



KESSEL

EGYPTIAN GERMAN CO. (EGIC)

■ ■ ■ Part of the SMART HOME - Complete Solutions



KESSEL

PP Push-fit Drainage Systems

SUPERIOR GERMAN QUALITY



www.egic.com.eg



Dear Customers,

The Egyptian German Industrial Corporate was founded in 1991 to market all types of sanitary products and related accessories. Joining Kessel AG, our German partner, we built our factories supported by extensive MIS distribution network and warehouse facilities to ensure quality service.

By constantly adapting our products to the needs of the market, and developing the relevant know-how, EGIC has achieved success in Egypt and EMEA region with motivation to continue making constant improvements to our systems and solutions.

Becoming a leading developer of benchmark quality in Polymers/Plastic products, we manufacture an economically innovative product range of PP-R Pipes & Fittings for drinkable cold & hot water as well as PP & UPVC Pipes and Fittings for drainage.

Applied raw material technologies optimizes the material characteristics for the protection of the environment. The use of polypropylene raw material for manufacturing ensures social compatibility, hygiene, health and well-being packing for the most precious commodity, goods: "Clean drinking water."

Our promise is to not only satisfy but also exceed our customers expectations by offering them the highest quality products & a wide range of supported services. Our outstanding customer relations skills ensures efficient delivery, where in turn reflects in customer loyalty.

As an Egyptian and the Chairman of EGIC, I strive to support and invest in our fellow citizens employees, the roots that flourish the success of any productive country. At EGIC we believe, in team work, in progress in a better tomorrow and in honest open communication. Career opportunities are constantly open for those dedicated to build a strong infrastructure, while contributing to the economic growth and future stability of our country and the next generation.

Sincere Regards,
CEO & Chairman

Omar Safey El Dine

Company Description

EGIC a family-owned joint stock company – was established early 1991 to market all types of sanitary products and related accessories. In 2001, EGIC became a pioneer & market leader in manufacturing pipes and fittings for water supply and drainage, in several plastic materials (Polypropylene, PVC, Polyethylene); which positions the company in the construction value chain as a construction material supplier and manufacturer.

Company History

- EGIC was established in 1991.
- In 1995, it became the first importer of PP-R water pipes.
- In 1997, it expanded its importing activities to reach the drainage pipes.
- In 2001, production started: EGIC started producing a small range of fittings, and grew to the extent that it currently produces the full range of fittings.

Company's Physical Assets

- Cairo Head Office (Manial Street)
- Beni Suef Factory for producing Polypropylene pipes and fittings.
- October Factory for producing PP, PVC and Polyethylene pipes.
- Warehouses:
 - Cairo Central Warehouse
 - Others, all over Egypt.

Smart Home- Complete Solutions

Home is a dwelling place where we spend the whole of our life. Installing Superior Piping Systems that work properly, in our home is really crucial to make it a peaceful place to live in. These facilities are very important and there is no second thought to the fact that a home can never be complete without them. Expert services are required to get this job done, a professional market leader with a good reputation in the market on account of its timely quality teamwork service and performance.

We provide the best Market and Customer Service Teamwork offering complete home plumbing solutions and maintenance services. Our business provides highly qualified, efficient and experienced tradespeople for every job.

Our Pipes and Fittings Range Include:

- PP-R Pipes & Fittings for Drinkable Hot & Cold Water.
- PP Pipes & Fittings with Rubber Ring for Drainage.
- PVC Pipes and Fittings for Drainage.
- Floor Drains.
- Drainage Channels.
- Gully Traps.
- HDPE Pipes and Fittings for Water and Gas from 32-800 mm.

Our Superior German Quality Systems aims for a complete plumbing solution.

- ☑ Zero Leakage
- ☑ Zero Contamination
- ☑ Zero Corrosion
- ☑ Zero Blockage



- 1 PP-R Pipes & Fittings for Drinkable Hot & Cold Water
- 2 PP Pipes & Fittings with Rubber Ring for Drainage
- 3 PVC Pipes & Fittings for Drainage
- 4 Floor Drains
- 5 Gully Trap / Inspection Chambers
- 6 Drainage Channels
- 7 PE Pipes for water supply/Drainage
- 8 PE Gas Pipes



Basic Information

 **KESSEL**

CHAPTER 1 Basic Information

SUPERIOR GERMAN QUALITY



Basic Information

Trade Mark



Material

polypropylene (PP) hot water resistant, stabilized light sensitivity.

Test marks

Impact / Block Copolymer Granules
Extrusion Grade, for Drainage Type : Moplen EP 440 G.

Quality requirements

DIN 8078

Technical delivery conditions

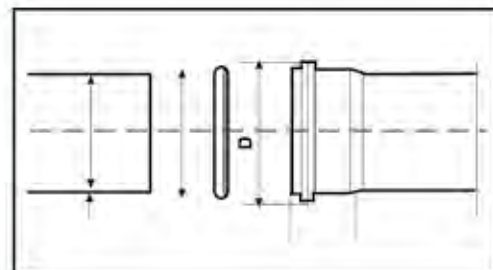
DIN EN 1451 and DIN V 19 560 - 10

Colour

Grey RAL 7037

Chemical resistance

Environmental resistance to most organic and inorganic chemicals that are used in the industrial field and also private homes. (For a full list of chemicals check the Chemical resistance table)



Marking

KESSEL pipes bear the following marks:

- 1-The brand **KESSEL**
- 2-The nominal size
- 3-The number of the standard specification DIN V 19 560
- 4-The Date and the time of production.
- 5-The extrusion line & shift no.
- 6-Material no.

