipes, thick sheets
TIPPLEN H 781 F	0.70	1700	1600	37	11	10	126	93	Excellent processability, balanced mechanical properties	SA	Extrusion, blow moulding, sheets
TIPPLEN H 681 F	1.7	1740	1550	36	11	6.5	121	96	Good mechanical properties, excellent processability	SA	Extrusion, sheets for thermoforming, blown bottles
TIPPLEN H 659 F	1.7	1850	1800	38	9	10	129	102	Excellent optical properties, outstanding stiffness	NA	Extrusion, sheets for thermoforming, blown bottles
TIPPLEN H 649 FH	2.5	1700	1600	36	10	7	119	99	Bimodal, for high-speed production, metallizable grade, excellent optical properties	–	Monolayer and co-extruded biaxially oriented PP films (BOPP)
TATREN HT 3 06	3.0	1950	1900	37	8.5	6	106	105	Low water carry-over	–	High tenacity raffia, monofilaments, marine ropes, excellent for carpet backing, extrusion, injection moulding
TATREN HF 3 22	3.0	1750	1700	35	10	6	97	100	High-speed BOPP lines, excellent optical properties, metallizable	–	Monolayer and co-extruded biaxially oriented PP films (BOPP)
TIPPLEN H 543 F	4.0	1650	1700	36	9	6	120	101	Low water carry-over	–	Extrusion, weaving tapes, split film yarns
TIPPLEN H 583 F	4.2	1600	1650	35	9	5	110	99	Low water carry-over	SA, UV, AGF	Monofilaments, split film yarn, geotextile
TATREN HG 10 07	10	1900	1900	36	8	4	102	104	Good colour stability, superior spinning characteristics, good optics	AGF	Staple fibres, cast films, core layer at co-extrusion, injection moulding of sanitary equipment, caps, closures, small technical items
TATREN HS 25 52	25	1450	1550	33	10	3	78	101	Controlled rheology, very narrow molecular weight distribution, good colour and thermal stability, very low volatiles and low smoke	AGF	Spunbond for hygienic and medical applications
TATREN HT 25 11	25	1450	1550	33	10	3	78	101	Controlled rheology, low smoke	AGF	General purpose injection moulding, extrusion coating of PP fabric, undemanding fibre applications, compounding
TIPPLEN H 145 F	29	1800	1990	38	8	2.9	128	104	Reactor grade, high stiffness	SA	Injection moulding
TATREN HM 50 46	50	1850	1900	36.5	8	3	100	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, media boxes and boxes for food packaging

| ADDITIVES |

SA Slip agent
NA Nucleating agent
AS Antistatic agent
AGF Anti gas fading
UV UV stabilizer

| NOTES |

¹ Typical properties measured on standard injection moulded test specimen according to ISO 294-1.

