

ENHANCING EFFICIENCY AND DURABILITY

SABIC® PP COMPOUNDS FOR HIGHER PERFORMANCE
APPLICATIONS WITH POTENTIAL COST SAVINGS



ABOUT SABIC

SABIC is the third largest global diversified chemical company and market leader in the production of polyethylene, polypropylene and other advanced thermoplastics, glycols, methanol and fertilizers. Fostering innovation and a spirit of ingenuity, we have 21 dedicated Technology & Innovation facilities in Saudi Arabia, the USA, the Netherlands, Spain, Japan, India, China and South Korea.

With over 70 years of legacy of pioneering solutions in advanced engineering thermoplastics, and over three decades of experience in polypropylene and compounds, SABIC's PP compound business is positioned to help create new opportunities for our customer's growth and breakthrough applications around the world. We offer our customers our expertise in a variety of ways:

- Material solutions generated from our legacy of creating solutions for your needs
- Application development and design support, logistics and processing expertise to spark new ideas and improved efficiencies, supported by global sales and supply
- Unwavering commitment to drive performance for our customers, ensuring long-term reliability and building valuable relationships





EFFICIENT SOLUTIONS FOR YOUR NEEDS

SABIC® PP Compounds for
innovation, production and
performance benefits.

1 HIGH STRENGTH
AND STIFFNESS

2 LOW DENSITY

3 EXCELLENT CHEMICAL
RESISTANCE AND
EASY PROCESSABILITY



SABIC® PP COMPOUNDS

SABIC® PP Compounds are materials based on polypropylene that is blended with other components such as impact modifiers, mineral fillers, glass fibers, pigments and stabilizers. These compounds are based on SABIC's advanced polypropylenes and provide properties such as improved strength and stiffness, while maintaining the low density and chemical resistance known for polypropylenes.

GLASS FIBER REINFORCED

The properties of Glass Fiber Reinforced SABIC® PP Compound grades include high stiffness, molded part strength, and continuous performance at elevated temperatures. These advantages combined with low moisture sensitivity can help replace thermoplastic materials such as polyamides (PA). Compared to ABS, the chemical resistance of glass fiber reinforced SABIC® PP Compounds aim to offer improved long term performance of your applications.

Glass Fiber Reinforced SABIC® PP Compound products can be used in high performance applications such as washing machine tumble, water management system parts. It also offers a low cost alternative for materials used in structural parts of furnitures and electrical power tools.

MINERAL FILLED COMPOUNDS

Talc filled SABIC® PP Compound grades aim to offer an upgrade in performance versus standard PP resins with an improved balance of stiffness and heat resistance. They also enable achieving lower part thickness thus potentially lower cost. Talc filled PP compound products are widely used in diverse industries for various applications including

automotive HVAC systems, dishwasher parts, air conditioner fan blades and food containers. SABIC's PP base resins with high impact resistance and low emission enables high performance of the mineral filled PP compounds.

