Frontier Analysis, Ltd

TECHNICAL SERVICE RESPONSE NO.: UT045

Subject: Analysis of a Balloon and Other Samples Associated with a Possible Alien Encounter (October 19, 2005)

Date: March 23, 2006

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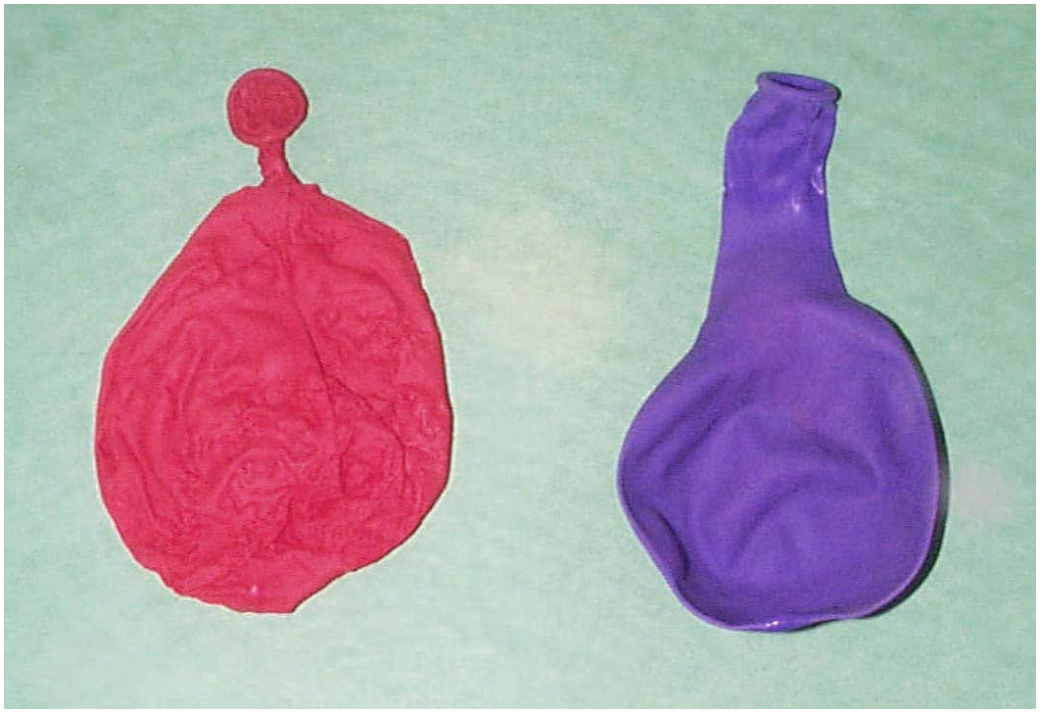
Background/Objective:

A witness, who has purportedly experienced multiple UFO related events over his lifetime, informed MUFON that he was in possession of an air-filled, red balloon on which there appears to be a handprint of unknown origin. He is wondering if the imprint on the balloon may be evidence of a real physical visitation. This happened in his home on October 19, 2005. The stem was touched when deflating the balloon for shipping to Frontier Analysis. This resulted in a black stain on the witnesses skin. The object is to analyze the red balloon, and other related samples, to determine if there is any unusual residue. Following are photographs of the red balloon showing the anomalies, along with a normal blue control balloon for comparison. Both balloons are from the same batch and subjected to identical environs. Both had been air filled and deflated.

(Henry C. Toney)

Inflated balloon displaying a “handprint” appearing anomaly.

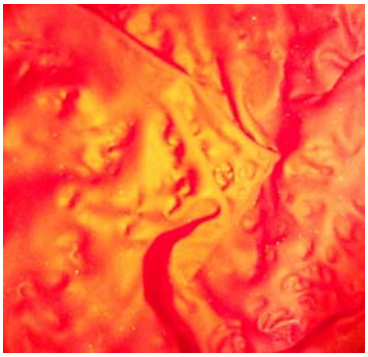


(Frontier Analysis, Ltd.)