RANDOM COPOLYMERS

TYPICAL PROPERTIES, CANNOT BE CONSIDERED AS SPECIFICATION

Grade/Parameter	Melt Mass-Flow Rate (MFR) 230°C/2.16 kg	Flexural Modulus ¹	Modulus of Elasticity in Tension ¹	Tensile Stress at Yield ¹	Tensile Strain at Yield ¹	Notched Izod Impact Strength at 23°C ¹	HDT (0.45 MPa, flatwise) ¹	Hardness Rockwell ¹	Haze ²	Special features	Special additives	Application
Unit	g/10 min	MPa	MPa	MPa	%	kJ/m ²	°C	R scale	%	-	-	-
Test method	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	-	-	-
TIPPLEN R 780	0.50	1050	1000	29	13	18	95	75	20	Excellent processability, good heat stability, expandable	-	Automotive components, foamed sheets
TIPPLEN R 785	0.50	1100	1050	30	12	23	90	78	-	Excellent processability, good heat stability, expandable	NA	Pipes, profiles, fittings, extrusion of sheets
TIPPLEN R 660	2.0	1000	950	26	13	24	86	73	15	Excellent clarity and gloss	CA	Extrusion, blow moulded bottles, injection stretch blow moulding
TIPPLEN R 665 XClear	2.8	900	950	25	14	17	82	70	11	Excellent clarity, gloss and processability	CA, AS	Extrusion, blow moulded bottles, injection stretch blow moulding
TIPPLEN R 351 F	8.5	900	900	25	12	5	83	77	-	Excellent transparency, gloss and very good heat weldability	SA, AB	Cast and blown film for foodstuffs, stationery, clothes packaging
TIPPLEN R 360	12	1100	1050	28	13	6	-	81	9.3	Very good transparency and excellent gloss	CA	Injection moulding for packaging cosmetics, herbs, household articles, caps
TATREN RM 45 44	45	1200	1200	29	11	4.5	-	89	7	Reactor grade, excellent organoleptic properties, excellent transparency, high gloss, very good processing stability	CA, AS	Thin wall injection moulding especially food packaging, household articles, cups, closures, media boxes
TIPPLEN R 960 A	45	1150	1100	28	13.5	4.5	-	80	7.3	Reactor grade, excellent organoleptic properties, very good transparency and excellent gloss	AS, CA, OW	Thin wall injection moulding for packaging cosmetics, sweets, household articles
TIPPLEN R 1060 A	84	1100	1150	29	13.5	4	-	80	7.5	Controlled rheology, excellent optical properties, good resistance to warping	AS, CA, OW	Thin wall injection moulding for packaging cosmetics, sweets, household articles
TATREN RM 85 84	85	1250	1250	29	11	3.5	-	90	7	Reactor grade, excellent organoleptic properties, excellent transparency, high gloss, very good processing stability	CA, AS	Thin wall injection moulding especially food packaging, household articles, cups, closures, media boxes

| ADDITIVES |

NA Nucleating agent
SA Slip agent
CA Clarifying agent
AB Antiblocking agent
AS Antistatic agent
OW Optical whitener

| NOTES |

¹ Typical properties measured on standard injection moulded test specimen according to ISO 294-1.
² Typical properties measured on standard injection moulded test specimen according to ISO 294-3. Values have been measured on specimens with 1 mm wall thickness.

IMPACT COPOLYMERS – 1

TYPICAL PROPERTIES, CANNOT BE CONSIDERED AS SPECIFICATION

Grade/ Parameter	Melt Mass – Flow Rate (MFR) 230°C/2.16 kg	Flexural Modulus ¹	Modulus of Elasticity in Tension ¹	Tensile Stress at Yield ¹	Tensile Strain at Yield ¹	Notched Izod Impact Strength at 23°C ¹	Notched Izod Impact Strength at -20°C ¹	HDT (0.45 MPa, flatwise) ¹	Hardness Rockwell ¹	Hardness Shore D ¹	Special features	Special additives	Application
Unit	g/10 min	MPa	MPa	MPa	%	kJ/m ²	kJ/m ²	°C	R scale	–	–	–	–
Test method	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	ISO 868	–	–	–
TIPPLEN K 850	0.23	2000	1900	34	7	41	6.5	135	90	–	Excellent heat and detergent resistance, very high stiffness and good weldability	SA, NA	Extrusion, corrugated sewage pipes, giga pipes, sheets
TIPPLEN K 880	0.35	1500	1400	28	10	49	8.5	120	76	–	Excellent heat and detergent resistance, very high impact strength	SA	Extrusion, pipes, sheets, blow moulding
TIPPLEN K 793	0.70	1450	1400	27	8	45	8	120	76	–	Very high impact strength	SA	Corrugated cardboards, corrugated pipes, extrusion, sheets, blow moulding
TIPPLEN K 691	1.3	1500	1450	27	6	43	8	126	82	–	High impact strength and stiffness	SA, NA	Corrugated cardboards
TIPPLEN K 693	2.0	1500	1380	26	7	20	6.5	115	79	–	High impact strength and stiffness	SA	Corrugated cardboards, corrugated pipes, extrusion, sheets, blow moulding, injection moulding
TIPPLEN K 695	2.0	1400	1370	27	7.7	18	6	115	79	–	Good mechanical properties, low gel content	SA	Cast film, corrugated cardboards, sheet for thermoforming
TIPPLEN K 597	4.0	1100	1100	22	6.3	50	8	104	70	–	Outstanding high impact strength	SA	Injection moulding, automotive components, battery cases
TATREN IM 6 56	6.0	1530	1530	27	6.5	10	4.5	95	89	–	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
TIPPLEN K 499	6.5	1300	1300	25	6	16	7	107	83	–	Excellent resistance to heat and chemicals	SA	Injection moulding, automotive components, battery cases, crates, boxes, dowels
TATREN IM 12 59	12	1500	1500	24.5	5	11.5	5.5	92	78	–	High stiffness, good impact resistance	NA	Injection moulding of rigid packaging, storage and transport boxes, household articles and technical items
TATREN TPO 12 76	12	850	900	16.5	13	44 ²	35 ²	67	–	50	Controlled rheology, extra high impact strength, good impact/stiffness balance	NA	Compounding, automotive applications and bumpers, injection moulding
TIPPLEN K 395 A	13	1300	1450	26	5	9.5	5	118	85	–	High stiffness	NA, AS	Injection moulding, household articles, pails, boxes, garden furniture