KESSEL fittings show the degree of the angle, the number of cavities, the month and year of production.

The ring seal shows the number of the standard specification DIN 4060, the test mark PA-I..., the trade name of the producer for the ring seal.

Nominal Diameters (DN)

50 75 110

Laying length (mm.)

750 1000 1500 3000

Joining

Push-fit connection.

Sealing

pre-inserted lip ring seal.

Applications

Can be used in various applications in the industrial as well as the residential sector. Like: office building, hospital, hotel, residential district, villa, embassy building, hot spring drainage water, etc...

DN	L (mm)	m (kg)
50	3000	.28550
75	3000	.45475
110	3000	.938110

Socket and spigot end measurement

1. **KESSEL** polypropylene (PP) pipes and fittings are used for pressure-less drainage lines. There are no limitations as to the admissible thermal loads by effluent water.
2. **KESSEL** pipes and fittings are connected by a push-fit socket and sealed tight with sealing ring.
3. **KESSEL** pipes and fittings should NOT be exposed to direct sunlight over a long period of time.
4. As shown in illustration (1 to 5), the **KESSEL** pipes can be easily cut to fit any length, chamfered and burned, connected and fixed in position.
5. In horizontal lines, the spacing of **KESSEL** pipe clamps must NOT be more than ten times the outer diameter of the pipe. In vertical lines, spacings should NOT be more than 1 meter (maximum 2 meters).
6. **KESSEL** Fittings should always be laid out as fixed points, e.g. installation 2 clamps right before and after the socket.
7. If the floor is covered with asphalt mastic, exposed pipe should be protected with heat-insulating material.
8. When **KESSEL** pipes are laid in concrete, the socket gaps should be sealed with adhesive tape in order to prevent penetration of cement grout.
9. Residual pipe lengths without socket may be re-used with single push-fit sockets and rubber seals.
10. For connection to an existing pipeline, use a long and/or double socket sleeves.
11. Connections from/to lines of metal or cast iron pipes done easily, by means of special fittings provided in the solution and corresponding sealing elements.
12. Distance between Pipe Clamps

RECOMMENDED PIPE CLAMP INTERVALS		
DN	Horizontal (m)	Vertical (m)
50	0.50	1.5
75	0.80	2.0
90	0.90	2.0
110	1.10	2.0
125	1.25	2.0
160	1.60	2.0

Chamfering and burning



Lubricating



Joining (push the spigot end into the socket until fully home)



Mark the position of the socket's edge on the pipe, withdraw the pipe from the socket by approx. 10 mm. and secure the pipe bracket immediately below the socket.





Products

 **KESSEL**

CHAPTER 2 Products

SUPERIOR GERMAN QUALITY

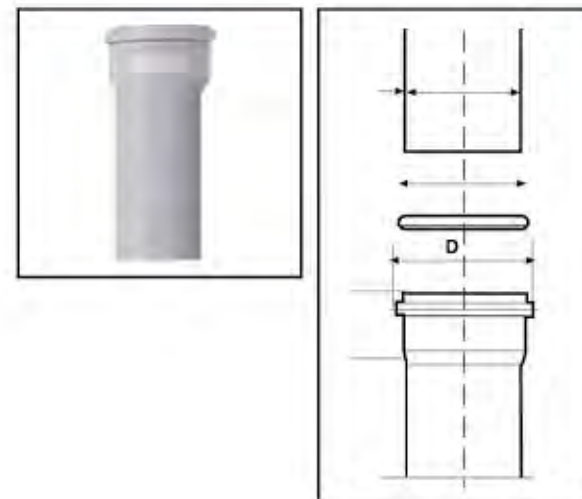




The Perfect Design & Performance

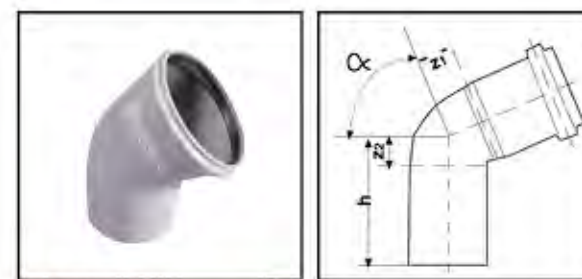


KESSEL Pipes with Socket



Measurements in mm.							
KESSEL	OD	l	d _i	S ₁	D	t	kg
52099903	50	750	50	1.8	64	58	0.231
42030001		1500	50	1.8	64	58	0.445
32020001		3000	50	1.8	64	58	0.892
42020001	75	1000	75	1.9	89	61	0.484
32020002		3000	75	1.9	89	61	1.427
42020002	110	1000	110	2.7	128	72	1.008
32020003		3000	110	2.7	128	72	2.989

