

Daron® P014

Vinyl ester resin optimized for carbon fiber adhesion

Components based on Daron® P014 feature high mechanical strength.

With Daron® P014 resin you can make strong and durable parts particularly with carbon fiber.

Benefits

- Ultra Low viscosity enables high reinforcement content while maintaining low pull forces.
- Stable viscosity in bath over time for optimized processing
- Great mechanicals through superior fiber wetting and adhesion
- Can be used with carbon and glass fiber

Application

Daron® P014 is especially adapted to the manufacturing of pultruded carbon fiber components.

Daron® P014's low viscosity allows for a high loading and superior wetting of fibers. Combined with an excellent adhesion this results in parts with outstanding mechanical properties.

Indicative Product Specifications

Property	Value	Unit	TM
Appearance	Clear	-	TM-2265
Solids content	50-55	%	TM-2033
Viscosity 100 s-1	150-350	mPa.s	TM-2313
Gel-Time @130°C	100-150	sec	TM-2261
Peak time @130°C	150-250	sec	TM-2261
Peak temperature @130°C	250-290	°C	TM-2261

Remarks

Viscosity measurement: Z2/ 100 s-1/ 23 °C.

Reactivity measurement: 1 g Trigonox C added to 100 g resin.

Liquid resin typical properties

Property	Value	Unit	TM
Density	1040	kg/m ³	TM 2160
Flash point	33	°C	TM 2800
Stability, no initiator, dark, 25 °C	6	Month	-

Unfilled castings typical properties

Property	Value	Unit	TM
Density at 20 °C	1133	kg/m ³	DIN 53479
Tensile strength	85	MPa	ISO 527-2
Tensile modulus	3.2	GPa	ISO 527-2
Tensile elongation	7	%	ISO 527-2
Flexural strength	145	MPa	ISO 178
Flexural modulus	3	GPa	ISO 178
HDT	110	°C	ISO 75 Ae
Tg (Max Tan δ)	116	°C	ISO 6721

Curing conditions

All properties are measured at 20°C unless otherwise specified.

Cure system 1 ml Butanox® LPT-IN (AKZO-Nobel) and 0.5 ml

Co-oct. solution (1 % Co in styrene) added to 100 g resin.

Cured 24 h at room temperature and 4 h at 100°C.

Processing

Daron® P014 can be processed using peroxides used for a bath pultrusion process. We typically use 0.5 phr of Trigonox 21 S and 1 phr of Trigonox C to be able to reach speeds of 1 m/min on a 1 meter die with temperature settings of 130-150-180 °C.

UD pultrudates typical properties

Property	Carbon	Unit	TM
Fiber content	75	wt%	ASTM D 2584
Tensile strength Longitudinal (0°) Transversal (90°)	2000 35	MPa	ISO 2561 ISO 527-4
Tensile modulus Longitudinal (0°)	137	GPa	ISO 2561
Linearized strain at break in tension (0°)	1,5	%	ISO 2561
Flexural strength Longitudinal (0°) Transversal (90°)	1500 80	MPa	ISO 14125
Flexural modulus Longitudinal (0°) Transversal (90°)	134 9	GPa	ISO 14125
Outer fiber strain at break (0°)	1,1	%	ISO 14125
Transverse strain at break (90°)	0,6	%	ISO 14125
ILSS	70	MPa	ISO 14130
Tg (Max Tan δ)	114	°C	ISO 6721

Curing conditions

Cured with 0.5 phr Trigonox 21S and 1 phr Trigonox C (AKZO-Nobel). Pultrudates were based on Zoltek Panex 35 T-13 fiber, 75wt%.

Guidelines before Use

Before use, the resin should be conditioned at a well-defined application dependent temperature.

Material Safety

A Material Safety Data Sheet of this product is available on request.

Test Methods

Test methods (TM) referred to are available on request.

Storage Guidelines

The resin should be stored in a dark and dry place at temperatures between 5 °C and 30 °C. Shelf life is reduced when resin is stored at higher temperatures and the properties of the resin might change during storage. The shelf life of styrene containing Vinyl ester will be significantly reduced when exposed to light. Therefore store in dark and in 100% light tight containers only. Exposure to direct sunlight should be avoided.

ISO 9001:2015 Certified

The Quality Management Systems at every AOC manufacturing facility have been certified as meeting ISO 9001:2015 standards. This certification recognizes that each AOC facility has an internationally accepted model in place for managing and assuring quality. We follow the practices set forth in this model to add value to the resins we make for our customers.

AOC. Trusted Solutions

AOC is the leading global supplier of resins and specialty materials which enable customers to create robust, durable and versatile products and components. With strong capabilities around the world in manufacturing and science, the company works closely with customers to deliver unrivaled quality, service and reliability for today, and create innovative solutions for tomorrow. Partner with AOC and we will work together to find the right solutions for your business.

Contact us for more products

We will help you to choose the right resin solution.

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