| ADDITIVES |

SA Slip agent
NA Nucleating agent
AS Antistatic agent

| NOTES |

¹ Typical properties measured on standard injection
moulded test specimen according to ISO 294-1.

² Values have been measured on standard injection
moulded test specimen prepared in accordance
with internal method.

IMPACT COPOLYMERS – 2

TYPICAL PROPERTIES, CANNOT BE CONSIDERED AS SPECIFICATION

Grade/ Parameter	Melt Mass – Flow Rate (MFR) 230°C/2.16 kg	Flexural Modulus ¹	Modulus of Elasticity in Tension ¹	Tensile Stress at Yield ¹	Tensile Strain at Yield ¹	Notched Izod Impact Strength at 23°C ¹	Notched Izod Impact Strength at -20°C ¹	HDT (0.45 MPa, flatwise) ¹	Hardness Rockwell ¹	Hardness Shore D ¹	Special features	Special additives	Application
Unit	g/10 min	MPa	MPa	MPa	%	kJ/m ²	kJ/m ²	°C	R scale	–	–	–	–
Test method	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	ISO 868	–	–	–
TATREN IM 15 79	15	1050	1100	20	10	43 ²	6.5 ²	74	–	55	Controlled rheology, excellent impact resistance and good stiffness	NA, AS	Heavy duty injection moulded products, medical and transport containers, technical items, compounding
TIPPLEN K 295 A	20	1470	1550	26	4	7.5	5	125	83	–	Reactor grade, high stiffness	NA, AS	Thin wall injection moulding, household articles
TATREN TPO 20 77	20	850	900	16.5	12.5	43 ²	35 ²	70	–	50	Controlled rheology, extra high impact strength, good impact/stiffness balance	NA	Compounding, automotive applications and bumpers, injection moulding
TATREN IM 22 63	22	1300	1350	23.5	5.5	10	5	84	76	–	Controlled rheology, high stiffness, good impact resistance	NA, AS	Injection moulding of rigid packaging, household articles, garden furniture and technical items
TATREN IM 25 75	25	1100	1150	20	6	40 ²	6 ²	80	55	–	Controlled rheology, excellent impact resistance and good stiffness	NA, AS	Heavy duty injection moulded products, medical and transport containers, crates, boxes, technical items, compounding
TIPPLEN K 199	30	1400	1350	26	5	6.4	4	105	87	–	Reactor grade, low C-emission and odour, good flow	NA	Thin wall injection moulding, automotive components
TIPPLEN K 199 TIC	30	1300	1350	24	5	6.4	4	119	84	–	Special automotive grade with low C-emission	NA	Injection moulding, automotive components
TIPPLEN K 948	45	1270	1400	24	4.5	6	4	120	83	–	Reactor grade, excellent organoleptic properties, low C-emission	NA	High-speed injection moulding, thin-walled packaging containers, pails, covers, garden furniture, automotive components
TATREN IM 45 54	45	1750	1800	29.5	4.5	5.5	3.3	104	97	–	Reactor grade, excellent stiffness/impact balance, short cycle time, excellent organoleptic properties	NA, AS	Rigid food and non-food packaging, hot filled stackable pails and containers, household articles, consumer goods, compounds for automotive applications
TATREN IM 55 80	55	1450	1400	23	4	7	4	92	83	–	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
TATREN IM 75 81	75	1400	1400	23	4	6	4	92	83	–	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
TATREN IM 100 85	100	1350	1400	23	4	4.5	3	92	80	–	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 |

