

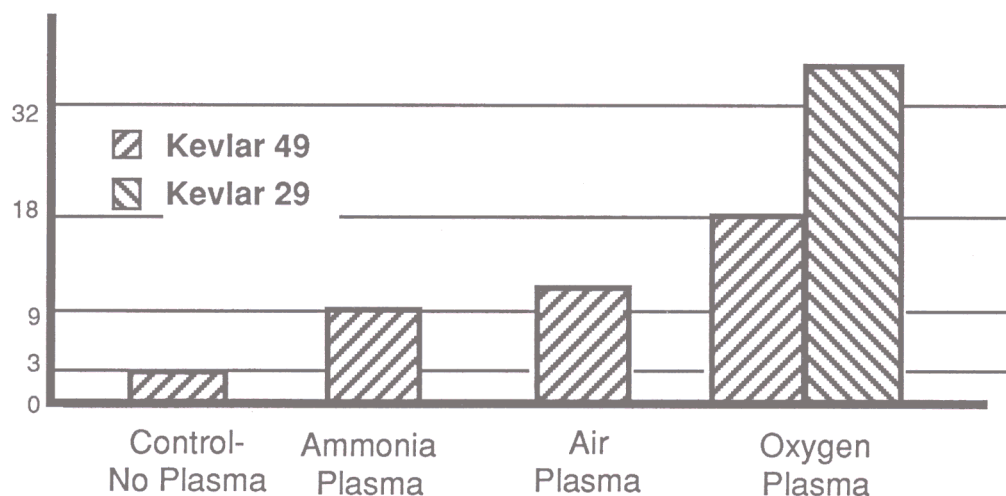
OBTAIN THE FULL BENEFITS FROM HIGH PERFORMANCE FIBERS

Plasma surface treatment provides significant improvements in fiber/resin bonding. Composites now exist which fully utilize the inherent properties of fibers such as Kevlar™ and Spectra™. Examples for each are presented below:

KEVLAR

Kevlar™ is a high modulus high strength fiber manufactured by DU PONT & CO. Its aromatic chemical structure gives Kevlar a broad recommended temperature use range. The graph below shows the improvements obtained in composite properties by plasma treatment.

**Kevlar™ / Epoxy Unidirectional Composites
T - Peel Strengths (PIW)**

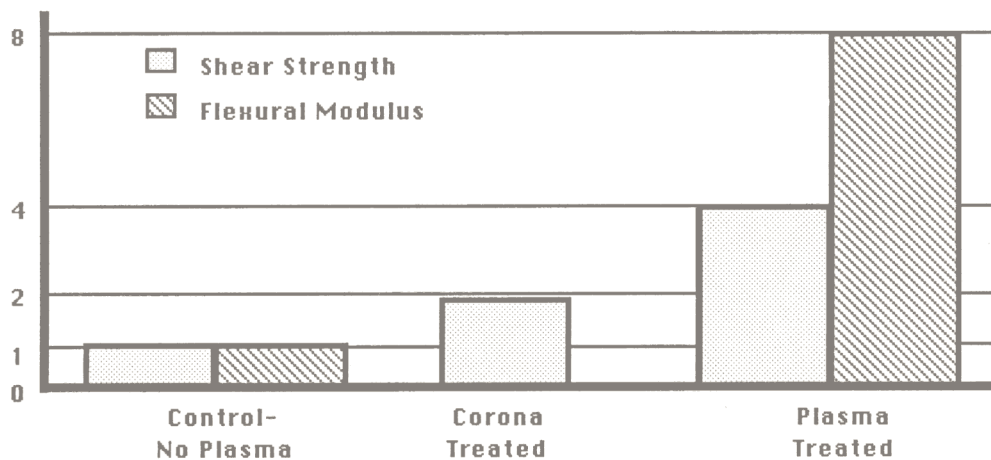


Data supplied by: Mark Smith, Allied Bendix Aerospace, Kansas City, MO.

SPECTRA™

Spectra™, a highly structured polyethylene fiber produced by the Fiber Division of Allied-Signal Corporation, provides higher specific strength and stiffness benefits than Kevlar™, albeit within a narrower use temperature. However, its polyethylene structure has limited property development in structural composites. Plasma treatment makes possible the use of Spectra composites for structural applications as evidenced by the properties in the following graph.

Spectra 900 / Epoxy Unidirectional Composites Relative Interlaminar Shear Strength and Flexural Modulus



SAMPE 1988, Anaheim, CA., March 1988

"Gas Plasma Treatment of Spectra™ Fiber"

The Kevlar™ and Spectra™ fibers were treated in a PS 1010 continuous plasma treatment system. Contact PLASMA SCIENCE, Inc. at 415-598-9300 for more detailed information on equipment, plasma technology or contract services.

Kevlar™ is a registered trademark of E.I. du Pont de Nemours & Company (Inc.).

Spectra™ is a registered trademark of the Allied Fibers Corporation.

Please contact Plasma Technology Systems at 650.596.1606 for more information