

SABIC
Innovative
Plastics™



Cycolac* ABS resin



Product guide Americas

Performance, commitment and innovation.

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At SABIC Innovative Plastics, the future is now

Cycolac* ABS resins have an impressive history of providing versatile, value-added solutions in application markets from appliances to healthcare.



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1. Introduction

The future of the Cicolac* portfolio shines even brighter.



Cicolac ABS resin

The SABIC Innovative Plastics team recognizes that the measure of quality engineering is how efficiently a design achieves its intended performance goals. Through this recognition and our commitment to customers, a new commercial focus and innovative technologies are helping to drive the latest generation of our Cylolac® resins. New products from plating grades to color aesthetics can provide unique performance to support customer success.

Instrumental to this evolution is SABIC Innovative Plastics’s active role in helping customers find the best Cylolac grade for their application. In addition to our superb field technical support and product development tools, we offer a unique selection of custom color capabilities, including express, small-lot service, color matching and a broad array of visual effects.

SABIC Innovative Plastics reinvents the potential of acrylonitrile-butadiene-styrene (ABS) with its line of Cylolac performance products, featuring more innovation, more color and more service.

Cylolac resins

The Cylolac family comprises one part of a much broader selection of engineering resins available from SABIC Innovative Plastics. But this versatile family of thermoplastics includes over 100 grades that all provide impressive mechanical, thermal and processing performance.

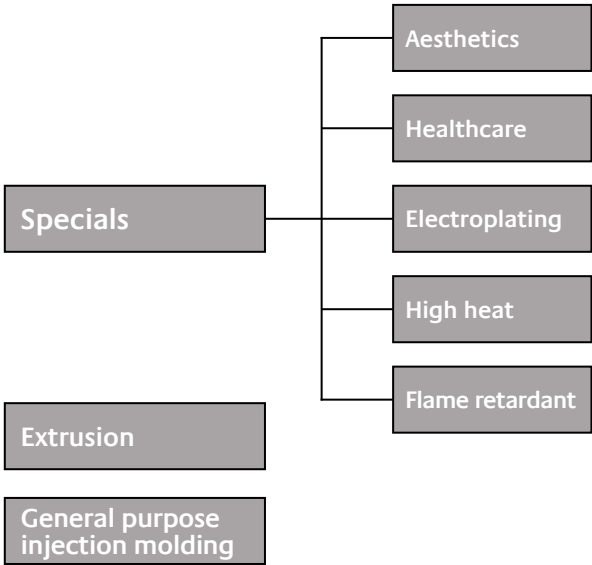
The Cylolac product family also encompasses a range of aesthetic options, from clear, opaque and highly colorable resins to a variety of special effects. All grades are characterized by a rich, glossy surface finish, with admirable depth of color and good scratch resistance.

Cylolac ABS resin is a terpolymer formed by blending an amorphous thermoplastic copolymer of acrylonitrile and styrene with an elastomeric component, such as polybutadiene or a butadiene polymer. By altering the ratio of these three monomers, Cylolac resins can offer an expansive assortment of performance properties tailored to meet a wide range of end-use requirements.

Typical property profiles of Cylolac ABS resin include

- High gloss finish
- Good low temperature ductility
- Excellent thermal properties
- Very good processing performance
- Good chemical resistance
- Low shrinkage, low warping
- High dimensional stability
- Good electrical properties
- Good paintability and platability

Table 1 Cylolac ABS performance products



2. Cicolac* ABS performance products

SABIC Innovative Plastics offers a selection of general purpose ABS grades suitable for a variety of demanding applications. But our Cicolac product portfolio is distinguished from competitive brands by a range of high-performance specialty grades.



Alliage* effect

This versatile alloy effect offers three dimensionality in a wide color range. Playing with the orientation of the flakes creates either a very rich, glossy, brushed aluminum look or a random burst, cracked or torn look.

By modifying the ABS monomers or by incorporating specific additives and fillers, SABIC Innovative Plastics' Cycolac® ABS resin family offers several enhanced or expanded performance product lines that meet target applications. These performance product lines include

- Aesthetics, including custom color and Visualfx® (Vfx) compatibility
- Healthcare
- Electroplating
- High heat
- Flame retardant

With support from SABIC Innovative Plastics engineers and a host of online design guides and tools, OEMs can find a Cycolac ABS product that meets their precise design parameters.