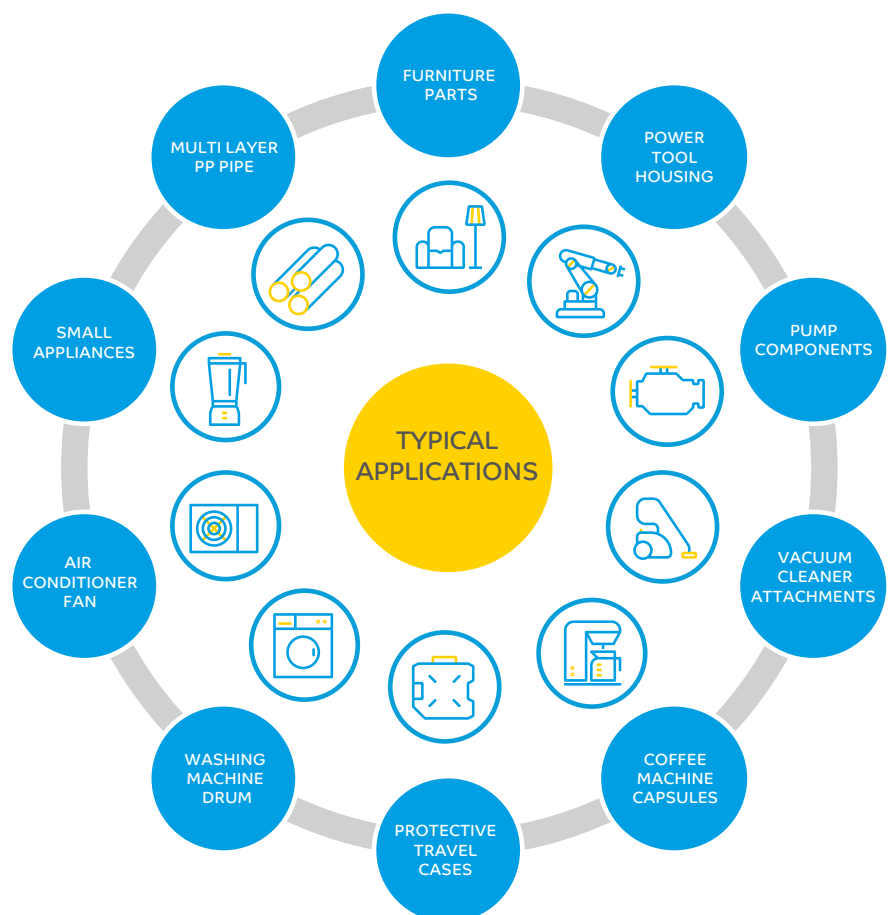
TYPICAL APPLICATIONS

SABIC PP Compound products are typically used in automotive applications, home appliances, small appliances, electrical power tools and various electrical equipments, water pumps and water management systems, furnitures, pipe and construction industries.

POTENTIAL BENEFITS

Widely utilized across many industries, SABIC® PP Compounds bring significant value to

- The specific needs of your applications over its lifetime by offering an upgraded material property balance compared to standard PP.
- Reduce production costs by leveraging the lower density and ease of processing of PP to replace other thermoplastic materials.
- Enabling total system cost reduction by eliminating secondary operations such as painting, coating or assembly.



POTENTIAL APPLICATIONS

GLASS FIBER REINFORCED GRADES

PUMP COMPONENTS

Pump casing, motor housing, and impeller are some applications where manufacturers can benefit from the stiffness, chemical resistance and dimensional stability benefits of Glass Reinforced SABIC® PP Compound products.



POWER TOOLS

Glass Reinforced SABIC® PP Compound products offer long term chemical resistance, stiffness and good visual appearance for hand tool housings.



WASHING MACHINE DRUM

Heavy loads in the high RPM washing machine drums require the strength and the stiffness of Glass fiber reinforced PP grades when mineral filled PP can not meet the required specifications. Glass reinforced SABIC PP compound resins are available from production locations in EU, US, MEA and PAC.



MULTI LAYER PP PIPE

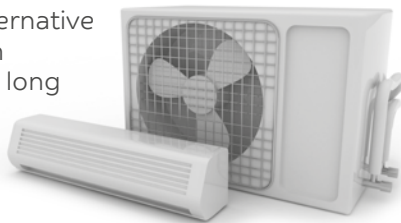
Based on random Polypropylene, SABIC® PP Compound G1620B is designed to solve the low temperature impact issue of the domestic hot and cold PP pipes. This special formula product not only increases low temperature impact resistance but also offers cost savings by faster installation, as a result of a lower thermal expansion coefficient (CLTE) than unfilled PP.



MINERAL FILLED GRADES

AIR-CONDITIONER FAN BLADE

The talc-filled SABIC® PP Compound product family is a cost efficient solution versus alternative materials with high stiffness providing long term dimensional stability.



PROTECTIVE TRAVEL CASES

This heavy duty protective case has high impact resistance and stackability due to its formulation based on high performance SABIC Copolymer PP base resins.



