

## Technical Data

### Product Description

GELOY™ Resin HRA222F - Europe PC/ASA flame retardant, excellent weatherability.

Generic PC+ASA

This data represents typical values that have been calculated from all products classified as: Generic PC+ASA

This information is provided for comparative purposes only.

General	GELOY™ Resin HRA222F - Europe	Generic PC+ASA
Manufacturer / Supplier	<ul style="list-style-type: none"> <li>SABIC</li> </ul>	<ul style="list-style-type: none"> <li>Generic</li> </ul>
Generic Symbol	<ul style="list-style-type: none"> <li>PC+ASA</li> </ul>	<ul style="list-style-type: none"> <li>PC+ASA</li> </ul>
Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>
UL Yellow Card <sup>1</sup>	<ul style="list-style-type: none"> <li>E45329-100183332</li> <li>E45329-462200</li> </ul>	--
Search for UL Yellow Card	<ul style="list-style-type: none"> <li>SABIC</li> <li>GELOY™ Resin</li> </ul>	--
Availability	<ul style="list-style-type: none"> <li>Europe</li> </ul>	<ul style="list-style-type: none"> <li>Africa &amp; Middle East</li> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>
Uses	<ul style="list-style-type: none"> <li>Appliances</li> <li>Construction Applications</li> <li>Electrical Parts</li> <li>Electrical/Electronic Applications</li> <li>Electronic Displays</li> <li>Lawn and Garden Equipment</li> <li>Lighting Applications</li> <li>Medical/Healthcare Applications</li> <li>Outdoor Applications</li> <li>Personal Care</li> <li>Surgical Instruments</li> <li>Water Management</li> </ul>	--
Also Available In	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Latin America</li> <li>North America</li> </ul>	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>

Physical	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Density / Specific Gravity	--	1.11 to 1.17		ASTM D792
	1.17	1.11 to 1.21	g/cm <sup>3</sup>	ISO 1183
Melt Mass-Flow Rate (MFR)				
260°C/5.0 kg	--	14 to 30	g/10 min	ASTM D1238
260°C/5.0 kg	--	20 to 41	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR)				ISO 1133
260°C/2.16 kg	13	--	cm <sup>3</sup> /10min	
260°C/5.0 kg	--	10 to 36	cm <sup>3</sup> /10min	



Physical	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Molding Shrinkage				
Flow	--	4.9E-3 to 7.1E-3	in/in	ASTM D955
--	--	0.49 to 0.61	%	ISO 294-4
Flow <sup>3</sup>	0.40 to 0.60	--	%	Internal Method
Water Absorption				ISO 62
Saturation, 73°F	0.60	0.48 to 1.0	%	
Equilibrium, 73°F, 50% RH	0.20	0.20 to 0.30	%	
Outdoor Suitability	f1	--		UL 746C
Mechanical	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Tensile Modulus				
--	--	288000 to 389000	psi	ASTM D638
-- <sup>4</sup>	376000	--	psi	ASTM D638
--	--	261000 to 400000	psi	ISO 527-1
--	365000	--	psi	ISO 527-1/1
Tensile Strength				
Yield <sup>5</sup>	9140	--	psi	ASTM D638
Yield <sup>6</sup>	8560	--	psi	ASTM D638
Yield	--	7790 to 9430	psi	ASTM D638
Yield	--	7660 to 9050	psi	ISO 527-2
Yield	8990	--	psi	ISO 527-2/5
Yield	8700	--	psi	ISO 527-2/50
Break	--	6380 to 9570	psi	ASTM D638
Break <sup>6</sup>	9570	--	psi	ASTM D638
Break <sup>5</sup>	8120	--	psi	ASTM D638
Break	--	5660 to 8220	psi	ISO 527-2
Break	7400	--	psi	ISO 527-2/5
Break	6530	--	psi	ISO 527-2/50
Tensile Elongation				
Yield	--	4.0 to 5.1	%	ASTM D638
Yield <sup>6</sup>	4.2	--	%	ASTM D638
Yield <sup>5</sup>	4.3	--	%	ASTM D638
Yield	--	2.3 to 5.5	%	ISO 527-2
Yield	4.3	--	%	ISO 527-2/5
Yield	4.4	--	%	ISO 527-2/50
Break	--	24 to 110	%	ASTM D638
Break <sup>6</sup>	> 100	--	%	ASTM D638
Break <sup>5</sup>	> 100	--	%	ASTM D638
Break	--	4.5 to 100	%	ISO 527-2
Break	> 50	--	%	ISO 527-2/5 ISO 527-2/50
Nominal Tensile Strain at Break	--	50 to 60	%	ISO 527-2