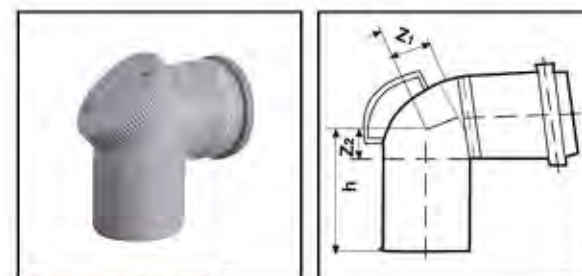
KESSEL Bend



KESSEL 5201
KESSEL 5202

Measurements in mm.					
Dn	α	Z ₁	Z ₂	h	kg
40	45°	10	13	72.0	0.037
	87.5°	23	26	85.0	0.041
50	45°	12	15	74.5	0.049
	87.5°	27	31	89.5	0.050
75	45°	17	20	83.0	0.084
	87.5°	39	43	105.0	0.093
110	45°	25	28	101.0	0.160
	87.5°	57	61	133.0	0.230

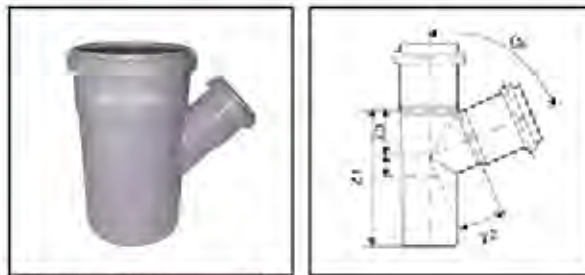
KESSEL Bend with inspection



KESSEL 5203

Measurements in mm.					
Dn	α	Z ₁	Z ₂	h	kg
110	87.5°	57	61	133.0	0.262

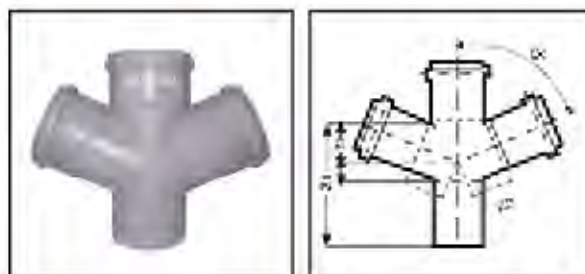
KESSEL Branch



☐ KESSEL 5204
☐ KESSEL 5205

Measurements in mm.					
Dn	α	Z ₁	Z ₂	Z ₃	kg
40/40	45°	115.0	49	49	0.068
	87.5°	105.0	24	24	0.050
50/50	45°	130.0	61	61	0.092
	87.5°	114.9	29	29	0.080
75/50	45°	134.0	79	74	0.115
	87.5°	118.0	42	30	0.115
75/75	45°	168.0	91	91	0.115
	87.5°	142.0	43	43	0.142
110/50	45°	148.0	104	91	0.220
	87.5°	122.0	59	30	0.205
110/75	45°	175.0	116	109	0.265
	87.5°	152.0	60	44	0.235
110/110	45°	266.0	133	133	0.375
	87.5°	185.0	61	61	0.310

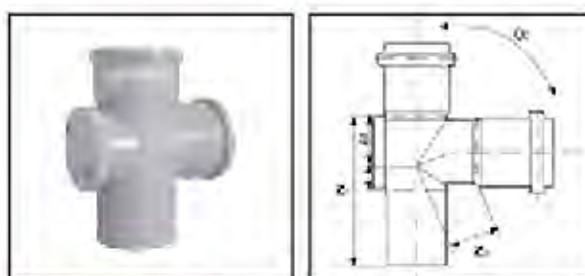
KESSEL Double Branch



☐ KESSEL 5207

Measurements in mm.						
Dn	α	Z ₁	Z ₂	Z ₃	l	kg
50/50/50	67.5°	20	41	41	124	0.100
75/75/75	67.5°	28	59	59	153	0.190
110/50/50	67.5°	8	71	51	135	0.265
110/110/110	67.5°	40	85	85	201	0.530

KESSEL Branch with inspection



☐ KESSEL 5206

Measurements in mm.						
Dn	α	Z ₁	Z ₂	Z ₃	l	kg
110/50	87.5°	27	59	30	122.0	0.337
110/110	87.5°	57	61	61	185.0	0.383

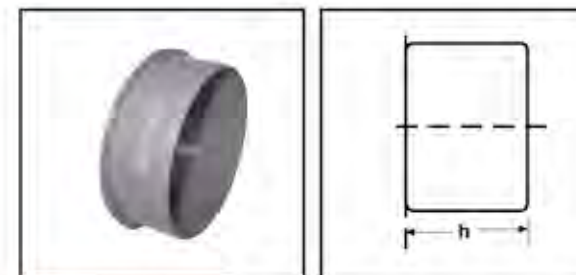
KESSEL Double socket



☐ KESSEL 5208

Measurements in mm.			
Dn	h	l	kg
40	111	9	0.035
50	112	9	0.041
75	118	22	0.070
110	140	26	0.140

KESSEL Plugs



☐ KESSEL 5209

Measurements in mm.		
Dn	h	kg
40	39	0.010
50	39	0.013
75	39	0.034
110	46	0.066

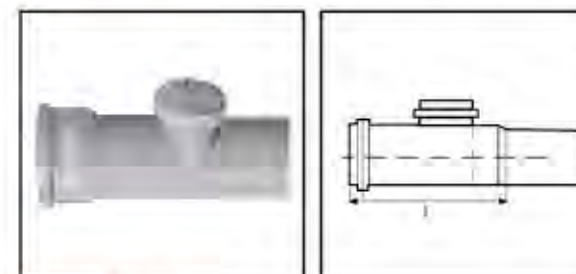
KESSEL Reduction Pipes



☐ KESSEL 52092

Measurements in mm.			
Dn1	Z ₂	h	kg
50/40	11	66	0.033
75/50	20	78	0.054
110/50	39	105	0.115
110/75	25	91	0.122