2.1 Specialty grades for aesthetics

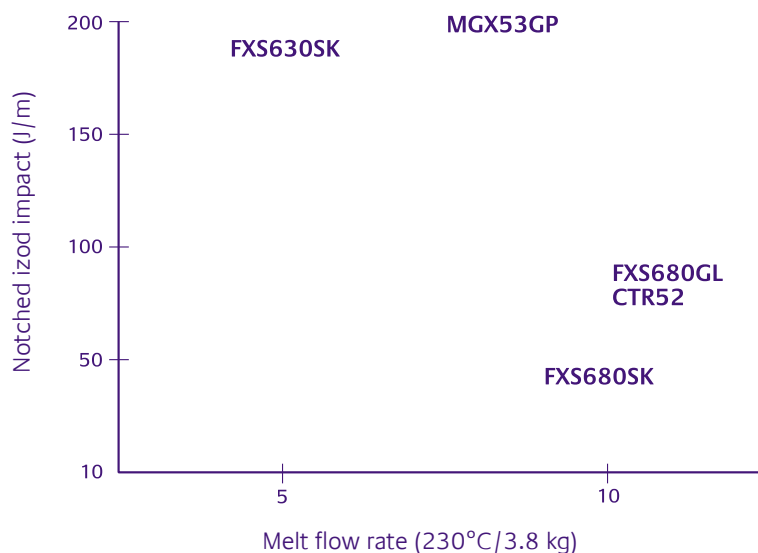
SABIC Innovative Plastics offers some of the most outstanding custom color capabilities of any ABS resin supplier. Our portfolio encompasses a wide spectrum of highly colorable opaque and transparent grades. Many are compatible with our Visualfx technology, which offers designers unique aesthetics options, such as Flame, Speckle, Stone, Marble and others. The potential benefit for customers is highly differentiated end-products manufactured without the cost, emissions or added steps associated with paint processes. Plus, SABIC's molded-in color solution delivers consistency from lot to lot.

SABIC Innovative Plastics also offers its world-class ColorXpress® services, providing rapid delivery and color matching for most ABS grades. If none of our standard aesthetic platforms apply, customers can seek a custom solution from SABIC's Innovation Centers located in Selkirk, NY; Bergen op Zoom, The Netherlands; or Shanghai, China.

Table 2.1 – Visualfx aesthetics resin portfolio

MGX53GP	General purpose, metallic
FXS680GL	Tinted transparent ABS
FXS680SK	Tinted metallic transparent ABS
FXS630SK	FR-ABS, metallic
CTR52	Transparent ABS

Figure 2.1 – Visualfx grades – product performance heat, impact and flow



2. Cycolac* ABS performance products

2.2 Specialty grades for healthcare

Few applications demand consistent materials performance more than medical devices. SABIC Innovative Plastics has helped designers meet this demand for surgical instruments, fluid and drug delivery components, oxygen and respiratory devices, and drainage and suction tools.

In addition to the broad aesthetics options available in our portfolio, this selection of Cycolac ABS resins offers FDA and ISO 10993-compliance for healthcare applications, and many base resins are approved in Europe for food contact.

Our healthcare specialty grades offer resistance to chemicals and lipids, reduced in-mold stress cracking and durable performance after repeated exposure to several sterilization methods. See figure 2.2 (page 9) for gamma radiation performance.

SABIC Innovative Plastics is not only committed to providing high performance materials to customers in healthcare, we are a dedicated industry partner willing to take the long view on the extended product development cycles typical of the healthcare market.

Four Cycolac resin grades have been approved for medical use in the US. MG94MD and MG47MD are grades that offer different flow rates to meet a wide range of tooling needs. CTR52 is transparent ABS and CTS100 is our very clear SAN resin (styrene-acrylonitrile copolymer).