Photograph showing deflated red balloon (crinkled surface, restricted stem) in comparison to blue balloon control (smooth surface, normal stem).

Following are microscope photographs of the red balloon and blue control balloon, also showing the dissimilarities. All photographs were taken by Frontier Analysis, Ltd.

Red Balloon with Anomalies


Crinkled Surface


Restricted Stem


Stem End

Blue Control Balloon


Smooth Surface


Normal Stem


Stem End

<u>Conclusions</u>:

1.) The blue and red balloons are composed of poly(isoprene). There are surface materials such as poly(dimethylsiloxane), talc-like mineral and calcite (calcium carbonate). These are probably from additives or processing agents used in the manufacture of the balloons.

2.) More additives and processing agents appear to be on the blue control balloon than on the red balloon. It is unknown whether the depletion of surface materials on the red balloon is due to variations in production, or result from an anomalous source.

3.) A trace amount of an additional material is believed to be on the red balloon. However, the balloon material and the additives/processing agents effectively mask the identification of this material. In fact, there are considerably more additives than this substance. It is possible that this material contains a phenolic-type or a sulfonic acid functionality. However, this cannot be confirmed.

Procedure:

Samples: The samples were received by this laboratory on November 21, 2005. They were submitted with the following information.

The Balloons

- **"The red balloon with surface anomalies suspected to be hand and fingerprints of an alien entity."** It had been inflated with air and was deflated prior to receipt for analysis. This was done to concentrate any foreign materials, which may be present on the surface. Also, it was necessary for sampling for infrared data acquisition.

- **"Control balloon from the same batch as red balloon with no unusual anomalies."** This is a blue control balloon which was submitted for reference. This balloon had also been inflated with air and was deflated prior to receipt.

Numerous infrared spectra[1] were taken of the surfaces and stems of the red balloon and the blue balloon. These data were acquired on a Thermo Electron Avatar 360 spectrometer equipped with a Harrick SplitPea® sampling accessory. In addition, numerous difference spectra were generated between the original spectra versus assorted references, as well as the original spectra of the red balloon versus the blue balloon. The samples were also examined with a radiation monitor (SE International's Radiation Alert™ Monitor 4) and a UV light (Optical Engineering's Model 22-UV).

Other Related Samples

- **"Cord the red balloon was fastened to since the eve of October 19, 2005."** Infrared spectra were obtained from its contact position with the stem, and a non-contact location at the end for reference.

- **"Implement used to untie the red balloon with surface anomalies."** No spectra were obtained, because there was no deposit visually obvious.

- **"Skin scrapings which turned black on contact with balloon stem while deflating the red balloon."** There were insufficient scrapings for analysis.

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[1] **Infrared Spectroscopy (IR):** Infrared spectroscopy is used for the molecular structure identification and quantitation of solids, liquids, and gases. An infrared spectrum is the result of light (in the 2 to 25 micron wavelength range) interacting with the vibrations of molecules. The particular set of vibrations of a molecule gives rise to specific spectral absorption bands, often referred to as the 'fingerprint' spectrum.

•**Exacto blade used to take the black skin scrapings.** Some skin scrapings were observed on the blade. Infrared spectra were obtained directly of the scrapings on the blade.

Results:

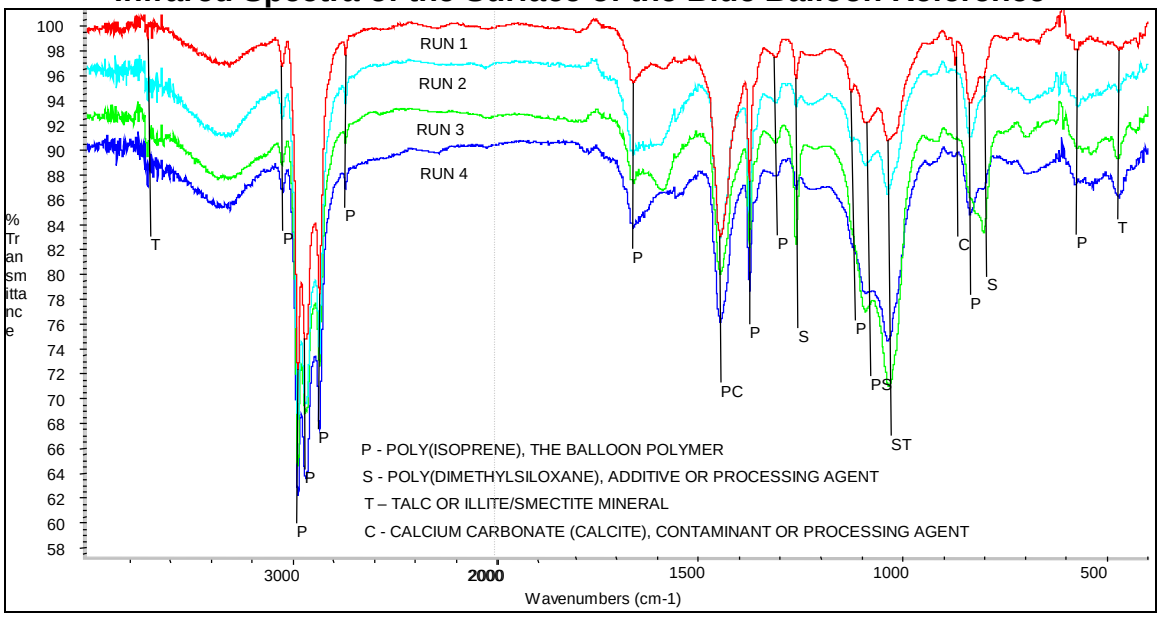
The results of the individual tests done on the samples follow. These results are summarized in the conclusions section on the page three of this report.

Balloon Analysis

The Blue Balloon Reference:

The blue balloon reference was examined first using infrared analysis in order to determine its composition, as well as other materials such as additives, processing agents and possible contaminants. This was done to find out what would also be expected on the red balloon. The spectra show the balloon is composed of poly(isoprene), and there are assorted surface materials such as poly(dimethylsiloxane) which is common silicone lubricant, a silicate mineral similar to illite/smectite or talc, and calcite (calcium carbonate). The spectra also show the amounts of these additives vary on the surface. For example, in the following spectra compare the band intensities around 1000 cm^{-1} to those around 1400 cm^{-1}. These spectra below are four selected runs out of nine, which show these additives and variances on the surface. The absorption peaks are labeled.

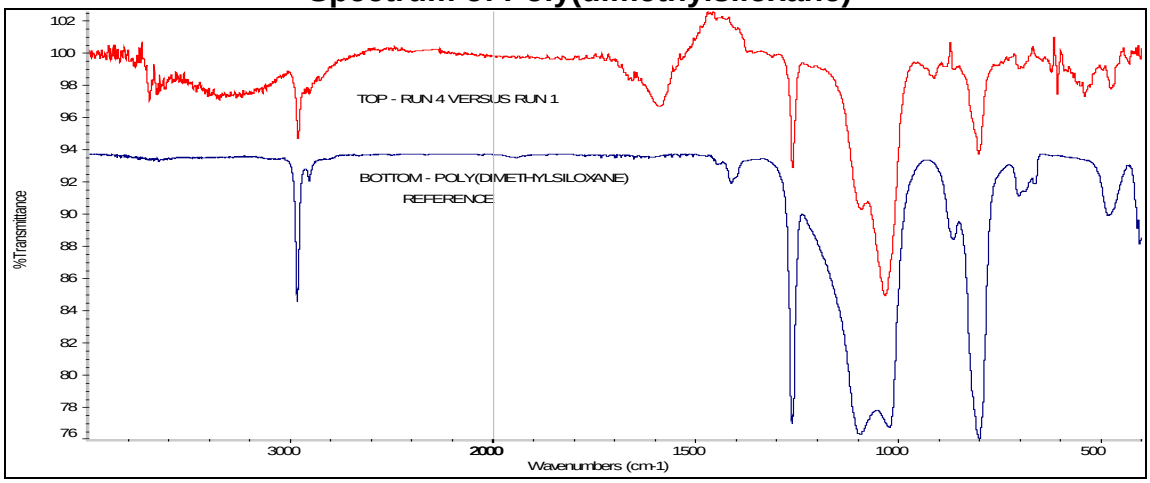
Infrared Spectra of the Surface of the Blue Balloon Reference



