

EN

Preliminary Technical Data Sheet

CONAP®

EN 5852 Part A/EN 5852 Part B

20:100

UL 94 V-0 listed

Polyurethane System - Two Component Filled
Potting compound system - Self-extinguishing

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Product description

CONAP® EN-5852 is a two-component, filled, flame-retardant polyurethane potting system.

Areas of application

Potting and encapsulation of electronic components, modules, circuit boards, assemblies and related devices.

Processing methods

- Manual and/or automatic casting/potting
- Under vacuum casting/potting
- Room temperature curing

In pre-filled products, before each use, always check for presence of possible sediment. In case, re-homogenize thoroughly. Add the appropriate quantity of hardener to the resin and mix carefully. Avoid excessive air trapping when mixing components. It can be useful to pre-heat components and remove entrapped air from the mixture with a vacuum step before casting.

Curing/Post-curing

For a room temperature curing system, post-curing allows fast stabilization of the material and attainment of the best electrical and mechanical properties. During curing process it is advisable to avoid thermal variations higher than 10°C/hour.

Storage and stability

Polyol and isocyanate based hardener can be stored respectively for one year and six months in the original sealed containers stored in a cool, dry place. Resin and hardener are chemically stable. Avoid storage outside. Hardener may increase its viscosity over storage time without changing final cured system properties. Store between 5 °C and 35 °C. Long storage may cause filler settling. Mix each component before using. Both components are moisture sensitive therefore it is good practice to close the containers immediately after each use. Containers of the hardener, once opened, should be used immediately or blanketed with dry air or nitrogen before resealing. Moisture absorption may cause the expansion of the product during application and/or may cause the hardener to form solid residues. Hardener can crystallize if exposed at low temperature. To restore the original conditions, material can be heated at 55-65 °C avoiding local overheating. Product must be homogenized

and cooled down at room temperature before using.

Handling precautions

Refer to the safety data sheet and comply with regulations relating to industrial health and waste disposal.

Typical product properties

EN 5852 Part A

Properties	Conditions	Test Method	Value	M/U
Colour		--	Amber	
Viscosity	25 °C	IO-10-50 (ISO 3219)	500 ÷ 700	mPa·s
Density	25 °C	IO-10-51 (ASTMD 1475)	1,20 ÷ 1,24	g/ml

EN 5852 Part B

Properties	Conditions	Test Method	Value	M/U
Colour		--	Black	
Viscosity	25 °C	IO-10-50 (ISO 3219)	10000 ÷ 19500	mPa·s
Density	25 °C	IO-10-51 (ASTMD 1475)	1,41 ÷ 1,47	g/ml

Typical system properties

Properties	Conditions	Test Method	Value	M/U
Mix Ratio by weight		--	100 : 20	g
Mix Ratio by volume		--	100 : 25	ml
Initial mixture viscosity	25 °C	IO-10-50 (ISO 3219)	7000 ÷ 11000	mPa·s
	40 °C		4000 ÷ 6000	mPa·s
	60 °C		3000 ÷ 4500	mPa·s
Pot life (doubled initial viscosity)	25 °C	IO-10-50 (ISO 3219) (*)	9 ÷ 16	min
	40 °C		8 ÷ 14	min
	60 °C		4 ÷ 8	min
Gel time	25 °C - 100 ml	IO-10-52a	20 ÷ 30	min
Gel time	40 °C - 100 ml	IO-10-52b	16 ÷ 26	min
	60 °C - 100 ml		10 ÷ 18	min
Gel time (manual test)	25 °C - 15 ml - 6 mm	IO-10-73 (*)	80 ÷ 120	min
Demoulding time	25 °C - 15 ml - 6 mm	(*)	7 ÷ 9	hrs
Post-curing	60 °C	(**)	15	hrs
Suggested curing cycle		(**)	24 h RT + 15 h 60 °C	

Typical cured system properties

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	24 h RT + 15 h 60 °C	
Density (solid)	25 °C	IO-10-54 (ASTM D 792)	1,28 ÷ 1,34	g/ml
Hardness	25 °C	IO-10-58 (ASTM D 2240)	80 ÷ 90	Shore A/15
Hardness	25 °C	IO-10-58 (ASTM D 2240)	30 ÷ 40	Shore D/15
Glass Transition (Tg)		IO-10-69 (ASTM D 3418)	5 ÷ 15	°C
Maximum Tg		IO-10-69 (ASTM D 3418)	5 ÷ 15	°C
Water absorption (24 h RT)		IO-10-70 (ASTM D 570)	0,10 ÷ 0,20	%
Water absorption (2 h 100 °C)		IO-10-70 (ASTM D 570)	0,30 ÷ 0,40	%
Linear thermal exp. (Tg -10 °C)		IO-10-71 (ASTM E 831)	70 ÷ 90	ppm/°C
Linear thermal exp. (Tg +10 °C)		IO-10-71 (ASTM E 831)	170 ÷ 190	ppm/°C
Flammability		IO-10-68 (UL 94 V-0)	2,8	mm
Thermal conductivity	25 °C	IO-10-87 (ASTM C 518)	0,50 ÷ 0,60	W/(m·K)
Thermal shock (n° 10 cycles passed)		IO-10-67 (Olyphant washer)	-40 ÷ +180	°C
Max recommended operating temperature		IEC 60085 (***)	130	°C

Typical mechanical properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	24 h RT + 15 h 60 °C	
Flexural strength	25 °C	IO-10-66 (ASTM D 790)	na	MN/m²
Strain at maximum stress	25 °C	IO-10-66 (ASTM D 790)	na	%
Strain at break	25 °C	IO-10-66 (ASTM D 790)	na	%
Flexural elastic modulus	25 °C	IO-10-66 (ASTM D 790)	na	MN/m²
Tensile strength	25 °C	IO-10-63 (ASTM D 638)	3,5 ÷ 5,5	MN/m²
Tensile elastic modulus	25 °C	IO-10-63 (ASTM D 638)	17 ÷ 22	MN/m²
Elongation at break	25 °C	IO-10-63 (ASTM D 638)	65 ÷ 95	%
Compressive strength	25 °C	IO-10-72 (ASTM D 695)	na	MN/m²

Typical dielectric properties in cured condition

Properties	Conditions	Test Method	Value	M/U
Specimens curing cycle		--	24 h RT + 15 h 60 °C	
Tracking Index		IEC 60112	> 600	CTI
Dielectric constant	25 °C	IO-10-59 (ASTM D 150)	4,5 ÷ 5,5	
Loss factor	25 °C	IO-10-59 (ASTM D 150)	115 ÷ 155	x10 ⁻³
Volume resistivity	25 °C	IO-10-60 (ASTM D 257)	1,0 x 10 ¹⁴ ÷ 1,0 x 10 ¹⁵	Ω·cm
Dielectric strength	25 °C - 2 mm	IO-10-61 (ASTM D 149)	21 ÷ 23	kV/mm

IO-00-00/200-000-000 = Elantas Europe internal test method. The correspondent international method is indicated whenever possible; nd = not determined; na = not applicable; RT = TA = laboratory room temperature (23±2°C); conversion units: 1 mPas = 1 cPs 1 MN/m² = 10 kg/cm² = 1 MPa

(*) for larger quantities pot life is shorter and exothermic peak increases; (**) the brackets mean optionality; (***) the maximum operating temperature is given based on laboratory information available being it function of the curing conditions used and of the type of coupled materials. For further possible information see post-curing paragraph.

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