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Email report- WPR18FA035

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Michael,

Material removed from the carburetor inlet screen of the accident aircraft was submitted to the Materials Laboratory. The material was submitted to determine the identity of the material.

The material was examined under a 5-50X stereo zoom microscope. The material consisted of two different fibrous materials-blue and reddish brown.

A sample of each of the unknown fibrous materials were examined using a Fourier Transform Infrared (FTIR) spectrometer with a diamond attenuated total reflectance (ATR) accessory in accordance to ASTM E1252-98 (American Society for Testing Materials E1252-98: *Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis*). The spectrometer was used to collect and process infrared wavelength absorbance spectra of the unknown material(s).

Both materials had the same spectrum. The spectra for the materials contained the following combination of spectral peaks corresponding to particular functional groups found within molecular structure of the material. The presence of a broad peak at $\sim 3280\text{ cm}^{-1}$ is indicative of an oxygen-hydrogen (O-H) bond. The presence of a strong doublet peak between $\sim 2880\text{ cm}^{-1}$ and $\sim 2820\text{ cm}^{-1}$ is indicative of a carbon-hydrogen (C-H) single stretching bond. A peak at $\sim 1620\text{ cm}^{-1}$ is indicative of a carbon-oxygen (C-O) stretching bond. A doublet peak at $\sim 1050\text{ cm}^{-1}$ and 1030 cm^{-1} is indicative of a carbon-oxygen-carbon (C-O-C) bond. The spectrum was consistent with a carbohydrate. A spectral library search was performed on the unknown spectrum. The spectral search found a strong match to cellulose. Cellulose is found in natural plant fibers like cotton.

If you have any questions, feel free to contact me.

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Chemist
RE-30