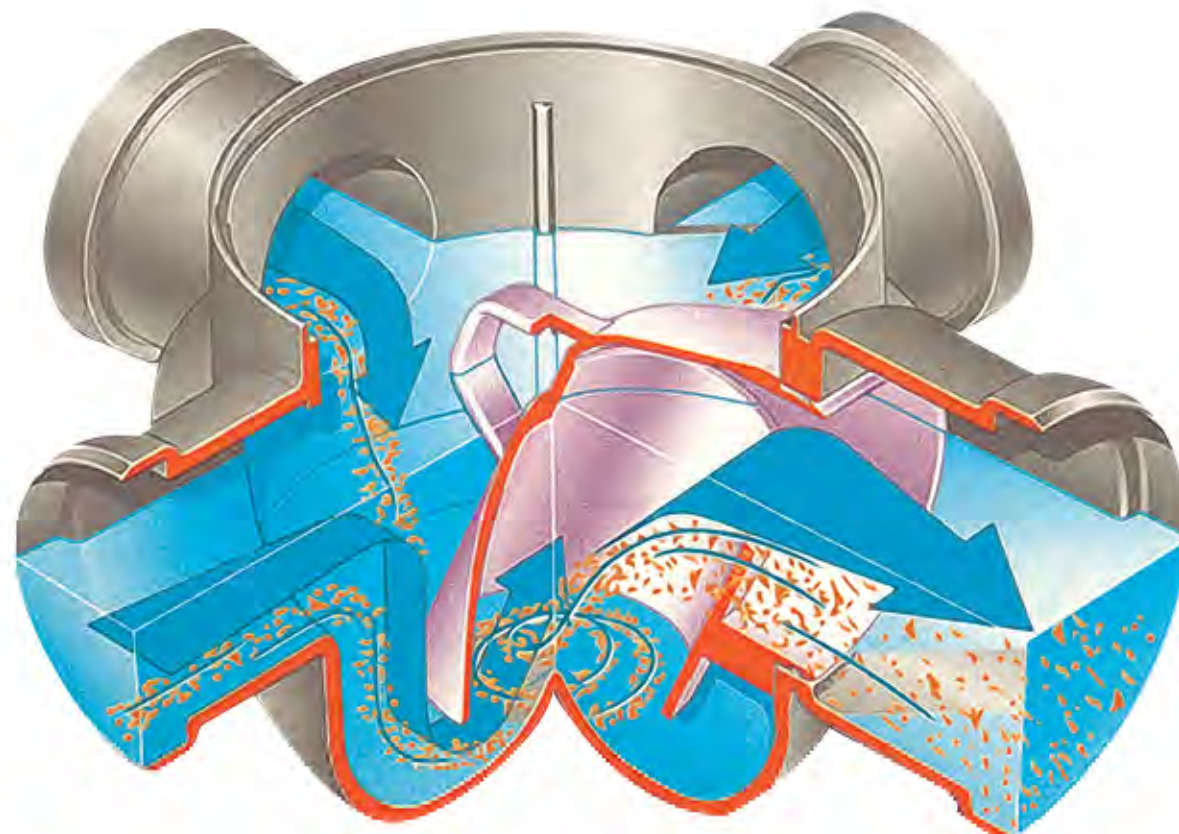
KESSEL Inspection Pipes



☐ KESSEL 52090

Measurements in mm.		
Dn	l	kg
50	115	0.075
75	142	0.145
110	185	0.330

Engineered in Germany



The New **KESSEL** ABS Floor Drain 3000

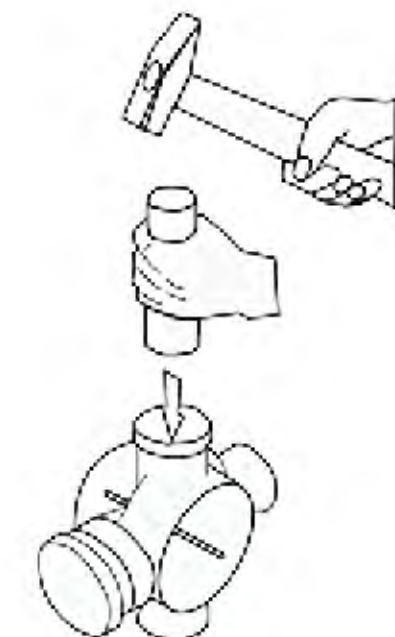
Product Description	Nom. diam Ø = O.D.mm. Outlet	Code No.	KESSEL advantages
<ul style="list-style-type: none"> ■ KESSEL floor drain, ABS, Ø 75, with odour trap 	Ø 75		<ul style="list-style-type: none"> ■ Fits to all KESSEL floor/bathroom drain upper sections. ■ Removable odour trap for optimum pipe cleaning. ■ Three lateral inlets, all with „knock-out plugs“. ■ Hydraulically designed for self-cleaning and maximum flow. ■ Pipe connection can be glue fitted or push fitted with available gaskets. ■ Chemical resistance. ■ Impact resistance.
<ul style="list-style-type: none"> ■ Three lateral Ø 50 inlets with lateral Ø 75 outlet, discharge 1.05 liter/s 	Ø 75/ Ø 50 reduction	37 301	
<ul style="list-style-type: none"> ■ Outlet, reduction available Ø 75 / Ø 50 	Ø 50/ Ø 40 reduction	37 302	
<ul style="list-style-type: none"> ■ Inlet reduction available Ø 50 / Ø 40 			

KESSEL Installation Hints

■ To remove Knock-out plugs place the opposite side of drain on firm surface then knock out plug using hammer and extension rod.

