



Primaset® LVT-100 for Pultrusion Process

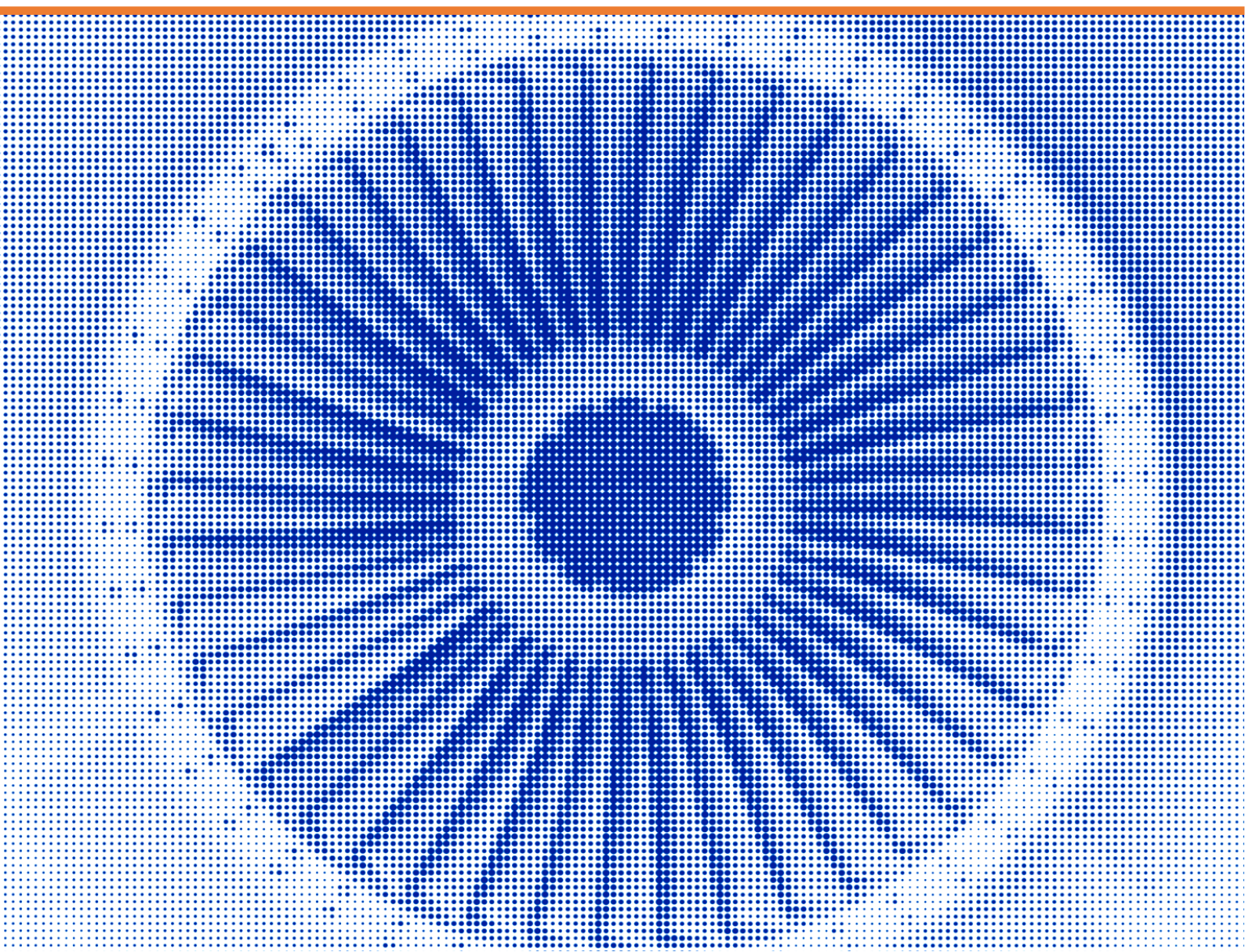
New Liquid, Low Viscosity Thermoset Resin



Composite Materials

Primaset® resins are a novel class of high-performance thermoset materials. They are characterized by glass transition temperatures up to 400°C, very good dielectric and mechanical properties and epoxy-like processing. Areas of use are electronics, aerospace, automotive and industrial composites and compounds.

Primaset® LVT-100 is a new low viscosity resin, which is liquid at room temperature and suitable for pultrusion, filament winding, resin transfer molding (RTM), vacuum-assisted RTM (VARTM), resin liquid infiltration, as a reactive diluent, die-attach adhesive and liquid encapsulant. Primaset® LVT-100 can be mixed with other cyanate esters and epoxy resins.



Primaset® LVT-100

Applications

Primaset® LVT-100 is a new resin suitable for the pultrusion composite process across various markets. Recently, it has been proven effective for HTLS (High Temperature Low Sag) Type 4 Composite Core Conductor applications. The carbon fiber pultruded cables offer high strength, low weight, low CTE, and high temperature resistance.

This composite cable rod can operate continuously at temperatures ranging from 150°C to 250°C, which is higher than that of Aluminium Conductor Steel Reinforced (ACSR) conductors. Thermo-oxidative testing of CFRP (Carbon Fiber Reinforced Polymer) rods with Primaset® LVT-100, compared to a competitor's product at 250°C, demonstrated significantly improved stability at high temperatures with minimal mass loss.