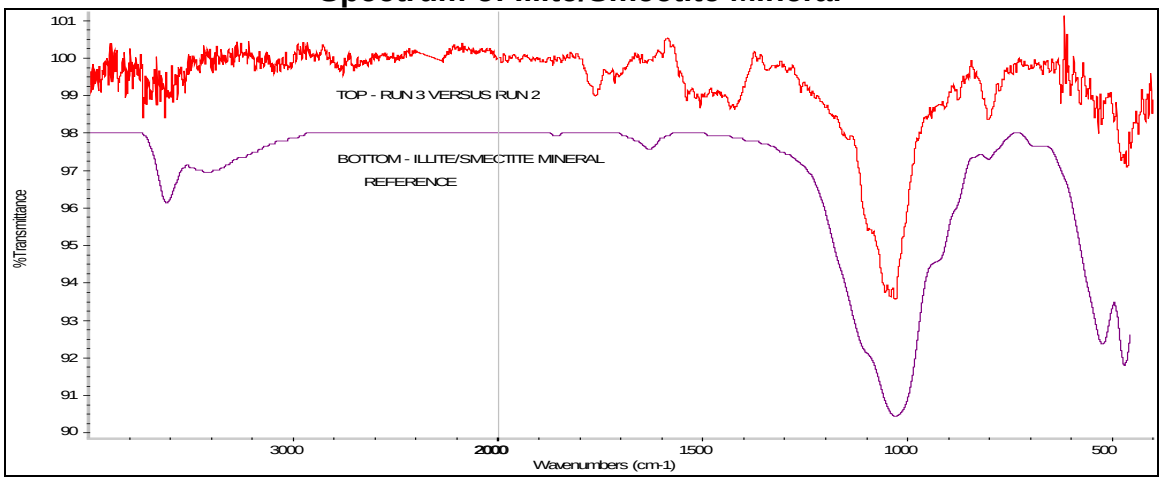
The following illustrates how the surface components described above were identified, though masked by strong poly(isoprene) absorption. As noted above,

uneven distribution of these materials is noted on the surface of the poly(isoprene) balloon. These band ratio variances in the runs made it possible to identify the materials on the surface of the balloon. So difference spectra were generated between the various runs, whereby the neoprene bands were nulled out, thus permitting enhanced absorption and additional bands due to the surface materials, and hence their identifications. Following are the spectra: run 4 versus run1; run 3 versus run 2; and run 1 versus run 2. These are presented along with reference spectra of poly(dimethylsiloxane), illite/smectite mineral, and calcite (calcium carbonate), respectively, for comparison.

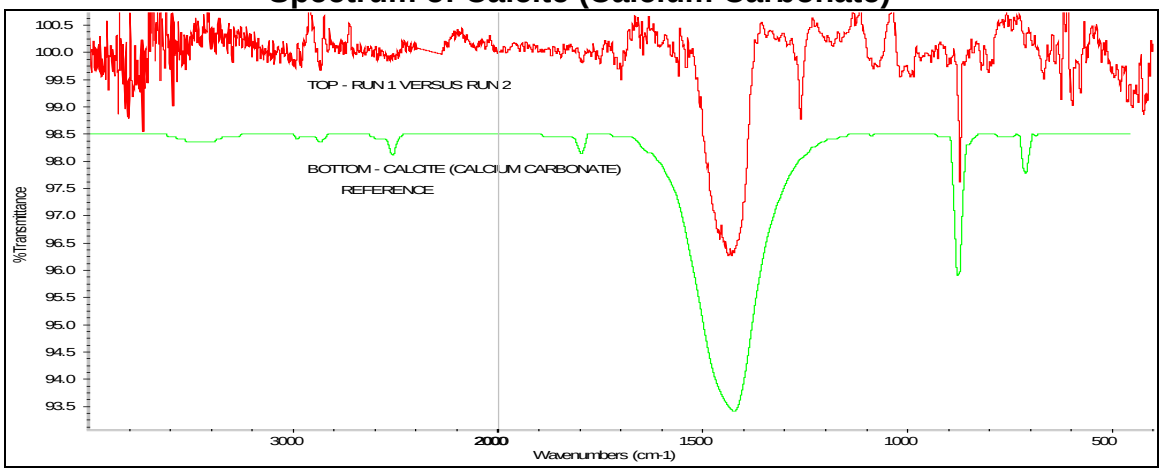
Infrared Difference Spectrum of Run 4 Versus Run 1 and a Reference Spectrum of Poly(dimethylsiloxane)