■ Installing odour trap - Tilt odour trap so that bottom section enters outlet first, then firmly insert odour trap into outlet (applying grease is recommended).

■ 75Ø - Ø50 and Ø50 - Ø40 reductions fit inside inlets or outlet.



KESSEL Bathroom Drain Classic

manufactured from ABS,
vertical outlet (2.5 deg slope),
0.9 l / sec flow rate

Removable odor trap (50 mm.
height).

Integrated body gasket.

Vertically adjustable ABS upper
section,

100 x 100 mm. stainless steel cover,
load class K (300 kg).

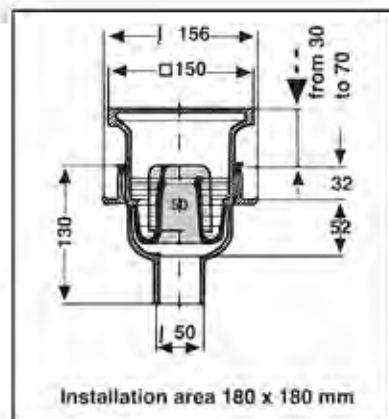
OD Ø" 50 40 250.20

OD Ø" 75 40 270.20

150 x 150 mm. stainless steel cover,
load class K (300 kg).

OD Ø" 50 40 250.20 + 27191

OD Ø" 75 40 270.20 + 27191



KESSEL Bathroom Drain Classic

manufactured from ABS,
lateral outlet,

0.9 l / sec flow rate

Removable odor trap (50 mm.
height).

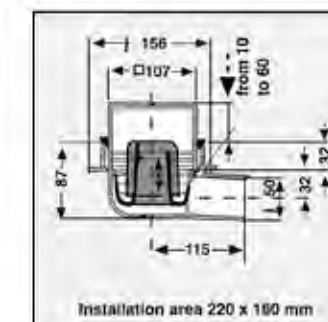
Integrated body gasket.

Vertically adjustable ABS upper
section,

100 x 100 mm. stainless steel cover,
load class K (300 kg).

OD Ø" 50 40 150.20

OD Ø" 75 40 170.20



KESSEL Bathroom Drain (The Superflat) New

manufactured from sound
dampening PP,

OD Ø" 50 flexible outlet,

0.9 l / sec flow rate

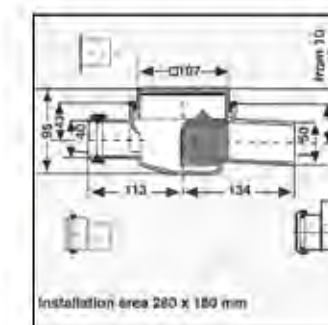
Removable odor trap.

Lateral OD Ø" 40 inlet and integrated
body gasket.

Vertically adjustable ABS upper
section,

100 x 100 mm. stainless steel cover,
load class K (300 kg).

Lowest installation height - 90 mm.

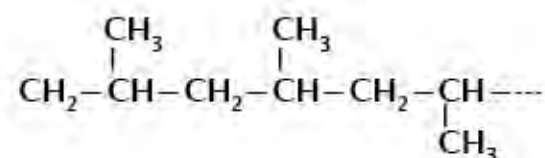


OD Ø" 50 42701.20

Polypropylene (PP)

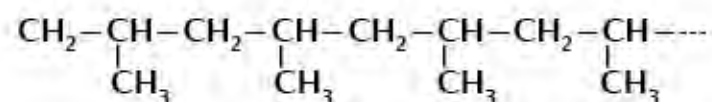
Polypropylene is related to polyethylene, and is also produced by the polymerization of ethylene, using the low-pressure process.

The structural formula of polypropylene differs from that of polyethylene in that on every second carbon atom of the chain molecule a hydrogen atom is replaced by a CH₃ group. These CH₃ groups may either be arranged on both sides of the carbon atom (atactic)



or all the groups can be on only one side (isotactic). Commercial polypropylenes are exclusively isotactic.

Its formula:



Isotactic polypropylene is highly crystalline - the evenly constructed chains can be easily arranged. This gives it a high resistance to heat (up to 110°C over short periods), plus high mechanical strength, good tear resistance, surface hardness, tensile strength and good recovery behaviour. Its excellent electrical insulation properties correspond to those of polyethylene, while its chemical resistance is high, as with all polyolefin polymers.

