

# GURONIC Casting Resin The Alternative Encapsulant

# GURONIC Casting Resin for Electronics

## Properties

## Details

## Advantages

### Mechanical Properties



#### **soft-elastic**

- excellent mechanical damping up to 1000 G

- reliable protection against vibration and shock
- extremely low stress on parts and soldered joints
- re-enterable, repair possible

### Electrical Properties



#### **good dielectric**

- excellent electrical insulation
- high electric breakdown strength

- minimal impact on electronics
- safe to use even at high voltages

### Flexibility at Low Temperatures



#### **glass transition approx. - 80 °C**

- resin stays soft at low temperatures
- excellent mechanical damping especially at low temperatures

- minimal stress on parts and soldered joints at low temperatures and during temperature shocks
- protection against vibration and shock even at low temperatures

### Manufacturing



- variable potlife
- convenient mixing ratio (typically 1:1 to 3:1)
- no exothermic reaction during cure
- virtually no cure shrinkage

- adjustable to process conditions
- easy to manufacture
- easy potting of big volumes

### Environmental



#### **safety class free according to 91/155/EWG**

- no solvents, no VOC
- no epoxy
- no isocyanate
- no silicone

- no special protective measures for production

# The GURONIC product family

## Technical Data

(valid for the cured material, if not stated otherwise)

		<b>Standard blue</b> elastic, flexible at low temp.		<b>B1NO blue or beige</b> elastic, flexible at low temp.	
<b>Variants (fast cure / slow cure)</b>		<b>B1</b>	<b>B2</b>	<b>B1NO</b>	<b>B5NO</b>
Pot life at 23 °C	[HD 631.1 S2]	15 min	3 h	10 min	2 h
Cure Time	at 23 °C until fully cured at 80 °C until solid cure at 80 °C until fully cured	12 h 45 min 2 h	72 h 3 h 9 h	12 h 25 min 1 h	72 h 3 h 8 h
Mixing ratio	by weight	2 : 1		2 : 1	
	by volume	1.38 : 1		1.34 : 1	
Viscosity of fresh mixture [Pa s]	at 20 °C [DIN 53019] at 50 °C	5 1		25 4	
Temperature rise during cure		none		none	
Chemical base of resin and hardener		Modified hydrocarbon resin. Not safety			
Density of cured product [g/cm <sup>3</sup> ]	[EN ISO 1183-1]	1.18		1.21	
Glass transition temperature [°C]	[DIN 53445]	-82.5		-78	
Typical operation temperature range [°C]		-70 to +85		-70 to +120	
Hardness Shore A	[ISO 868]	A 10		A 20	
Tear strength [N/mm <sup>2</sup> ]	[ISO 527]	0,5		0.9	
Elongation at break [%]	[ISO 527]	89		170	
Dielectric breakdown strength [kV/mm]	[DIN VDE 0370 / IEC 156]	15		15	
Relative permittivity $\epsilon_r$ (0 °C - 50 °C, 10 Hz - 10 <sup>5</sup> Hz)		2.5 to 2.6		2.2	
Thermal conductivity [W/(mK)] at 23 °C		0,25		0.31	
Thermal expansion coefficient (20 °C to 100 °C)	linear - [K <sup>-1</sup> ]	3.3 x10 <sup>-4</sup>		2.1 x10 <sup>-4</sup>	
	cubic - [K <sup>-1</sup> ]			5.5 x10 <sup>-4</sup>	
Water uptake [%]	[DIN EN ISO 62]	0.2		ca. 0.2	

n.m. = not measure

The data presented in this leaflet are in accordance with the present state of our knowledge, but do not release the user from checking all supplies carefully. We reserve the right to alter product data within the scope of technical process or new developments. The mechanical properties of the cured materials are measured after standard cure conditions (24 h 23°C, 24 h 80°C) according to HD 631.1 S2.