COFFEE CAPSULES

SABIC® PP Compound 1961 grade can be an excellent candidate for single use coffee capsules. It increases shelf life with its enhanced oxygen barrier property. Compared to multilayer solutions, single layer coffee capsules are cheaper to produce and could be recycled after use.



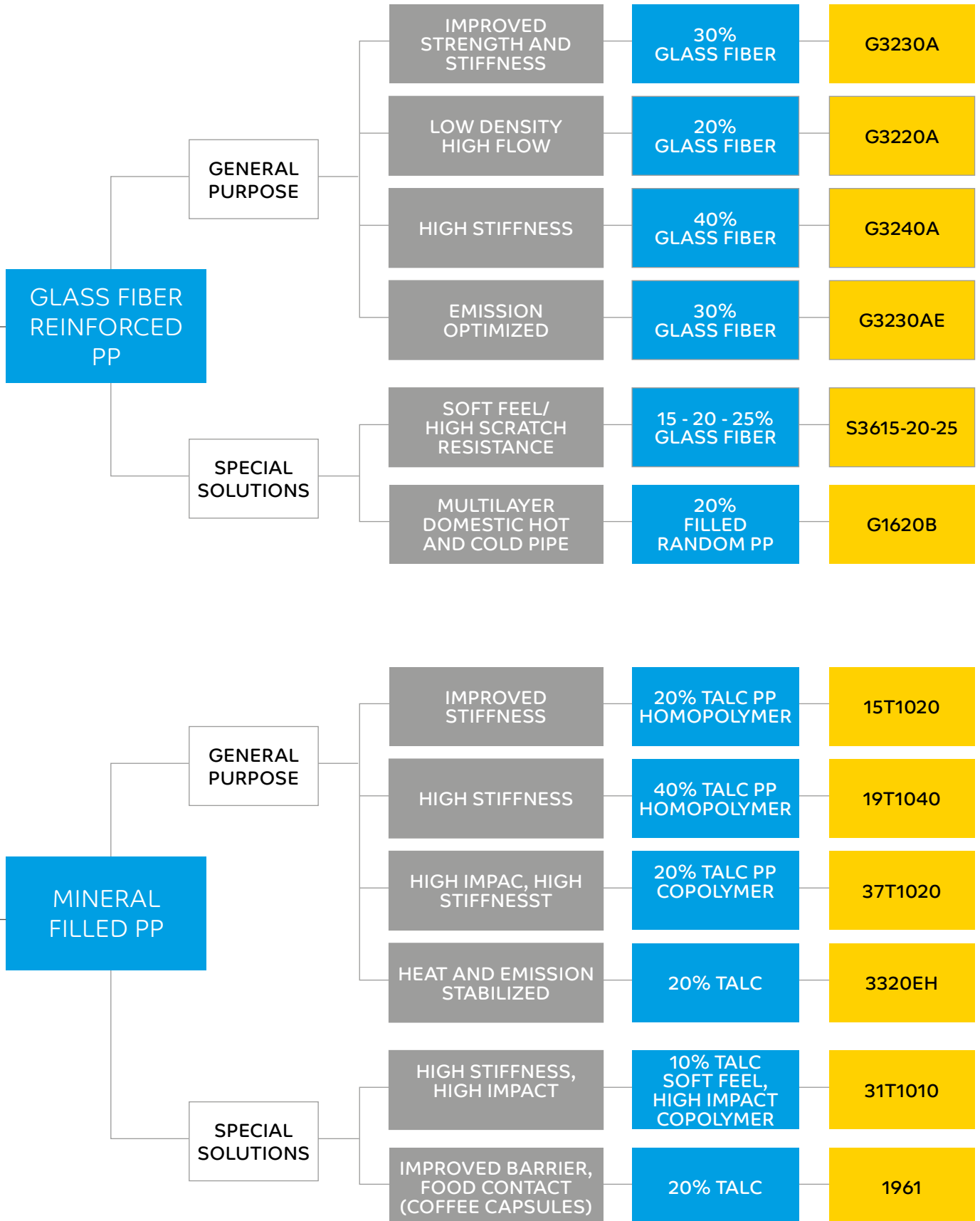
CHAIRS

Talc filled SABIC® PP Compound grades offer high strength, good visual appearance and ease of processing for plastic chairs. Depending on your application design and requirements, homopolymer and copolymer based SABIC® PP grades are available.