Mechanical	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Flexural Modulus				
--	--	297000 to 402000	psi	ASTM D790
--	--	281000 to 388000	psi	ISO 178
-- <sup>7</sup>	364000	--	psi	ISO 178
Flexural Strength				
--	--	10400 to 12100	psi	ASTM D790
--	--	10600 to 14100	psi	ISO 178
-- <sup>7,8</sup>	13500	--	psi	ISO 178
Yield	--	11900 to 13900	psi	ASTM D790
Impact	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Charpy Notched Impact Strength				
--	--	1.4 to 29	ft·lb/in <sup>2</sup>	ISO 179
73°F <sup>9</sup>	7.1	--	ft·lb/in <sup>2</sup>	ISO 179/1eA
Notched Izod Impact				
--	--	0.53 to 12	ft·lb/in	ASTM D256
32°F	5.4	--	ft·lb/in	ASTM D256
73°F	7.2	--	ft·lb/in	ASTM D256
--	--	2.4 to 24	ft·lb/in <sup>2</sup>	ISO 180
-22°F <sup>10</sup>	4.3	--	ft·lb/in <sup>2</sup>	ISO 180/1A
32°F <sup>10</sup>	5.7	--	ft·lb/in <sup>2</sup>	ISO 180/1A
73°F <sup>10</sup>	8.1	--	ft·lb/in <sup>2</sup>	ISO 180/1A
Instrumented Dart Impact				
--	--	88.5 to 422	in·lb	ASTM D3763
--	--	33.0 to 62.9	ft·lb	ISO 6603-2
Hardness	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Rockwell Hardness				
--	--	109 to 118		ASTM D785
--	--	109 to 122		ISO 2039-2
Thermal	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Deflection Temperature Under Load				
66 psi, Unannealed	--	211 to 241	°F	ASTM D648
66 psi, Unannealed	--	194 to 271	°F	ISO 75-2/B
66 psi, Unannealed, 0.157 in, 3.94 in Span <sup>11</sup>	210	--	°F	ISO 75-2/Be
264 psi, Unannealed	--	190 to 240	°F	ASTM D648
264 psi, Unannealed	--	177 to 252	°F	ISO 75-2/A
264 psi, Unannealed, 0.157 in, 3.94 in Span <sup>11</sup>	190	--	°F	ISO 75-2/Ae
Vicat Softening Temperature				
--	--	221 to 281	°F	ASTM D1525
--	219	--	°F	ISO 306/B120
--	216	--	°F	ISO 306/B50
--	232	--	°F	ISO 306/A50
--	--	214 to 284	°F	ISO 306



Thermal	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Ball Pressure Test (163 to 171°F)	Pass	--		IEC 60695-10-2
CLTE				
Flow	--	4.0E-5	in/in/°F	ASTM E831
Flow	--	3.7E-5 to 4.8E-5	in/in/°F	ISO 11359-2
Flow : -22 to 176°F	3.8E-5	--	in/in/°F	ISO 11359-2
Transverse	--	4.0E-5 to 4.7E-5	in/in/°F	ASTM E831
Transverse	--	3.5E-5 to 4.7E-5	in/in/°F	ISO 11359-2
Transverse : -22 to 176°F	3.9E-5	--	in/in/°F	ISO 11359-2
Transverse : 73 to 176°F	4.2E-5	--	in/in/°F	ISO 11359-2

Electrical	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Surface Resistivity	--	1.0E+11 to 1.0E+16	ohms	IEC 60093
Volume Resistivity	--	1.0E+13 to 1.0E+16	ohms-cm	IEC 60093
Relative Permittivity	--	2.95		IEC 60250
Dissipation Factor	--	2.5E-3 to 0.015		IEC 60250

Flammability	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit	Test Method
Flame Rating (0.08 in, Testing by SABIC)	V-0	--		UL 94
Glow Wire Flammability Index				IEC 60695-2-12
--	--	1200 to 1760	°F	
0.04 in	1760	--	°F	
Oxygen Index	29	--	%	ISO 4589-2

Injection	GELOY™ Resin HRA222F - Europe	Generic PC+ASA	Unit
Drying Temperature	176 to 194	175 to 248	°F
Drying Time	2.0 to 4.0	2.9 to 5.1	hr
Suggested Max Moisture	0.020	0.020 to 0.043	%
Suggested Shot Size	--	50 to 63	%
Hopper Temperature	140 to 176	158	°F
Rear Temperature	392 to 446	418 to 504	°F
Middle Temperature	428 to 500	446 to 520	°F
Front Temperature	446 to 518	455 to 502	°F
Nozzle Temperature	428 to 500	455 to 539	°F
Processing (Melt) Temp	446 to 518	480 to 538	°F
Mold Temperature	122 to 158	140 to 186	°F
Injection Pressure	--	14900 to 16900	psi
Back Pressure	--	60.0 to 1450	psi
Screw Speed	--	50 to 55	rpm
Vent Depth	--	2.0E-3 to 2.2E-3	in

**Injection Notes**

Generic  
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Notes

<sup>1</sup> A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

<sup>2</sup> Typical properties: these are not to be construed as specifications.

<sup>3</sup> Tensile Bar

<sup>4</sup> 0.20 in/min

<sup>5</sup> Type I, 2.0 in/min

<sup>6</sup> Type I, 0.20 in/min

<sup>7</sup> 0.079 in/min

<sup>8</sup> at Yield

<sup>9</sup> 80\*10\*4 sp=62mm

<sup>10</sup> 80\*10\*4 mm

<sup>11</sup> 120\*10\*4 mm