**flame retardant**

<b>C400-0</b> transparent elastic, flexible at low temp. transparent		<b>FY15-H</b> brown hard-elastic, flexible at low temp.	<b>FR</b> brown elastic, self-extinguishing UL 94 V-0	<b>DOFRO</b> brown elastic, self-extinguishing, UL 94 V-0	<b>P500-H</b> transparent soft-elastic, flexible at low temp., transparent
<b>C400-0</b>	<b>C500-0</b>	<b>FY15-H</b>	<b>FR 5</b>	<b>DOFRO 0.15</b>	<b>P500-H</b>
10 min	2 h	30 min	15 min	2 h	2 h
8 h 25 min 1 h	48 h 3 h 8 h	48 h 40 min 8 h	48 h 60 min 3 h	12 h 45 min 2 h	72 h 1 h 12 h
1 : 1		1,2 : 1	4 : 1	4 : 1	5 : 3
1 : 1		1 : 1.07	2,35 : 1	2,32 : 1	5 : 3
7 1.5		25 5.5	33 5	60 7.5	24 4.7
none		none	none	none	none
classified. Not hazardous					
0.94		1.03	1.40	1.48	0.96
-78		ca. -65	-82	-75	ca. -50
-70 to +120		-50 to +100	-70 to +90	-65 to +130	-40 to +120
A 15		A 44	A 10	A 25	A 12
0.3		0.8	0.4	0.5	0.3
90		45	150	80	100
31		10	15	15	18
2.0		n.m.	2.9 to 3.0	3.6 to 3.7	3.0 to 3.8
0.2		ca. 0.3	0.37	0.52	ca. 0.2
2.2 x10 <sup>-4</sup>		2.0 x10 <sup>-4</sup>	3.1 x10 <sup>-4</sup>	1.7 x10 <sup>-4</sup>	2.2 x10 <sup>-4</sup>
6.4 x10 <sup>-4</sup>		6.1 x10 <sup>-4</sup>			6.7 x10 <sup>-4</sup>
ca. 0.2		ca. 0.2	0.3	ca. 0.3	ca. 0.2

## GURONIC Casting Resin for Electronics



Potting resin production

TE Connectivity, a first choice partner when it comes to developing new materials and offering services tailored to your needs. You have not found the right material in our assortment? We also offer customized resin formulation and development services. Whatever your project may entail, we will provide the expert consulting you need to make it a success.



GURONIC C400-0 twin cartridge



GURONIC gel

### Encapsulation Technology and Services

- Casting resins
- Materials consulting
- Customized development
- Casting and coating service
- Sample and pilot production
- Inspection and testing
- Tooling



GURONIC customized potting



GURONIC products

### We provide the expertise and tailored services you need

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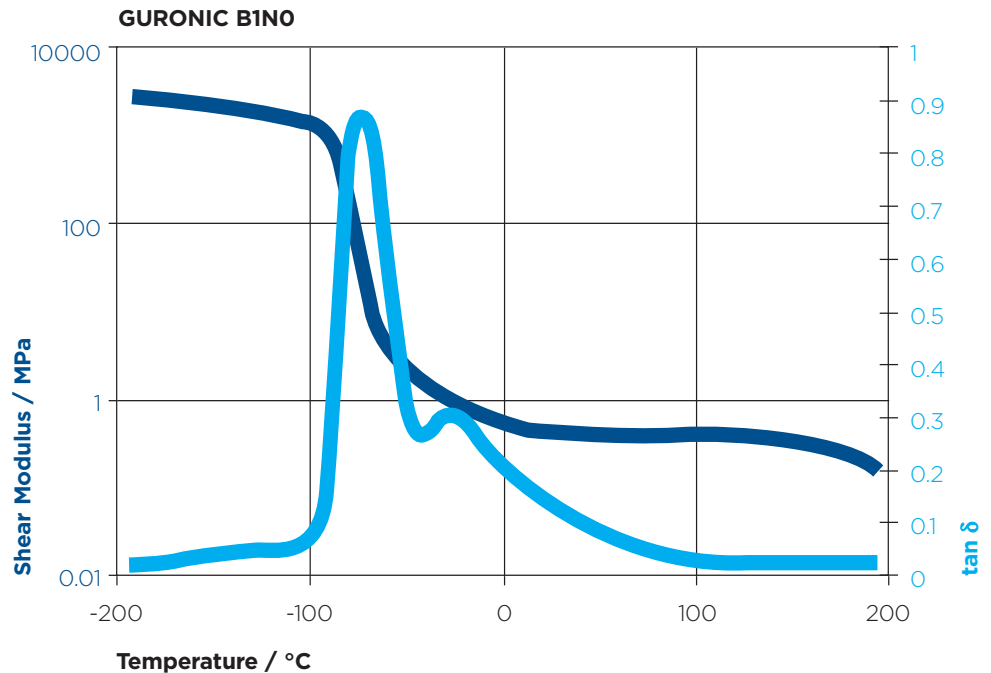
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## GURONIC Casting Resin for Electronics



Shear Modulus and damping ( $\tan \delta$ ) dependent on temperature for GURONIC B1N0, used to determine the glass transition temperature according to German industrial standard DIN 53445.

GURONIC casting resins show excellent mechanical damping properties even at low temperatures. GURONIC is soft-elastic over the whole application temperature range.

As a member of TE Connectivity we cultivate worldwide customer relationships with our international sales organization. For your applications we develop and manufacture high standard casting resins. Our company is certified according to OHSAS 18001, DIN EN ISO 9001 as well as to DIN EN ISO 14001.

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