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Data Sheet Epoxy Prepreg System E201/E201S

Description

Product Description

E201/E201S is a resin system based on a modified high performance epoxy resin and offers a manifold use in different areas such as interior applications. Additionally E201 is high toughened with a typical curing temperature of 125°C for 1 hour. The curing conditions are quite flexible and the range is from 80°C until 160°C for short term curing. By adjusting the curing condition the desired properties of the material can be reached.

E201/E201S Prepregs also have

- controlled flow properties
- long storage stability at room temperature (3 months)
- brittle temperature of 100°C - 120°C
- good tack stages and variation possibilities (Tack 0 - 2)
- excellent adhesive strength with metal

Application

This resin-system can be used for all customary reinforce materials like fabrics, UD-fabrics with area weights up to 1000 g/m². The resin content is flexible from 30 to 50% as needed for the acquirement of the construction and the process.

Storage

E201E201S prepregs are dispatched by ambient temperature transport. After the date of dispatch the prepregs can be stored at -18°C for a period of at least 6 months. Before fabrication the prepreg rolls, in their protective sheets, have to be conditioned to room temperature. In this context it is absolutely necessary to avoid the formation of condensation water directly on the prepregs. At room temperature (approximately 20°C) the prepregs remain processable for 3 months. If the fabrication time exceeds this period the fabrication properties should be checked by measuring the resin flux.

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Fabrication

Curing

E201/E201S was formulated for autoclave-, press- or vacuum-only processing. It's a versatile cure system for curing temperatures of 80°C to 160°C. The recommended heat up rate is 1 °C/min to 4 °C/min.

The E201/E201S resin system is also offering a two-step-processing with an initial curing and a stand-alone post-curing. Parts can be demoulded after the initial cure at a shorter cure cycle in order to increase tooling availability. The combined time of both cure cycles should not fall short of the total recommended duration of a one-step cure cycle which is depending on lay-up procedure, part design and tooling properties and therefore needs to be evaluated individually on a case-by-case-basis by carrying out internal tests.

The recommended pressure during curing can vary between vacuum pressure (>0.7 bar) and a positive pressure of approx. 8 bar. This depends on the specific application and the kind of reinforcement.