Infrared Difference Spectrum of Run 3 Versus Run 2 and a Reference Spectrum of Illite/Smectite Mineral



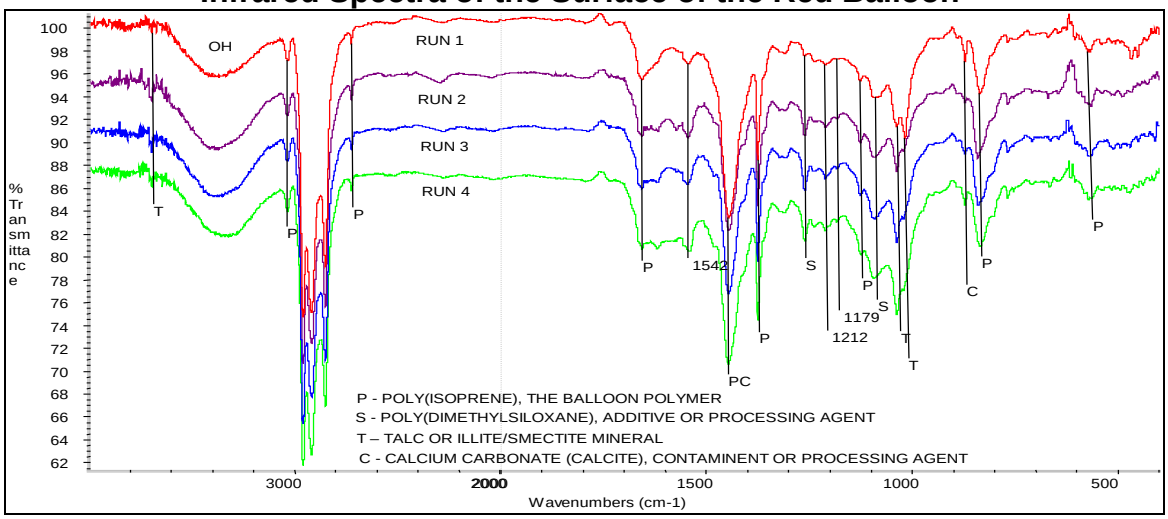
Infrared Difference Spectrum of Run 1 Versus Run 2 and a Reference Spectrum of Calcite (Calcium Carbonate)