Keys:

+	= resistant
o	= practically resistant
o	= partially resistant
o	= not very resistant
---	= not resistant

No:

details	= not tested
any	= any concentration
conc.	= concentrated solution
low	= low concentration
serv	= service concentration
stand.	= standard, customary
disc.	= discoloured
aq.	= aqueous solution
sat.	= cold saturated
b.p.	= boiling point

Chemical Resistance

Chemicals	Conc.%	20°C	60°C	100°C
Acetone ¹	100	+	0	
Ether, see diethyl ether				
Alums of all types, aq.	any	+	+	
Aluminium salts, aq.	any	+	+	+
Formic acid	98	+	0	
	90	+		
	50	+	+	
	10	+	+	+
Ammonia, gaseous	100	+	+	
Ammonia, aq.	conc	+	+	
	10	+	+	
Ammonium acetate, aq.	any	+	+	+
Ammonium carbonate, aq.	any	+	+	+
Ammonium chloride, aq.	any	+	+	+
Ammonium nitrate, aq.	any	+	+	+
Ammonium phosphate, aq.	any	+	+	+
Ammonium sulphate, aq.	any	+	+	+
Amyl alcohol, pure		+	+	
(fermentation amyl alcohol)				
Aniline	100	+	0	
Barium salts	any	+	+	+
Benzaldehyde	100	+		
Benzaldehyde, aq.	sat.	+		
	(0.3)	+		
Petrol, see fuels				
Benzoic acid	100	+	+	
Benzoic acid, aq.	sat	+	+	+
Benzene	100	0	---	
Succinic acid, aq.	sat.	+	+	
Boric acid	100	+	+	
Boric acid, aq.	sat.	+	+	
	(4.9)			
Bromine, liquid	100	---		
Bromine vapours	high	---	---	
Bromine vapours	low	0	---	
Bromine water	sat.	---	---	
Butane, liquid	100	+		
Butane, gaseous	100	+	+	
n-Butyl alcohol (n-Butanol)	100	+	+	+
Calcium chloride, aq.	sat.	+	+	
Calcium nitrate, aq.	sat.	+	+	
Chlorine, liquid	100	---		
Chlorine, gaseous, damp	10	0	---	---
Chlorine, gaseous, dry	100	---	---	---
Chlorobenzene	100			
Chloroform	100	0	---	

¹ Boiling point 56.3°C

Chemicals	Conc.%	20°C	60°C	100°C
Chlorosulphonic acid				
Chlorine water	100	---	---	
Hydrogen chloride, gaseous	sat.	0	---	
(ct. also hydrochloric acid)	high	+	+	
Chromium salts (bivalent and trivalent), aq.	low	+	+	
Chromium trioxide, aq. (chromic acid)	sat.	+	+	
	sat.	+	---	
Cyclohexane	20	+	0	
Cyclohexanol	100	+		
Cyclohexanone	100	+	+	
Decahydronaphthalene	100	+	---	
Diethyl ether ¹	100	0	---	---
Dibutyl phthalate, see plasticizers	100	0		
Dimethylformamide	100	+		
1,4-Dioxan	100	+	0	---
Iron salts, aq.	sat.	+	+	+
Acetic acid (glacial)	100	+	0	---
Acetic acid, aq. (ct. also vinegar)	50	+	+	
	10	+	+	+
Acetic anhydride	100	+		
Ethyl acetate (acetic ester)	100	0	0	
Butyl acetate	100	+	0	
Ethanol, not denatured	100	+		
Ethanol, aq., not denatured	96	+	+	
	50	+	+	
	10	+	+	
Ethyl benzene	100	0	---	
Chloroethane ²	100	---		
Dichloroethane	100	0	0	
2-Ethyl hexanol	100	+		
Hydrofluoric acid	40	+	+	
Formaldehyde, aq.	40	+	+	
	30	+	+	
	10	+	+	
Glycerol	100	+	+	
Glycerol, aq.	high	+	+	
	low	+	+	
Glycol	100	+	+	+
Glycol, aq.	high	+	+	
	low	+	+	+

¹ Boiling point 34.6°C

² Boiling point 13.1°C

Chemicals	Conc.%	20°C	60°C	100°C
Urea, aq.	sat.	+	+	
Heptane	100	+	0	
Hexane	100	+	0	
Isooctane	100	+	0	
2-Propanol	100	+	+	
Caustic potash solution	50	+	+	
	25	+	+	
	10	+	+	
Potassium carbonate, aq. (potash)	sat.	+	+	
Potassium chlorate, aq.	sat.	+	+	
	10	+	+	
Potassium chloride, aq.	(7.3)			
Potassium dichromate, aq.	sat.	+	+	+
	sat.	+	+	+
Potassium iodide, aq.	(12)			
Potassium nitrate, aq.	sat.	+	+	
Potassium permanganate, aq.	sat.	+	+	
	sat.	+	+	
Potassium persulphate, aq.	(6.4)			
	sat.	+		
Potassium sulphate, aq.	(0.5)			
Cresol	sat.	+	+	+
Cresol, aq.	100	+	0	
	sat.	+	0	
Copper salts, aq.	(0.25)			
Magnesium salts, aq.	sat.	+	+	+
Methyl ethyl ketone	sat.	+	+	+
Methyl alcohol (methanol)	100	+	0	
Methyl alcohol, aq.	100	+	+	
Dichloromethane ₁	50	+	+	
Lactic acid, aq.	100	0		
	90	+	+	
	50	+	+	
	10	+	+	+
Mineral oils, see Technical Requisites and Drugs				
Naphthalene	100	+		+
Sodium bicarbonate, aq. (natron)	sat.	+	+	
Sodium bisulphite, aq.	sat.	+	+	
Sodium carbonate, aq. (soda)	sat.	+	+	+
	10	+	+	
Sodium chlorate, aq.	25	+	+	+
Sodium chloride, aq. (common salt)	sat.	+	+	
Sodium chlorite, aq.	5	+		
Sodium hydroxide (caustic soda)	100	+	+	
Sodium hypochloride, aq.	5	+	+	
Sodium nitrate, aq.	sat.	+	+	