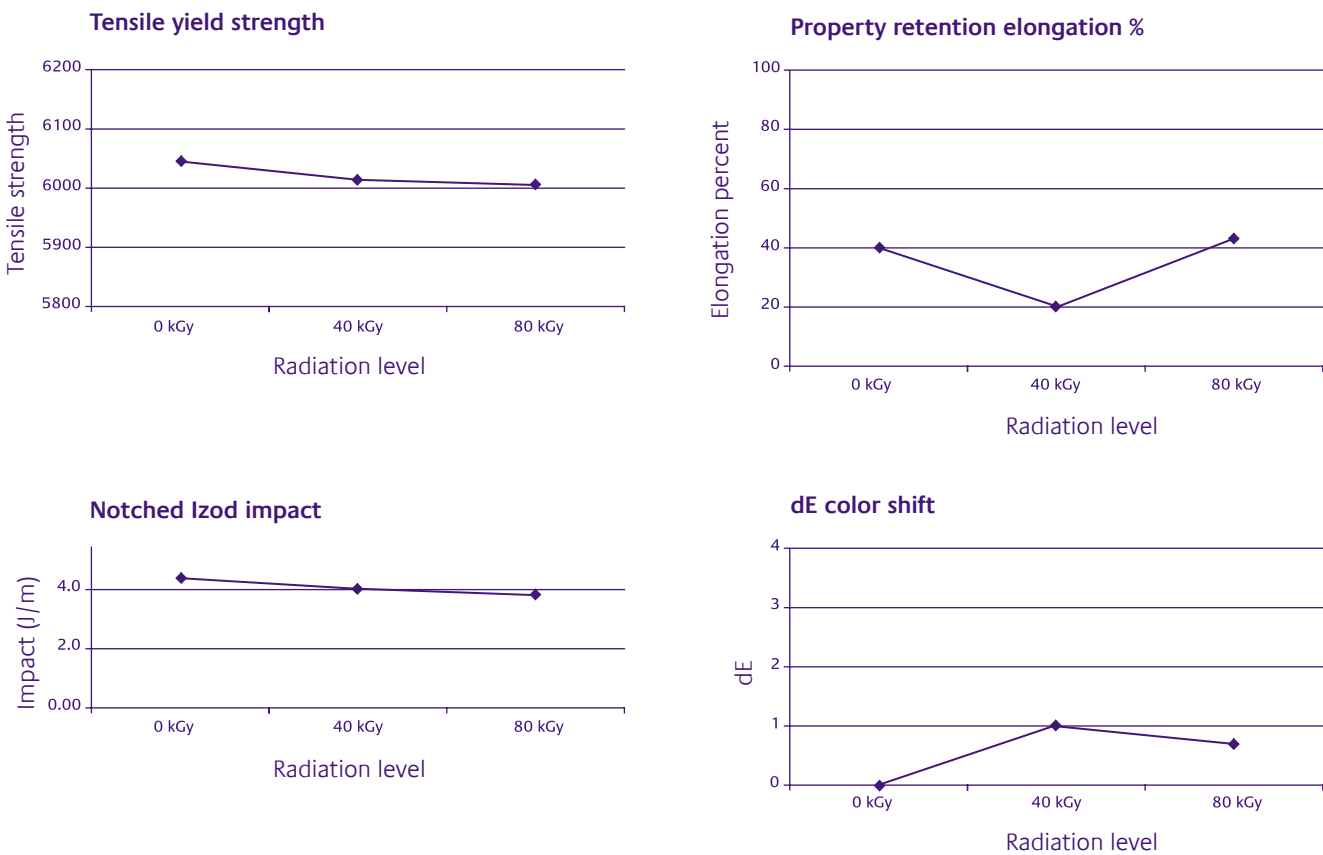
Table 2.2 – Cycolac resin biocompatibility

Product†	Acute system injection	Intracutaneous	Implantation	Hemolysis	Cytotoxicity	Pyrogen	Sensitization
CTS100-NA1000T	X	X	X	X	X		
CTR52F	X	X	X	X	X	X	X
MG47MD-NA1000	X	X	X	X	X	X	X
MG94MD-NA1000	X	X	X	X	X	X	X

• SABIC Innovative Plastics does not support implant applications >29 days

† Medical applications are not strictly limited to the products listed. For some medical applications, the test results on a similar product are applicable.

Figure 2.2 – Property retention after radiation typical for Cylolac® MD resins



Cylolac MD resins properties after kGy.



Needleless drug delivery injection device

2. Cylolac* ABS performance products

2.3 Electroplating and other specialty grades

Although several thermoplastics can be electroplated, ABS resins continue to dominate this market. SABIC Innovative Plastics' Cylolac resins stand out from competitive brands by providing high-purity, ABS substrates with excellent surface quality, dimensional stability and temperature cycling performance. For electroplaters, these qualities translate into superb adhesion, lightweight durability and reliable performance.