***The Red Balloon*:**

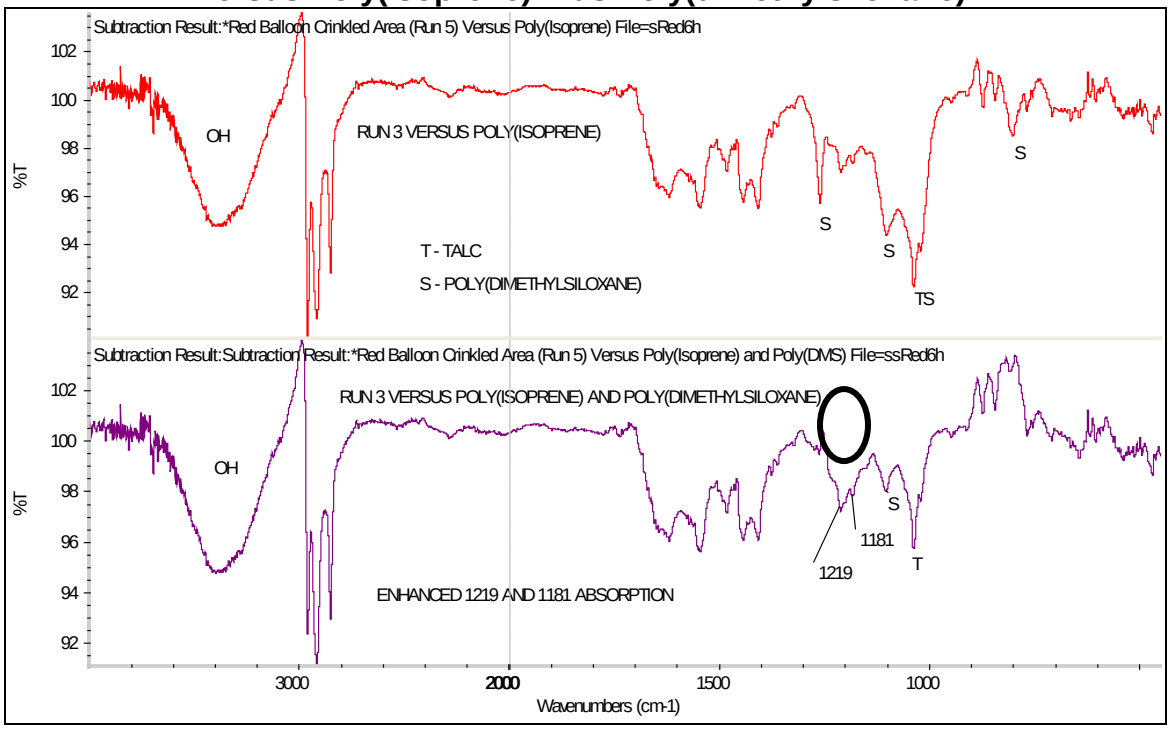
Infrared spectra from the surface of the red balloon shows it is also made of poly(isoprene) and has the same additives or processing agents as identified in the blue balloon reference. That is, poly(dimethylsiloxane), calcite, and silicate mineral (illite/smectite or talc-like) are present. However, there is very weak additional absorbance between 1200 cm^{-1} and 1100 cm^{-1} which is difficult to specifically identify. Computer enhancement techniques tentatively suggest phenolic or sulfonate type materials. (See below.) Visual inspection of band intensities of the various components, compared to those in the spectra in the blue balloon, indicate the materials on the surface such as poly(dimethylsiloxane) and silicate mineral are in lower concentrations than on the blue balloon. Following are four selected representative spectra with peak designations.