¹ Boiling point 41.6°C

Chemicals	Conc.%	20°C	60°C	100°C
Sodium nitrate, aq.	sat.	+		
Sodium perborate, aq.	sat.	+	+	
	(1.4)	+	+	
Sodium phosphate, aq.	sat.	+	+	
Sodium sulphate, aq. (Glauber's salt)	sat.	+	+	
Sodium sulphite, aq. ¹	sat.	+	+	
Sodium sulphite, aq.	sat.	+	+	
Sodium thiosulphate, aq. (fixing salt)	sat.	+	+	
Caustic soda solution	50	+	+	
	25	+	+	
	10	+	+	
Nickel salts	sat.	+	+	
Nitrobenzene	100	0+	0	
Oleic acid	100	+	+	
Octane, see isooctane				
Oxalic acid, aq.	sat.	+	+	+
Ozone (< 0.5 ppm)		0+	0-	
Perchloroethylene, see tetrachloroethylene				
Phenol	sat.	+	+	
(aqueous phase)	(approx. 9)			
	sat.			
(phenolic phase)	(approx. 70)			
	100	+		
Phosphorus pentoxide	sat.	+	0	
Phosphoric acid	(approx. 85)			
	50	+	+	
Phosphoric acid	10	+	+	+
	50	+		
Propane, liquid	100	+	+	
Propane, gaseous	100	+	0	
Pyridine	100	+	+	
Mercury	100	+	+	
Mercury salts, aq.	sat.	+	+	
Nitric acid	50	0	--	
	25	+	+	
	10	+	+	
Hydrochlorid acid	conc.	+	+	⊕
	10	+	+	
	100	0		
Sulphur	low	+	0	
Sulphur dioxide	100	+	+	
Carbon disulphide ²	96	+	+	
Sulphuric acid	50	+	+	
	25	+	+	
	10	+	+	+
Hydrogen sulphide ¹	low	+	+	

¹ Discoloration with lead stabilizers

² Boiling point 46.2°C

Chemicals	Conc.%	20°C	60°C	100°C
Silver salts, aq.	sat.	+	+	
Stearic acid	100	+		
Tetrachloroethane	100	0-	---	
Tetrachloroethylene	100	0	---	
(perchloroethylene)				
Carbon tetrachloride	100	0	---	
Tetrahydrofuran	100	0	---	
Tetrahydronaphtalene	100	0	---	
Thiophene	100	0	---	
Toluene	100	0	---	
Trichlorethylene	100	0	0-	
Water	100	+	+	+
Hydrogen Peroxide, aq.	90			
	30	+	0	
	10	+	+	
	3	+	+	+
Tartaric acids, aq.	sat.	+	+	
Xylene	100	0	---	
Zinc salts, aq.	sat.	+	+	
Tin (II) chloride	sat.	+	+	
Citric acid, aq.	sat.	+	+	+

¹ Resistance depends on composition

Chemicals	Conc.%	20°C	60°C	100°C
Battery acid	sat.	+	+	
Alum		+	+	
Asphalt ¹		+	0	
Petrol, see fuels				
Bleaching lye/liquor		0	0	
(12% effective chlorine)				
Floor polish/wax ¹		+	0	
Borax, aq.	sat.	+	+	
Brake fluid ¹		+	+	
Chlorinated lime		+	+	
(aqueous suspension)				
Chromium baths, techn. ¹		+	+	
Chromic-sulphuric acid mixture		---	---	
Diesel oil, see fuels				
Dixan lye®	servo	+	+	+

¹ Resistance depends on composition

Technical Requisites and Drugs	Conc.%	20°C	60°C	100°C
Pine-needle oil		+	O+	
Fixing salt (ct. also sodium thiosulphate)	10			
Formalin®		+	+	
Antifreeze (car)		+	+	
Dishwasher fluid ¹		+	+	+
Heating fuel oils ¹		+	O	
Scots fir oil		+	O+	
Bone oil		+	O+	
Aqua regia		+	---	
Cresol solution		+		
Lanolin®		+	O	
Linseed oil		+	+	
LITEX®		+	+	
Lysol®		+	O	
Mineral oils (free from aromatics) ¹		+	O	---
Furniture polish ¹		+	O	---
Engine oils (car) ¹		+	O	---
(cf. also two-stroke engine oils and oil in accordance with ASTM)				
Moth balls ¹		+		
Oleum	any	---	---	
Oil NO.3 in accordance with ASTM D 380-59	100	+	O	---
Paraffin	100	+	+	---
Liquid paraffin	100	+	O	---
Pectin	sat.	+	+	
Petroleum ether	100	+	O	
Kerosene	100	+	O	
Photographic developer ¹	stand. serv.	+	O	
Sagrotan®		+	O	
Soft soap		+	+	
Typewriter oil		+	O+	
Shoe polish ¹		+	O	
Seawater		+	+	+
Silicone oil ¹		+	O+	
Soda, see sodium carbonate				