The versatility of Cylolac electroplating grades has driven broadening applications in automotive, household fittings, fluid engineering and electronic components. In addition, it has met the growing demand for striking aesthetics in consumer products.

Cylolac MG37EP is characterized by excellent electroplatability yielding mirror-like plated surfaces. This grade is currently specified by many automotive OEMs. Cylolac MG37EPN natural is our NSF ANSI std. 61 listed grade for potable water applications including faucets and related hardware. Please consult the NSF website (www.NSF.org) for specific details. Cylolac MG37CR features improved chemical resistance.

Table 2.3 – Electroplating portfolio

MG37EP	Automotive specified
MG37EPN	NSF listed
MG37CR	Chemically resistant



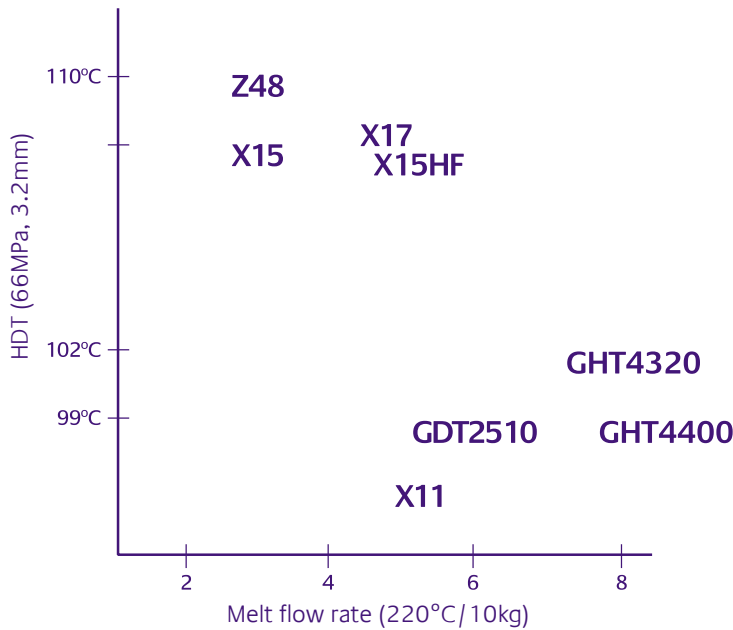
2.4 High-heat specialty grades

Several high-heat Cycolac® ABS resins from SABIC Innovative Plastics are designed to provide cost-effective options for enduring color and mechanical performance – properties important for telecommunication components and electrical enclosures. But our high-heat Cycolac grades also excel in automotive interiors, where they provide superb materials solutions for dashboards, door trim, pillars and other interior elements.



Automotive interior trim

Figure 2.3 – High-heat portfolio



2. Cylolac* ABS performance products

2.5 Flame-retardant specialty grades

Several Cylolac resin grades offer an excellent balance of impact and flame resistance to help designers meet increasingly stringent regulatory and safety standards. SABIC Innovative Plastics expertise in flame-retardant additives and compounds has given this selection of Cylolac ABS grades a range of tensile and flex properties, and a variety of profiles for distortion temperature, melt flow index and UV stability. For thin wall applications, designers should consider our FR15U resin.

The flexible array of performance qualities available from our flame-retardant Cylolac ABS family makes these materials excellent candidates for numerous applications in consumer electronics.

Cylolac FR15U, F30U and VW300 have been developed to offer excellent indoor UV performance in communication equipment. See table 2.4 for UL flame ratings and specific product strengths.