Infrared Spectra of the Surface of the Red Balloon

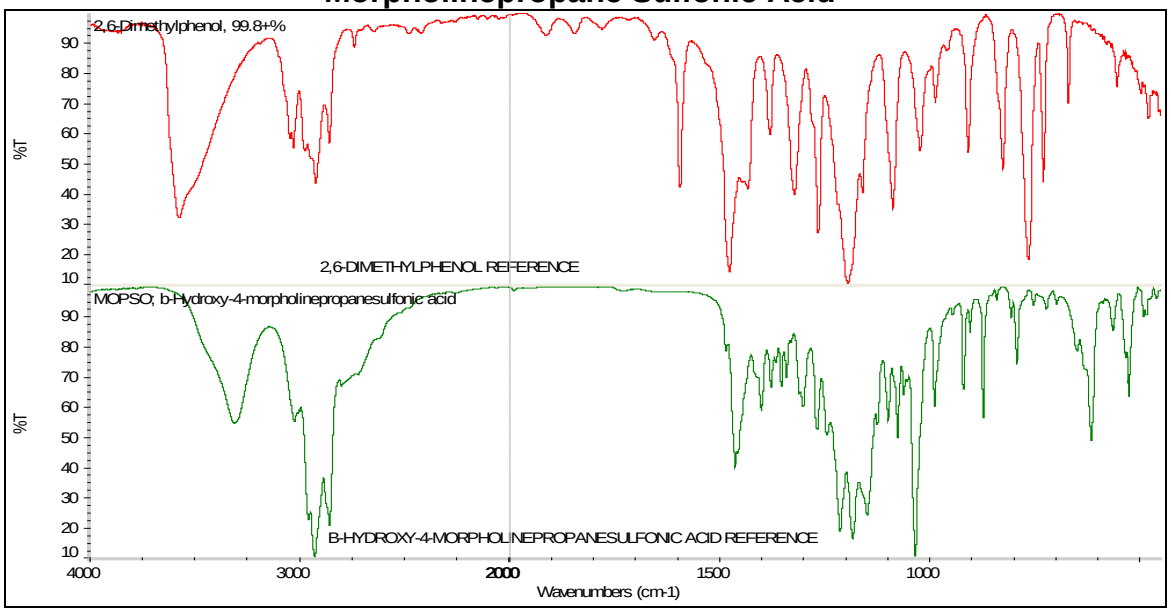


Computer enhancement techniques were used to try eliminate absorption from the balloon material and additives in order to more specifically identify the component causing the bands between 1300 cm^{-1} and 1100 cm^{-1}. Two approaches were used. For the first approach, poly(isoprene) absorption was taken out of the original spectrum. That is, this interfering absorption in the original spectrum was subtracted out using a poly(isoprene) reference. A second subtraction was done on the resulting spectrum. This time, poly(dimethylsiloxane) absorption was removed using a reference of this material. This procedure was done on several spectra. This procedure produced the best results for run 3. The result was more enhanced 1215 cm^{-1} and 1182 cm^{-1} bands, along with a few others. These compare closest to those produced by phenolic type compounds and sulfonate derivatives. These identifications are suggested and not confirmed. It should be noted that some anomalies are introduced into the spectra when two components are subtracted from a spectrum. Following are the two difference spectra along with references of a phenolic and sulfonic acid type compounds for comparison.

Infrared Difference Spectra of Run 3 Versus Poly(isoprene), and Run 3 Versus Poly(isoprene) Plus Poly(dimethylsiloxane)

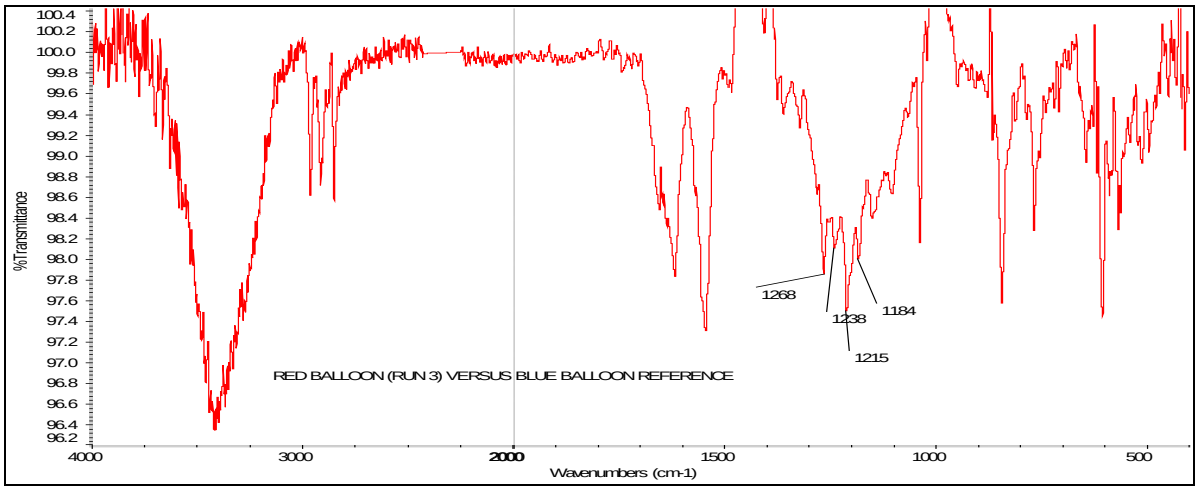


Infrared Reference Spectra of 2,6-Dimethylphenol and 8-Hydroxy-4-Morpholinepropane Sulfonic Acid