NA Nucleating agent
AS Antistatic agent

| NOTES |

¹ Typical properties measured on standard injection moulded test specimen according to ISO 294-1.
² Values have been measured on standard injection moulded test specimen prepared in accordance with internal method.

PRODUCT SELECTION CRITERIA BASED ON THE TYPE OF POLYPROPYLENE

Selection criteria	Homopolymer	Random copolymer	Impact copolymer and TPO
Stiffness	First choice	Not recommended	Second choice
Toughness >0°C <0°C	Second choice	Second choice	First choice
	Not recommended	Second choice	First choice
Transparency	Second choice	First choice	Not recommended

EFFECT OF NUCLEATION ON TECHNICAL PROPERTIES

Technical properties	Trend
Stiffness	+
Impact resistance	=
Transparency*	+
Cycle time	+
Shrinkage (total)	-
Processability	+

+ Improvement
 = No change
 - Decline
 * Nucleating agent slightly improves transparency of homopolymers and random copolymers. Much better optical properties using special type of nucleator – clarifying agent – are achieved. Nucleated impact copolymers are never transparent, they are opaque.

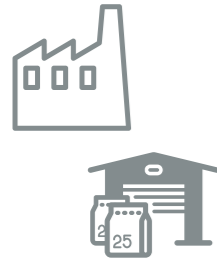
PHYSICAL PROPERTIES*

Physical	Density (ISO 1183-1)	0.9 g/cm ³
	Bulk Density (ISO 60)	0.46 – 0.58 g/cm ³
	Melting point (ISO 11 357-3)	
	Homopolymer	160 – 168°C
	Impact copolymer	160 – 166°C
	Random copolymer	135 – 150°C
	Water absorption (ASTM D570)	<0.03%
Mould Shrinkage (ISO 294-4)	1.1 – 2.5%	
Thermal	Thermal Conductivity (ASTM C518)	
	solid	0.23 W/(m·K)
	melt	0.16 W/(m·K)
	Coefficient of Linear Expansion	
	at 20°C	1.1·10 ⁻⁴ K ⁻¹
	at 80°C	1.7·10 ⁻⁴ K ⁻¹
	Specific heat (ASTM D2766)	
at 23°C	1.68 J/(g·K)	
at 100°C	2.10 J/(g·K)	
Electrical	Dielectric Constant (DIN 53 483)	2.27 (at 50 Hz)
	Dielectric Strength (DIN 53 481)	500 kV/cm
	Volume Resistivity (DIN 53 482)	>10 ¹⁷ Ω·cm
	Surface Resistivity (DIN 53 482)	10 ¹⁴ Ω
	Dissipation Factor (DIN 53 483)	<4·10 ⁻⁴ (at 50 Hz)

* These physical values are based on literature data. The values can change with different types, these values are not specified and not guaranteed.