Figure 2.4 – Flame-retardant Cylolac specialty portfolio

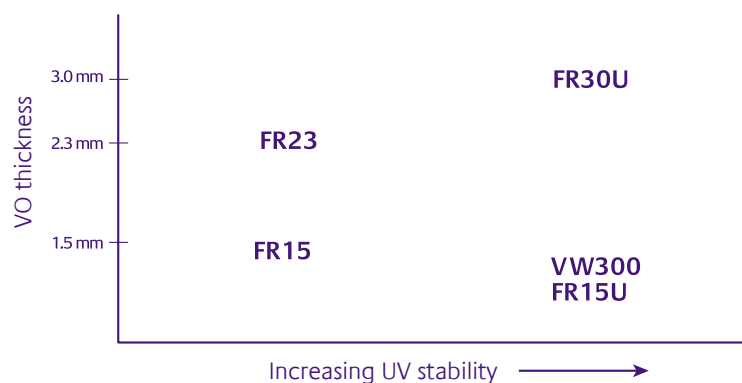


Table 2.4 – Flame-retardant Cylolac product positioning

	Izod impact	Flow	Accelerated light aging	HDT	Process stability	Flame rating
FR30U						V1 & 5VB @ 2.3mm V0 @ 3.0mm
FR15U						V0 @ 1.5mm, except BL/GN 5 VA @ 2.8mm
FR23						V0 @ 2.3mm 5 VB @ 2.5mm
FR15						V0 @ 1.5mm 5 VA @ 2.5mm

Highest performance > > > Lowest performance

3. General Cyclocac* ABS grades

In addition to its outstanding range of specialty grades, SABIC Innovative Plastics offers a broad selection of general purpose Cyclocac ABS resins. These highly colorable products offer excellent processing performance and a wide array of flow and impact options. SABIC Innovative Plastics' general-purpose portfolio offers Cyclocac grades designed either for extrusion or injection molding.



