

# NORYL™ RESINS FOR UNATTENDED APPLIANCES

A FOCUS ON SOLUTIONS FOR CUSTOMERS IN EUROPE

November 2018

# NORYL™ NH6020 AND NORYL™ NH7010 RESINS FOR UNATTENDED APPLIANCES

IEC 60355 is the international regulatory standard for typical household appliances. NORYL NH6020 and NH7010 resins are typically used by our customers to meet the most stringent requirements of this global standard, and exhibit outstanding typical properties for electrical applications, such as a high dielectric strength, high heat resistance, flame resistance and very good dimensional stability.



NORYL NH7010 and NH6020 are typically used by our customers to address warpage and snap fit breakage issues in unattended household appliance parts.

## TYPICAL REQUIREMENTS

Material requirements for heavy duty unattended appliances include:

- GWFI 850°C
- GWIT 775°C
- CTI>=250V
- UL94 V0
- BPT=125°C

## TYPICAL VALUE OF NORYL RESINS

Benefits of NORYL resins for electrical components are:

- Good hydrolytic stability
- Dimensional stability, low moisture uptake
- Bromine- and chlorine-free flame retardant
- UL94 V0 down to 0.75mm
- VDE certification
- RTI>105°C

## VDE/UL YELLOW CARD CERTIFIED PROPERTIES

NORYL NH7010 resin is a candidate for applications requiring high impact resistance. NORYL NH6020 resin is a candidate when high flow/thinner walls are needed.

NORYL™ GRADE	Ball Pressure* IEC 60695-10-2 (°C)	GWFI* IEC 60695-10-2 (°C/mm)	GWIT* IEC 60695-10-2 (°C/mm)	UL 94 (Listing/mm)	CTI IEC60112 (V)	RTI 1.5 mm UL746 (type/°C)
NH6020	125	960/0.75	775/0.75	V0/0.75	600	Imp/ 105
		960/1.5	775/1.5	5VA/2.5		Elec/ 110
		960/3	775/3			Str/110
NH7010	125	960/0.75	775/0.75	V0/1.5	-	Imp/ 105
		960/1.5	775/1.5	5VA/2		Elec/ 105
		960/3	775/3			Str/105

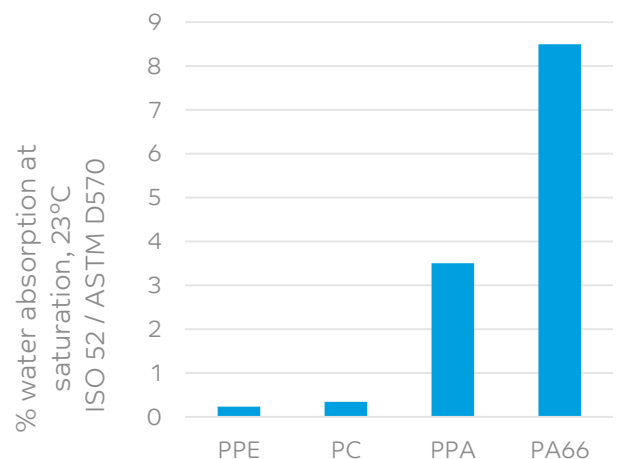
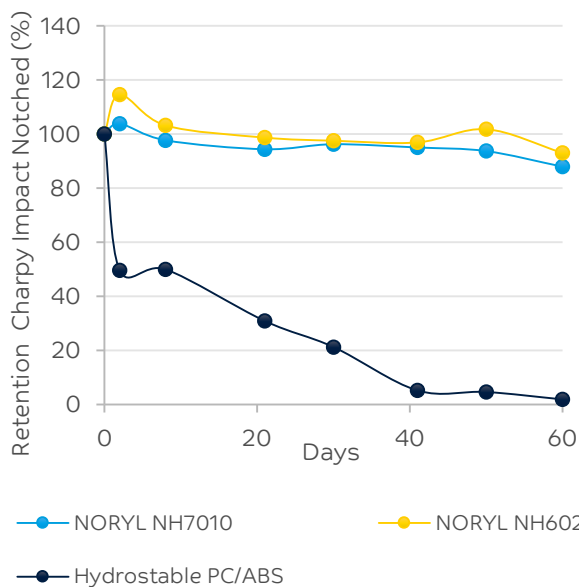
\* VDE certified property, all colors