¹ Resistance depends on composition

Technical Requisites and Drugs	Conc.%	20°C	60°C	100°C
Tar ¹		+	O	
Oil of turpentine		O	---	
White spirit		+	O	
Ink ¹		+	+	
Transformer oil ¹		+	O	
Fuels:				
Precipitation naphtha per DIN 51635		+	O	
Petrol, regular		⊕	---	
Petrol, super		O	---	
Diesel oil ¹		+	O	
Detergents ¹	high	+	+	
Detergents, synthetic ²	serv.	+	+	+
Water glass		+	+	
Hydrogen peroxide, see chemicals				
Plasticizers:				
Dibutyl phthalate		+	O	
Dibutyl sebacate		+		
Dihexyl phthalate		+		
Dionyl adipate		+		
				O
Plasticizers:				
Dionyl phthalate		+		
Diocetyl adipate		+		
Diocetyl phthalate		+		
Tricresyl phosphate		+		
Triocetyl phosphate		+		
Two-stroke engine oil		O	O	

¹ Resistance depends on composition

² Free from solvents, plasticizers and other additives

Pharmaceuticals and cosmetics	Conc.%	20°C	60°C	100°C
Aspirin®		+		
Quinine		+		
Hair shampoo		+	+	
Tincture of iodine, DAB 6 [DAB=German Pharmacopoeia]	+disc.			
Camphor		+		
Menthol		+		
Nail polish ¹		+	0	
Nail polish remover ¹		+	0	
Perfume ²		+		
Soap, bar	sat.	+	+	
Soap solution	10	+	+	
		+	+	
Vaseline		+	0	+
Toothpaste		+	0	

¹ Resistance depends on composition

² Check permeability for odorous substances

³ Resistance depends on composition. in this case in relation to 50%

Pharmaceuticals and cosmetics	Conc.%	20°C	60°C	100°C
Foodstuffs and Luxury Items				
Pineapple juice		+	+	
Apple purée		+	+	0+
Apple juice		+	+	
Orange juice		+	+	
Orange peel		+		
Orange peel oil		+		
Beer		+		
Bitter almond flavouring		+		
Gravy		+	+	0+
Butter		+	+	
Buttermilk		+		
Coca-Cola®		+		
Egg (raw and cooked)		+	+	0+
Peanut oil		+	0+	0-
Vinegar	stand.	+	+	
Vinegar essence ³	stand.	+	+	
Fish, pickled		+	+	0+
Fruit juices		+	+	

¹ Resistance depends on composition

² Check permeability for odorous substances

³ Resistance depends on composition. in this case in relation to 50%

Foodstuffs and Luxury Items	Conc.%	20°C	60°C	100°C
Jelly		+	+	⊕
Vegetables, ready to serve		+	+	⊕
Gin	40	+		
Grapefruit juice		+	+	
Semolina		+	+	⊕
Honey		+	+	
Cheese		+		
Coffee (beans and ground)		+		
Coffee, ready to drink		+	+	+
Cocoa, powder		+		
Cocoa, ready to drink		+	+	⊕
Mashed potatoes		+	+	⊕
Potato saled		+		
Coconut oil		+	0+	
Cake		+		
Cod-liver oil		+		
Linseed oil, see Technical				
Requisites and Drugs				
Liqueurs	any	+		
Soft drinks		+		
Maize oil		+	0	
Margarine		+	+	
Marmalade		+	+	⊕
Mayonnaise		+		
Horse-radish, ready to serve		+		
Flour		+		
Milk		+	+	⊕
Milk-based foods		+	+	⊕
Cloves (spice)		+		
Oil of cloves		+	0	
Fruit salad		+		
Olive oil		+	+	
Palm kernel oil		+	0	
Paprika (spice)		+	+	
Pepper		+	+	
Peppermint oil		+		
Custard		+	+	⊕
Curd cheese		+		
Beef suet		+	+	
Rum	40	+	+	
Rum flavouring		+		

Chemicals	Conc.%	20°C	60°C	100°C
Cream, whipped cream		+		
Salt, dry		+	+	+
Salted herrings		+	+	+
Salt water		+	+	+
Sauerkraut (pickled cabbage), ready to serve	any	+	+	⊕
Lard		+	+	0
Mustard		+		
Soda water		+		
Soya bean oil		+	0	
Cooking oil, vegetable		+	0	
Cooking oil, animal		+	0	
Starch, starch solution, aq.	any	+	+	
Tea, ready to drink		+	+	⊕
Tea leaves		+	+	
Tomato ketchup		+	+	
Tomato juice		+	+	
Vanilla		+	+	
Wine, mulled wine		+	+	
Brandy		+	+	
Whisky	40	+		
Sausage		+	+	
Cinnamon (powder)		+		
Cinnamon (sticks)		+		
Lemon flavouring		+		
Lemon peel		+		
Lemon peel oil		+		
Lemon juice		+	+	
Citric acid, see Chemicals		+	+	
Sugar dry		+	+	+
Sugar solutions	any	+	+	⊕
Sugar-beet syrup		+	+	⊕

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