

SG 4538-011PB-701

LIGHTNING STRIKE PREPREG

SALES AND DISTRIBUTION

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DESCRIPTION

SG4538-011PB-701 is a lightweight, conductive prepreg film composed of a phosphor bronze woven mesh reinforcement impregnated with a tough conductive enhanced epoxy resin. It is designed for lightning and shielding protection of aircraft.

FEATURES

- ◇ Dual Co-cure capabilities between 250°F and 350°F, post curable to 350°F
- ◇ Epoxy formulation results in a tough outer shell with outstanding surfacing capabilities
- ◇ Extremely low volatile content contributes negligible surface porosity
- ◇ Excellent tack and handling properties for ease of lay-up
- ◇ Excellent environmental performance from -65°F to 300°F
- ◇ Compatible with a wide range of other epoxy prepreg systems
- ◇ Capable of providing Zone 2A (swept stroke) direct effects lightning protection as a minimum. See Appendix A for photo details
- ◇ Provides a high degree of electromagnetic shielding for electric and magnetic fields associated with lightning and high powered radio frequency transmitters

PHYSICAL PROPERTIES

Form:	Modified epoxy impregnated woven wire
Resin Weight:	.030-.035 psf
Resin Color:	light grey opaque
Volatiles:	Less than 1%
Conductive Reinforcement:	Phosphor bronze woven mesh
Reinforcement Mesh Weight:	.011 psf
Mesh Thickness:	.002" typical
Prepreg weight:	.0435 psf typical
Separator:	paper, polyethylene
Tack:	Medium
Gel time:	10-12 minutes at 250°F
Out Time:	30 days at 75° F
Shelf Life:	One year at 0° F Four months at 40° F
Availability:	40-54" widths

APPLICATION

1. Remove material from cold storage at least 20 hours prior to use to allow for stabilization at lay up temperature conditions. Keep the prepreg sealed to prevent moisture from condensing on the prepreg. If details are cut and replaced in cold storage, the prepreg must be placed in sealed containers. Shorter stabilization times can be used with these details.
2. Cut the material to size, remove the release paper
3. Apply the prepreg to the part or mold starting at one edge and proceed in a rolling motion.
4. Next using a semi-flexible roller squeegee and starting in the center, proceed, in a uniform manner, to push out any air pockets toward the outer edges. Alternately, palm hand pressure can be used to increase resin tack and effect better conformability.
5. Remove the poly- liner from the prepreg by peeling it back over itself minimizing lift off. If lift off occurs or if air pockets are noticeable, pull the poly liners back over the area and use the squeegee or palm hand pressure to workout the air pocket.
6. Use standard debulking procedure for 10 minutes.
7. Continue the prepreg lay up.
8. Debulking after each 3-5 plies is recommended.

RECOMMENDED CURE

DA4538 is designed to cure at 250°F or 350°F . Cure at 250°F takes place in one hour at 250°F, however, cure times and temperatures can be extended to 90 minutes and a post cure at 350°F to achieve a higher Tg. Alternatively, a processing profile of 60-90 minutes at 350°F can be used to effect a cure.

STORAGE

Store prepreg at 0°F for maximum shelf life.

CLEAN UP

The prepreg resin can be removed from non-bonding areas with ketones or methylene chloride solvents. Be sure to follow all the material safety data sheet guidelines for the solvent to be used.

CAUTION

This material contains epoxy resins and amines, which may cause irritation to sensitive skin. Avoid contact with eyes or skin. If skin contact occurs, wash as soon as possible with soap and water. If contact with eyes occur, flush with water for 15 minutes. Do not handle this material until the material safety data sheet has been read and understood. The user of this material is required to use the necessary protective equipment as directed by the applicable state and federal laws when handling, curing, and grinding this material.

IMPORTANT NOTICE

Information in this data sheet has been obtained under controlled laboratory conditions and is believed to be accurate. Properties listed are typical values and are not intended for use in preparing specifications. Actual values may vary. No warranty is expressed or implied for which APCM or AM&E assumes legal responsibility. APCM or AM&E cannot be responsible for misapplication or handling and use under conditions beyond its control and under no circumstances shall be liable for incidental or consequential damage resulting from handling or use of this material.

Manufactured by and in conjunction with Adhesive Prepregs for Composite Manufacturing, LLC

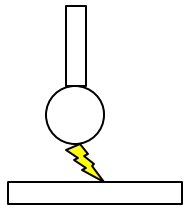
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Appendix A
Strike Guard SG4538-011PB-701
Panel #21-Zone 2A Test Results

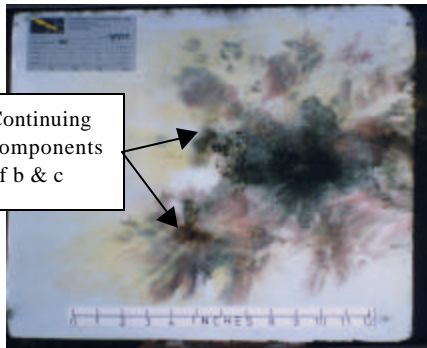
DIRECT EFFECTS TESTING

A 16" x 16" panel was subjected to a Zone 2A (swept stroke) direct effects attachment using a peak current amplitude current of 100 Ka. Testing was conducted at the facilities of Lightning Technologies, Inc. Typical strike test set up is shown below.

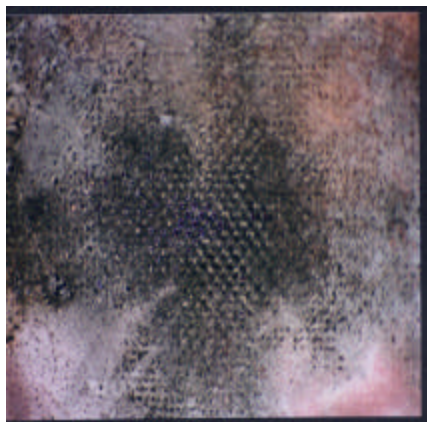
The composite panel consisted of a base of 3 plies of carbon fiber (total thickness of .035" typical) and a top or outer ply of Strike Guard Lightning Protection prepreg. Additionally, the test panel was coated to a 5 mil typical paint thickness.



Jet Diverting Electrode 1" from test panel



Front of panel shows an approximate 5" diameter of thermal damage consisting of paint loss, 2" diameter of prepreg conductive material sacrifice and resin loss at the surface. No evidence of fiber damage. No visual structural damage to the outer most ply.
"Quarter tap test" indicates resin degradation and possible delamination in the 2" diameter below the surface.
Rear of panel shows no visual evidence of damage of any kind.



Close up of 2" diameter area of conductive material sacrifice, resin loss but no evidence of fiber damage.

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