# NORYL™ NH6020 AND NH7010 RESINS FOR UNATTENDED APPLIANCES

## TYPICAL PROPERTIES: NORYL NH6020 and NH7010 RESINS

	NORYL NH6020 RESIN	NORYL NH7010 RESIN
<b>MECHANICAL</b>		
Tensile Modulus, 1 mm/min (ISO 527)	2740 MPa	2500 MPa
Tensile Strain, yield, 50 mm/min (ISO 527)	4.60%	4.90%
Tensile Stress, yield, 50 mm/min (ISO 527)	77 MPa	69 MPa
Flexural Stress, yield, 2 mm/min (ISO 178)	114 MPa	109 MPa
Flexural Modulus, 2 mm/min (ISO 178)	2680 MPa	2520 MPa
<b>IMPACT</b>		
Izod Impact, notched 80*10*4 -30°C (ISO 180/1A)	5 kJ/m <sup>2</sup>	8 kJ/m <sup>2</sup>
Izod Impact, notched 80*10*4 +23°C (ISO 180/1A)	8 kJ/m <sup>2</sup>	20 kJ/m <sup>2</sup>
<b>THERMAL</b>		
Vicat Softening Temp, Rate B/120 (ISO 306)	151 °C	162 °C
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm (ISO 75/Af)	124 °C	139 °C
<b>PHYSICAL</b>		
Density (ISO 1183)	1.14 g/cm <sup>3</sup>	1.09 g/cm <sup>3</sup>
Mold Shrinkage, flow, 3.2 mm (SABIC method)	0.5-0.7 %	0.5-0.8 %
Water Absorption, (23°C/sat) (ISO 62)	0.18%	0.25%
Moisture Absorption (23°C / 50% RH) (ISO 62)	0.06%	0.05%
<b>FLAME CHARACTERISTICS</b>		
UL Recognized, 94-5VA Rating (UL 94)	2.5 mm	2 mm
UL Recognized, 94V-0 Flame Class Rating (UL 94)	0.75 mm	1.5 mm
Glow Wire Ignitability Temperature, 1.0 mm (IEC 60695-2-13)	825 °C	825 °C
Glow Wire Flammability Index 960°C, passes at (IEC 60695-2-12)	1 mm	1 mm

## IMPACT RESISTANCE RETENTION AT 80°C and 93%RH    MOISTURE ABSORPTION COMPARISON



DISCLAIMER: Any sale by SABIC, its subsidiaries and affiliates (each a "seller"), is made exclusively under seller's standard conditions of sale (available upon request) unless agreed otherwise in writing and signed on behalf of the seller. While the information contained herein is given in good faith, SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND NON-INFRINGEMENT OF INTELLECTUAL PROPERTY, NOR ASSUMES ANY LIABILITY, DIRECT OR INDIRECT, WITH RESPECT TO THE PERFORMANCE, SUITABILITY OR FITNESS FOR INTENDED USE OR PURPOSE OF THESE PRODUCTS IN ANY APPLICATION. Each customer must determine the suitability of seller materials for the customer's particular use through appropriate testing and analysis. No statement by seller concerning a possible use of any product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right. SABIC and brands marked with ™ are trademarks of SABIC or its subsidiaries or affiliates, unless otherwise noted.

---

## CONTACT US

### Middle East and Africa

SABIC Global Headquarters  
PO Box 5101  
Riyadh 11422  
Saudi Arabia  
T +966 (0) 1 225 8000  
F +966 (0) 1 225 9000  
E [info@sabic.com](mailto:info@sabic.com)

### Americas

2500 CityWest Boulevard  
Suite 100  
Houston, TX 77042  
USA

Technical Answer Center  
T +1 800 845 0600  
E [productinquiries@sabic.com](mailto:productinquiries@sabic.com)

### Europe

Plasticslaan 1  
PO Box 117  
4600 AC  
Bergen op Zoom  
The Netherlands  
T +31 (0)164 292911  
F +31 (0)164 292940

Technical Answer Center  
T (0) 0 800 1 238 5060  
T2 0036 1 288 3040  
E [webinquires@sabic.com](mailto:webinquires@sabic.com)

### Asia Pacific

2550 Xiupu Road  
Pudong  
201319 Shanghai  
China  
T +86 21 2037 8188  
F +86 21 2037 8288  
E [asiaproductinquiries@sabic.com](mailto:asiaproductinquiries@sabic.com)

DISCLAIMER: THE MATERIALS, PRODUCTS AND SERVICES OF SAUDI BASIC INDUSTRIES CORPORATION (SABIC) OR ITS SUBSIDIARIES OR AFFILIATES ("SELLER") ARE SOLD SUBJECT TO SELLER'S STANDARD CONDITIONS OF SALE, WHICH ARE AVAILABLE UPON REQUEST. INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS DOCUMENT ARE GIVEN IN GOOD FAITH. HOWEVER, SELLER MAKES NO EXPRESS OR IMPLIED REPRESENTATION, WARRANTY OR GUARANTEE (i) THAT ANY RESULTS DESCRIBED IN THIS DOCUMENT WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN OR APPLICATION INCORPORATING SELLER'S MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS. UNLESS OTHERWISE PROVIDED IN SELLER'S STANDARD CONDITIONS OF SALE, SELLER SHALL NOT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS DESCRIBED IN THIS DOCUMENT. Each user is responsible for making its own determination as to the suitability of Seller's materials, products, services or recommendations for the user's particular use through appropriate end-use and other testing and analysis. Nothing in any document or oral statement shall be deemed to alter or waive any provision of Seller's Standard Conditions of Sale or this Disclaimer, unless it is specifically agreed to in a writing signed by Seller. Statements by Seller concerning a possible use of any material, product, service or design do not, are not intended to, and should not be construed to grant any license under any patent or other intellectual property right of Seller or as a recommendation for the use of any material, product, service or design in a manner that infringes any patent or other intellectual property right.

SABIC and brands marked with ™ are trademarks of SABIC or its subsidiaries or affiliates.  
© 2018 Saudi Basic Industries Corporation (SABIC). All Rights Reserved.  
Any brands, products or services of other companies referenced in this document are the trademarks, service marks and/or trade names of their respective holders.

---