SABIC PPC PRODUCT TREE

(SELECTED PRODUCTS)



PRODUCT PROPERTY GUIDE

	GENERAL					MECHANICAL				
	Filler	Filler %	MFR 230 °C and 2.16 kg	Density	Mold Shrink- age %	Flexural Modulus	Tensile Modulus	Tensile Stress at Yield	Tensile Stress at Break	Tensile Strain Break
			ISO 1133	ISO 1183	SABIC Method	ISO 178/1A	ISO 527/1A	ISO 527/1A	ISO 527/1A	ISO 527/1A
			dg/min	kg/m ³	%	MPa	MPa	MPa	MPa	%
Test Method	Unit									
G3230A	Glass	30	11	1.130	0,6	6.900	-	-	93	3
G3220A	Glass	20	17	1.040	0,7	4.500	-	-	80	3
G3240A	Glass	40	5	1.220	0,6	8.900	8.900	-	110	3
G3230AE	Glass	30	12	1.120	0,6	6.300	6.500	-	97	4
S3615	Glass	15	7	990	0,5	2.100	2.300	35	35	5
S3620	Glass	20	8	1.040	0,4	2.500	2.600		33	7
S3625	Glass	25	6	1.080	0,4	2.850	2.900	35	35	7
G1620B	Glass	20	1	1.030	-	2.800	3.200	-	45	7
15T1020	Talc	20	7	1.040	1,2	2.700	2.600	37	29	50
19T1040	Talc	40	18	1.250	0,8	3.600	3.600	30	24	11
37T1020	Talc	20	13	1.040	1,0	2.650	2.100	28	25	45
3320EH	Talc	20	20	1.040	1,1	2.600	2.550	30	25	15
31T1010	Talc	10	13	960	1,3	1.750	1.650	-	14	51
1961	Talc	20	35	1.040	1,0	3.000	2.900	35	30	15

			THERMAL		Typical Applications	Value Proposition
IZOD Notched Impact 23°C	IZOD Notched Impact -20°C	HDT 1.80	HDT 0.45			
ISO 180/1A	ISO 180/1A	ISO 75	ISO 75			
kJ/m ²	kJ/m ²	°C	°C			
10	-	150	-	Fan shrouds, battery trays, furniture parts, pump housing, automotive	High stiffness and heat resistance, lower cost and density vs glass filled PA superior chemical resistance vs ABS	
9	-	150	-	Various structural parts with easy processing requirement	High stiffness and heat resistance, lower cost and density vs glass filled PA, superior chemical resistance vs ABS	
10	-	153	-	Various structural parts with high strength requirement	High stiffness and heat resistance, lower cost and density vs glass filled PA, superior chemical resistance vs ABS	
-	-	150	-	Various structural parts with low emission requirement	High stiffness and heat resistance, lower cost and density vs glass filled PA, superior chemical resistance vs ABS	
30	13	108	-	Low density soft feel parts, auto, consumer, E&E	Soft haptics, scratch resistance, high stiffness, low gloss, elimination of painting, low CLTE	
38	-	110	-	Medium stiffness soft feel parts, auto, consumer, E&E	Soft haptics, scratch resistance, high stiffness, low gloss, elimination of painting, low CLTE	
35	25	111	-	High stiffness soft feel parts, auto, consumer, E&E	Soft haptics, scratch resistance, high stiffness, low gloss, elimination of painting, low CLTE	
17	-	-	-	Medium layer of multi-layer domestic hot and cold pipes (3-layer or 5-layer)	Low CLTE, high low temperature impact vs single layer random PP polymer.. Higher production rate vs on-line mixing	
3	2	-	120	Air-co fan, small appliances, furniture, various housing, automotive	Good flow and processability, high stiffness vs unfilled PP. High chemical resistance	
3	2	-	130	Appliance housings, furniture parts, automotive	Good flow and processability, high stiffness vs unfilled PP. High chemical resistance	
6	3		110	Appliance parts, furniture parts	Good flow and processability, higher impact vs talc filled homopolymer PP.	
3	2		120	HVAC housings, housing parts with low emission requirement	Stiffness, low emission, heat aging performance	
9	6	58	107	Heavy duty protective cases and boxes	Stiffness, dimensional stability, impact resistance, stackability	
2,5	-	68	121	Injection molded coffee capsules, food packaging	Medium oxygen barrier, , food contact	