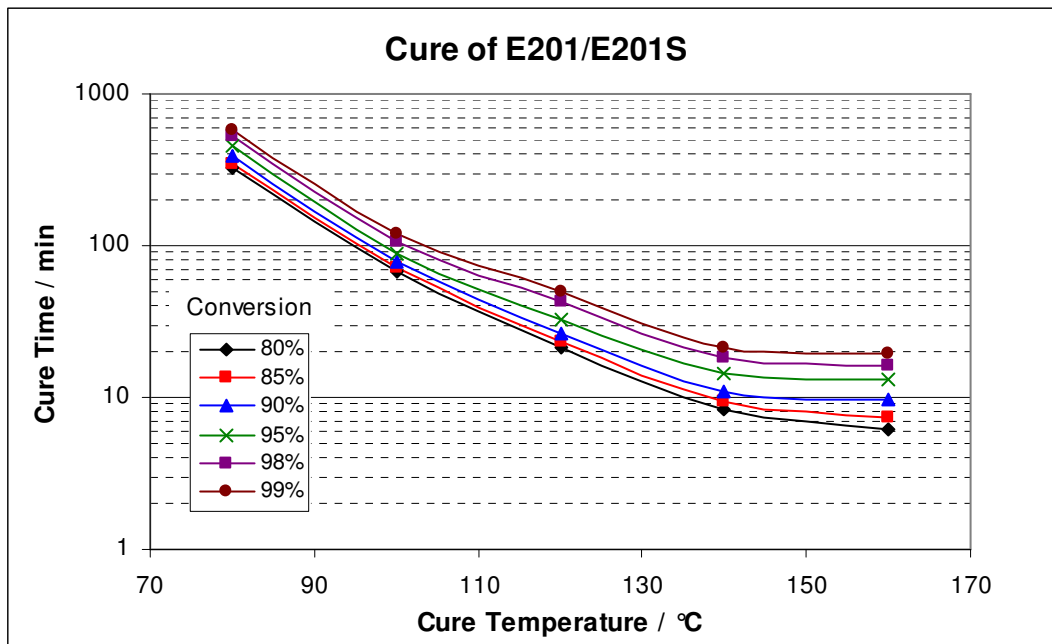


Fig 1. Time/turnover plot of E201/E201S

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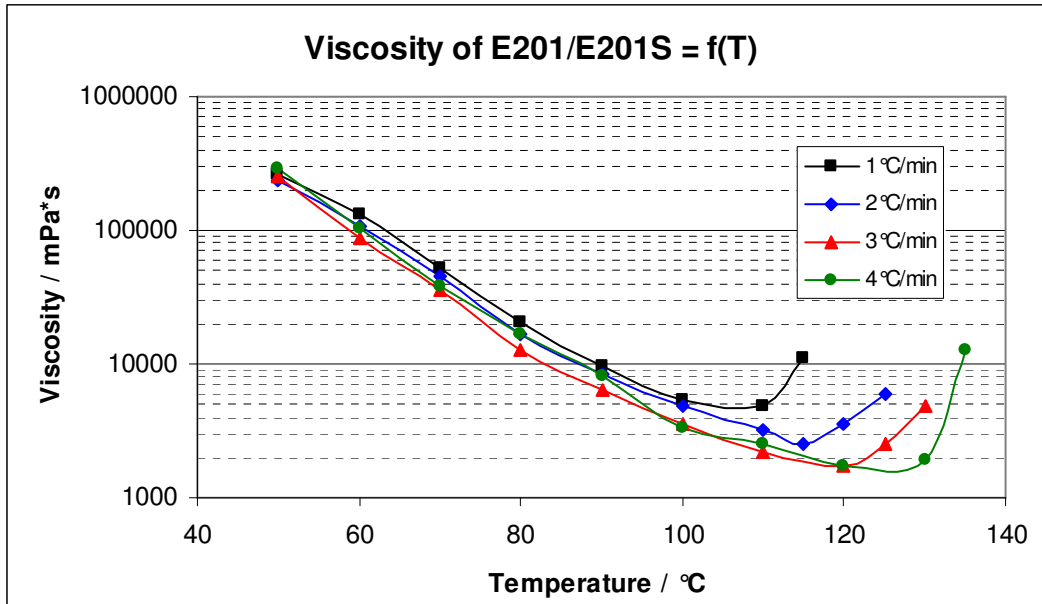


Fig. 2. Viscosity/temperature plot of E201/E201S

Properties

Prepreg Properties

PR-UD C 420/320 E201 30 / CE 1250-420-30 (Fiber type: SGL C30 T050 342 EPY)

Property	Normative reference	Unit	Value
Fiber Area Weight	DIN 29971	gsm	420
Width of prepreg	DIN 29971	mm	320
Resin Content	DIN 29971	%	30
Volatiles	DIN 29971	%	< 1
Prepreg Area Weight	DIN 29971	gsm	614

PR-FB1363 245/1200 E201S 45 / CE 8201-245-45S (Fabric type: Sigratex KDK 8043 Köper 2/2)

Property	Normative reference	Unit	Value
Fiber Area Weight	DIN 29971	gsm	245
Width of prepreg	DIN 29971	mm	1200
Resin Content	DIN 29971	%	45
Volatiles	DIN 29971	%	<1
Prepreg Area Weight	DIN 29971	gsm	445

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Laminate Properties

Physical, mechanical data's

Data's of UD-Carbon laminate with 60 vol% fiber content
 PR-UD C 420/320 E201 30 / CE 1250-420-30 (Fiber type: SGL C30 T050 342 EPY)

Property	Normative reference	Unit	T / °C	Value
Tensile strength 0°	DIN EN 2561 B	MPa	23	1900
E-Modulus 0°	DIN EN 2561 B	GPa	23	135
Elongation	DIN EN 2561 B	%	23	1.4 – 1.7
Flexural strength 0°	DIN EN ISO 14125	MPa	23	1250
Flexural modulus 0°	DIN EN ISO 14125	GPa	23	110
Interlaminare shear strength	DIN EN 2563	MPa	23	58

Data's of Carbon fabric laminate
 PR-FB1363 245/1200 E201S 45 / CE 8201-245-45S (Fabric type: Sigratex KDK 8043 Köper 2/2)

Property	Normative reference	Unit	T / °C	Value
Tensile strength 0°	EN 2561 B	MPa	23	1100
Tensile strength 90°	EN 2561 B	MPa	23	1030
E-Modulus 0°	EN 2561 B	GPa	23	70
E-Modulus 90°	EN 2561 B	GPa	23	65
Elongation	EN 2561 B	%	23	1,6 – 1,7
Flexural strength 0°	EN ISO 14125	MPa	23	1050
Flexural strength 90°	EN ISO 14125	MPa	23	990
Flexural modulus 0°	EN ISO 14125	GPa	23	62
Flexural modulus 90°	EN ISO 14125	GPa	23	60
Interlaminare shear strength 0°	EN 2563	MPa	23	68
Interlaminare shear strength 90°	EN 2563	MPa	23	70

Safety guidelines

When processing the above-mentioned products the guidelines issued by the chemical industry and the employers' liability insurance in connection with the safety data sheets have to be complied with.

General remarks

These data and information are based on carefully conducted tests and experiments and shall inform the user. They should not be regarded as a guarantee for the suitability of certain applications. Users should at any rate ensure and confirm the suitability of these products for the intended purpose by carrying out their own tests and research.