Typical Properties

- Low viscosity, liquid at room temperature neat resin
- Rapid fibre impregnation and wetting
- Dissolves epoxy, PS, PES, PEI and others
- Co-reacts with and cures Epoxy resins
- Low moisture uptake

Appearance	Clear liquid
Color	Yellow to orange
Density @25°C [g/cc]	~ 1.2
Viscosity @25°C [mPa*s]	300
Loss on drying [w%]	< 0.5
Gel time @200°C [min]	> 20
Tg [°C] tan δ by DMA ¹	320
Toughness K _{IC} [MPa*m ^{1/2}]	0.53
Ultimate tensile strength [MPa]	81 ± 10
Tensile modulus [MPa]	3330 ± 55
Tensile breaking elongation [%]	3.5
Water absorption (2 hours at 125°C) [%] ²	1.8

¹ Based on cure cycle: 1h @ 150°C + 3h @ 200°C + 1h @ 260°C

² 2 hours at 125°C (1.0-1.4bar)

Features and Performance pultruded

Temperature decomposition Td by TGA [°C]	> 400
Mass Loss at 250°C after 500 h [wt%]	1.2
Mass Loss at 250°C after 1000h [wt%]	3.2
Mass Loss at 250°C after 500 h [wt%] competitor product	9.7
Mass Loss at 250°C after 1000h [wt%] competitor product	14.0

Cure temperature zones pultruded machine: 165-190°C

Cure speed: 0.25 m/min

Catalyst solution recommended by Arxada

Post-cure in service or free-standing 1h 260°C

Sources: Arxada internal and third-party measurements

Shelf Life

Primaset® LVT-100 can be stored 2 years at room temperature. Containers should be tightly sealed and stored in a dry location to prevent moisture absorption.

Handling / Safety Precautions

Primaset® LVT-100 may cause sensitization by skin contact and is toxic to aquatic organisms. Overheated catalyzed Primaset® LVT-100 can liberate dangerous amounts of heat in uncontrolled polymerization, sufficient to generate smoke, pyrolysis fumes and pressure build-up. Before processing or catalyzing Primaset® LVT-100, consult Safe Handling Recommendations and Safety Data Sheet.

arxada

Switzerland

Arxada Ltd

Peter Merian-Strasse 80

CH-4052 Basel

Tel +41 61 316 81 11

USA

Arxada LLC

412 Mt. Kemble Ave

Suite 200S

Morristown, NJ 0796

Tel +1 800 777 1875

compositematerials@arxada.com

www.arxada.com

Use all chemicals safely; these products are for industrial use only. This document is provided to you ("Recipient") for information purposes only and is not part of any product specification. Always read all product information (including but not limited to the product label, SDS and product information sheets, hereinafter "Product Information") before use. Other written or oral statements made by Arxada representatives about the product or Product Information are also considered Product Information. All Product Information corresponds to Arxada's knowledge on the subject at the date of publication, and Arxada assumes no obligation to update it. Product Information is intended for use by Recipients experienced and knowledgeable in the field, who are capable of and responsible for determining independently the suitability of ingredients for their specific applications.

The statements made herein are the sole property of Arxada and relate solely to the product as an ingredient. Product Information may not be applicable, complete or suitable for Recipient's finished product or application; therefore, republication of such Product Information or related statements is prohibited. Recipients are obligated to ensure that all communications to their customers (i) are appropriate for their products or applications, (ii) do not rely solely on the Product Information, and (iii) comply with the applicable claims and regulations in the regions/countries where marketed. Recipients must perform appropriate tests independently to determine the suitability and efficacy of Arxada products in Recipient's product, application and conditions of use. Recipient assumes all risks of product use and handling and accepts full responsibility for compliance with all applicable Federal, national, state and local laws and regulations.

The Product information provided by Arxada is not intended and should not be construed as a license to operate under or a recommendation to infringe any patent or other intellectual property right, and Recipient is responsible for ensuring that their use does not infringe any such rights.

WAIVER OF WARRANTIES AND LIMITATION OF LIABILITIES: THIS PRODUCT INFORMATION IS OFFERED IN GOOD FAITH AND WITHOUT WARRANTY, EITHER EXPRESSED OR IMPLIED, REGARDING ITS ACCURACY OR THE RESULTS TO BE OBTAINED FROM THE USE OF SUCH INFORMATION. ARXADA MAKES NO WARRANTY (INCLUDING AS TO MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE) OF ANY KIND, EXPRESS OR IMPLIED, OTHER THAN THAT THE PRODUCTS CONFORM AT PRODUCTION TO THEIR PUBLISHED SPECIFICATIONS (AS MAY BE REVISED BY ARXADA WITHOUT NOTICE); ANY SUCH WARRANTIES THAT MAY OTHERWISE BE IMPLIED ARE EXPRESSLY DISCLAIMED. Arxada's total liability and Recipient's exclusive remedy for any cause of action associated with any technical advice, service, recommendation made or Product Information provided, howsoever caused and whether based in tort, contract, strict liability or any other legal theory, is expressly limited to the amount paid directly for such advice, service, recommendation or Product Information for which damages are claimed. In no event shall Arxada be liable for any other damages including, without limitation, any indirect, consequential, incidental, special or punitive damages.

All trademarks are owned by Arxada or its affiliates.

© 2021 Arxada Ltd.