STORAGE & HANDLING

PACKAGING



- ▶ 25 kg polyethylene bags
- ▶ Transported on shrink-wrapped or stretch-wrapped pallets
 - eligible load of polymer 1375 kg
- ▶ Adhesive is used between the bags in case of TIPPLEN to avoid their slipping
 - pay attention during the removal of the bags from the pallets
 - lift the bag at first without rotation
- ▶ Heat-treated pallets from PRS
 - a member of the Faber Halbertma Group, operating a pooling system that collects the pallets after use and organises reuse as part of a sustainable, circular system
 - PRS pallets remain the property of PRS at all times

TRANSPORTATION



- ▶ By truck
- ▶ Road silo
- ▶ Rail silo
- ▶ For details please see [Services](#) on www.molgroupchemicals.com

STORAGE



- ▶ Polypropylene is a combustible substance
 - adhere to the fire safety rules
- ▶ Do not store polypropylene in conditions of high humidity and fluctuating temperatures
 - atmospheric moisture can condense inside the packing
 - if it happens, dry the pellets before use
- ▶ Do not expose to UV radiation and temperatures above 40°C
- ▶ The producer does not take responsibility for any damages caused by adverse storage

STATEMENTS

REACH COMPLIANCE



- ▶ Polymers are exempt from registration
- ▶ SLOVNAFT, a.s. and MOL Petrochemicals Co. Ltd. use REACH-compliant raw materials (monomers and relevant additives)
- ▶ TATREN and TIPPLEN grades do not contain any substances specifically identified as SVHC at levels greater than 0.1%
- ▶ For more detailed information see [REACH/SVHC](#) statement on www.molgroupchemicals.com

APPLICATION FOR FOODS



- ▶ Most TATREN and TIPPLEN grades satisfy the regulations applied by European countries (EEC)
- ▶ In case of country-specific regulations or food industrial product licenses, contact MOL Petrochemicals Co. Ltd. and SLOVNAFT, a.s. for special information
- ▶ For more detailed information related to product safety, see [Declaration data sheets](#) on www.molgroupchemicals.com

SAFETY



- ▶ Polypropylene is not regarded as hazardous material when in contact with the skin or inhaled
- ▶ Any contact with the molten polymer or the inhalation of the released gases should be avoided during processing
- ▶ Install exhaust unit over processing machine and secure good ventilation of the area.
- ▶ For further information see [Material Safety Data Sheets](#) on www.molgroupchemicals.com.

RECYCLING



- ▶ Polypropylene resins are suitable for recycling using modern recycling methods.
- ▶ In-house production waste should be kept clean to facilitate direct recycling.

DISCLAIMER

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CERTIFICATES

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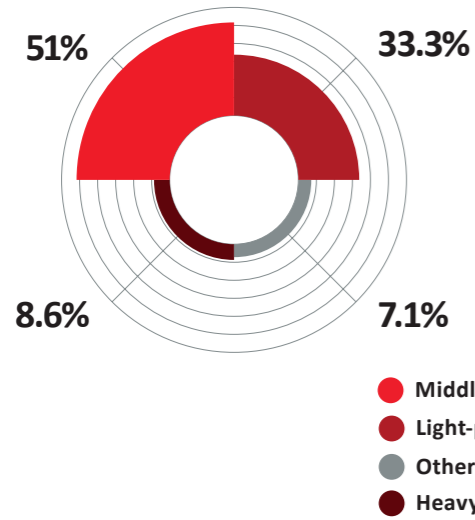
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MOL GROUP DOWNSTREAM REFINING & MARKETING, PETROCHEMICALS

SHAPE
TOMORROW

GROUP REFINERY YIELD (2022)



- DOMESTIC AND CORE MARKETS ■
- REFINERY 🏭
- PETROCHEMICAL PLANT 🏭
- OIL PIPELINE —
- PRODUCT DEPOT 🛢️

3
refineries

2
petrochemical sites

assets in
11
countries

380 KBPD
refinery capacity

17.4 MTPA
sales of refined
products

1.2 MTPA
sales of petrochemicals
products

890 KTPA
steam cracker*
capacity

~60.000
wholesale
customers

~9.300
employees

20%
CO₂ emission reduction of
Scope 1 and Scope 2 by 2030

*Ethylene capacity