3. General Cycolac® ABS grades

Figure 3.1 – Extrusion ABS grades portfolio

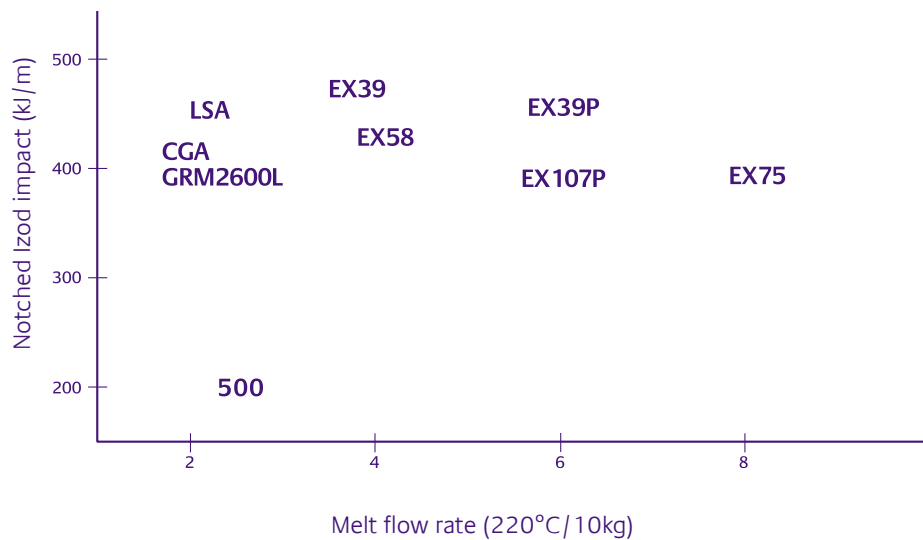


Figure 3.2 – Injection molding ABS grades portfolio

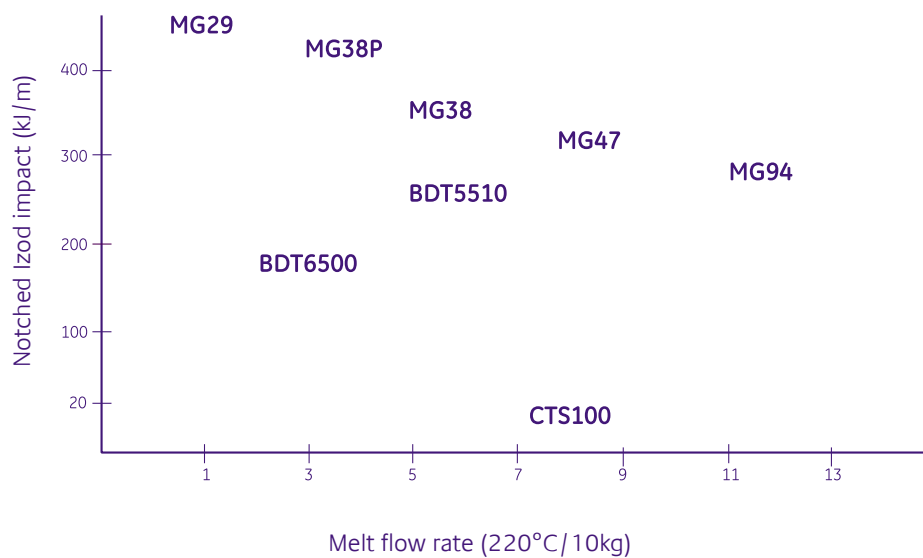
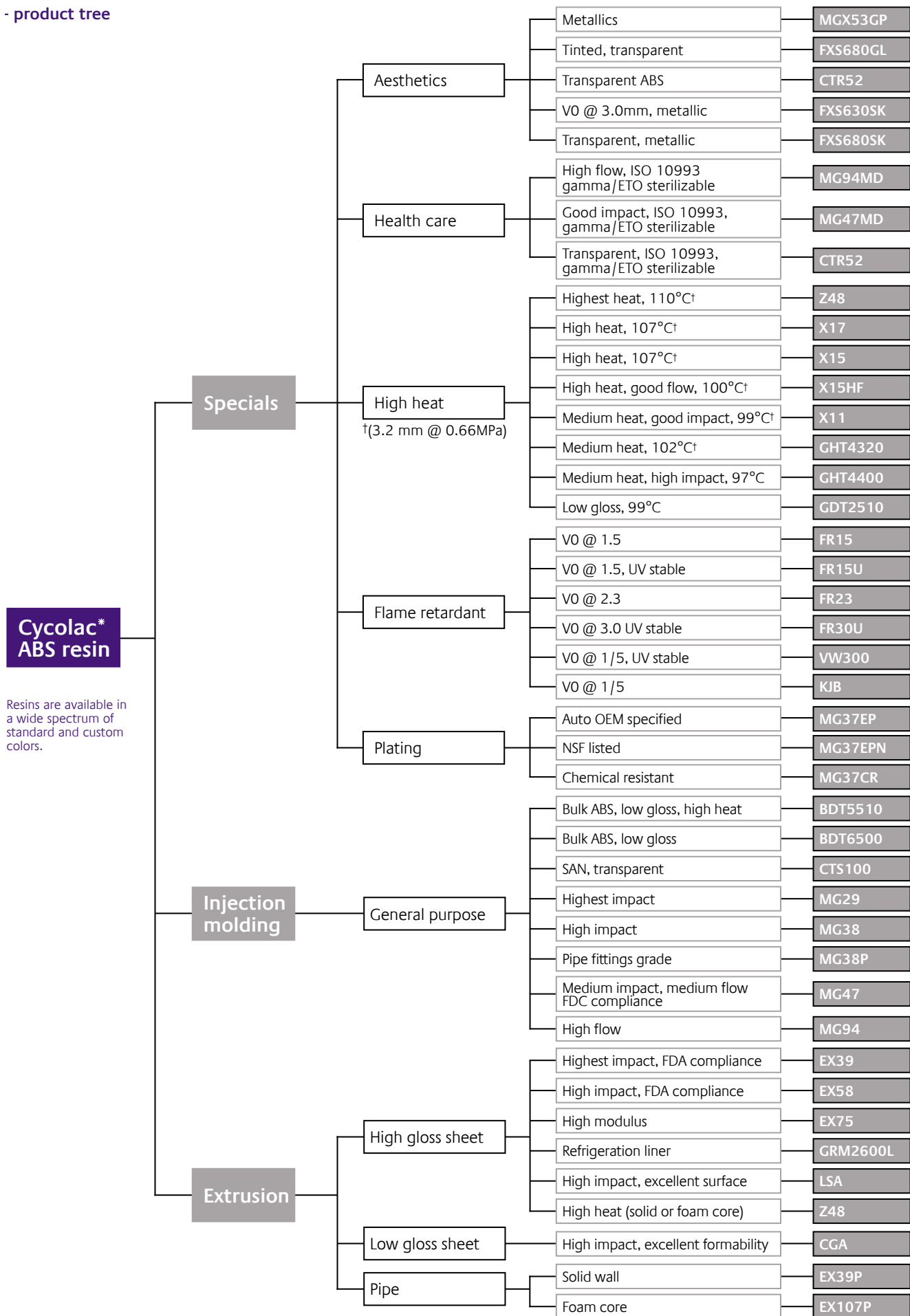


Table 3 - product tree



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