NEW SOLUTION

SOFT FEEL AND STRONG PERFORMANCE

SABIC recently introduced a new series of SABIC® PP Compounds - SABIC® PPC S36XX series- that deliver a soft feel combined with excellent scratch resistance performance for unpainted, low gloss applications. The new SABIC® PPC S3615, S3620, S3625 grades offer the luxurious haptics and finishes that today's consumers demand. At the same time, these injection molding materials can help OEMs and manufacturers reduce costs by as much as 50 percent by avoiding secondary operations such as applying soft paint, fabric, foam or other surface coverings.

POTENTIAL BENEFITS

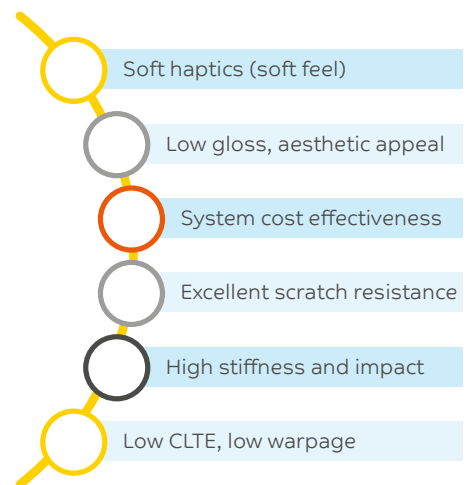
SABIC® PPC S36XX grades offer you a cost-effective solution for low gloss and tactile applications, ranging from low density to high stiffness, providing cost-out by paint elimination. In addition to a soft tactile feel, these products provide an attractive matte surface with excellent scratch resistance, good impact performance and low shrinkage. The portfolio includes several grades of short glass fiberreinforced PP to give customers a choice of stiffness level and material density. The materials are also UVstabilized to prevent fading and color shift.

PRODUCT OVERVIEW

Possible applications where these materials can be used include

- Automotive interiors
- Premium small appliances
- Consumer products
- Consumer electronics

SABIC PP compounds aim to have these types of applications efficiently manufactured by using only one high-volume injection molding step.



In the chart below, you can find basic comparison of SABIC® PPc 36XX product portfolio versus other materials based on tests conducted by SABIC.

	GENERIC PPC (20% TALCUM)	PC-ABS or ABS	SABIC® PPc 36XX RESIN PORTFOLIO WITH SOFT FEEL PROPERTIES
DENSITY	+	-	+
DIMENSIONAL STABILITY (WARPAGE)	+	++	+
SHRINKAGE (LOW)	-	+	++
MODULUS @23 °C	-	+	++
IMPACT @23°C	-	+	+
SCRATCH RESISTANCE	-	++	++
MAR RESISTANCE	-	+	+
GLOSS (LOW)	+	--	++
HAPTICS	--	--	++



AT SABIC, WE BELIEVE IN THE POWER OF CHEMISTRY TO MAKE THE WORLD A BETTER PLACE. BY DRIVING PERFORMANCE FOR CUSTOMERS, ENSURING LONG-TERM DEPENDABILITY AND BUILDING VALUABLE RELATIONSHIPS, WE PUT THAT POWER TO WORK. WE CALL IT 'CHEMISTRY THAT MATTERS™'.



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