The second approach involved subtracting a spectrum of the blue balloon reference from a spectrum of the red balloon (run 3). The two spectra selected for this procedure compared most with regards to the band intensities of the balloon poly(isoprene) and additives. Like the results from the first approach, the resulting spectrum from this procedure also enhanced absorption in the 1300-1100 cm^{-1} region. These bands, along with others, compare best to the same phenolic and sulfonate references shown above. Again, this is not a confirmation. Following is the difference spectrum of the red balloon versus the blue balloon surfaces.

Infrared Difference Spectrum of Red Balloon Versus Blue Balloon Reference

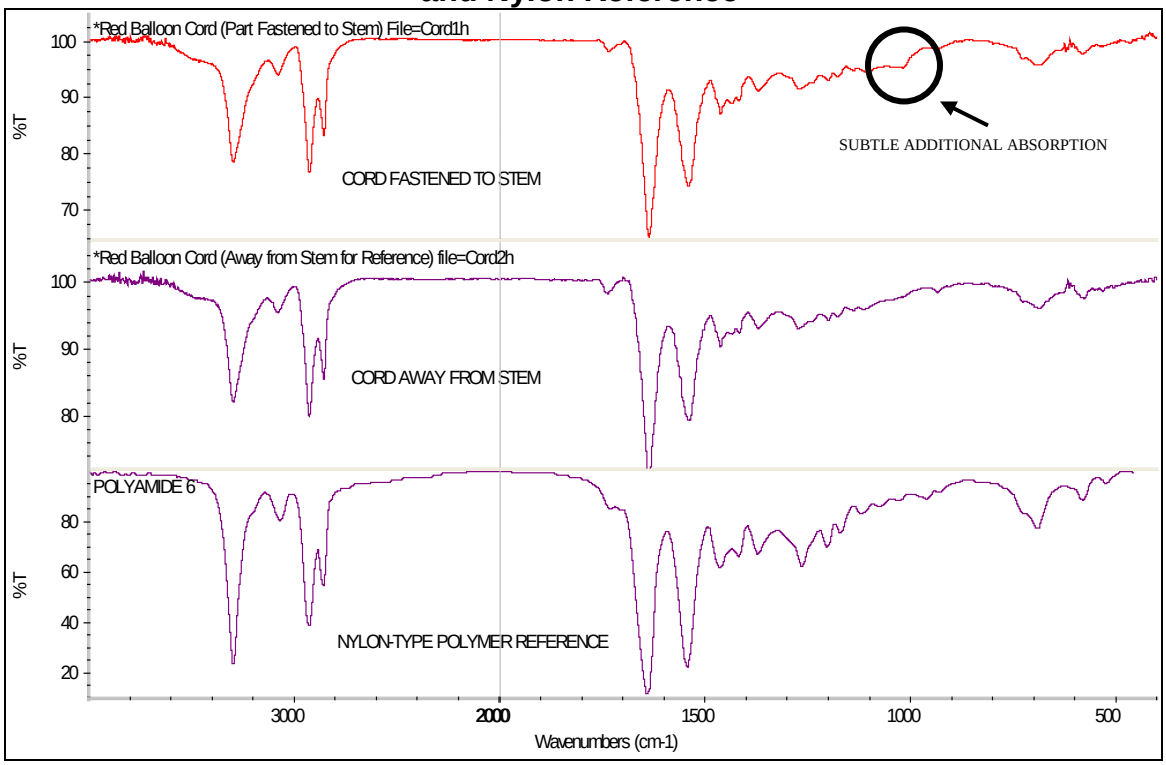


Other tests were done on the balloon. Radiation measurements show no radiation above normal background for any of the above samples. Additionally, no fluorescing material was detected under UV light.

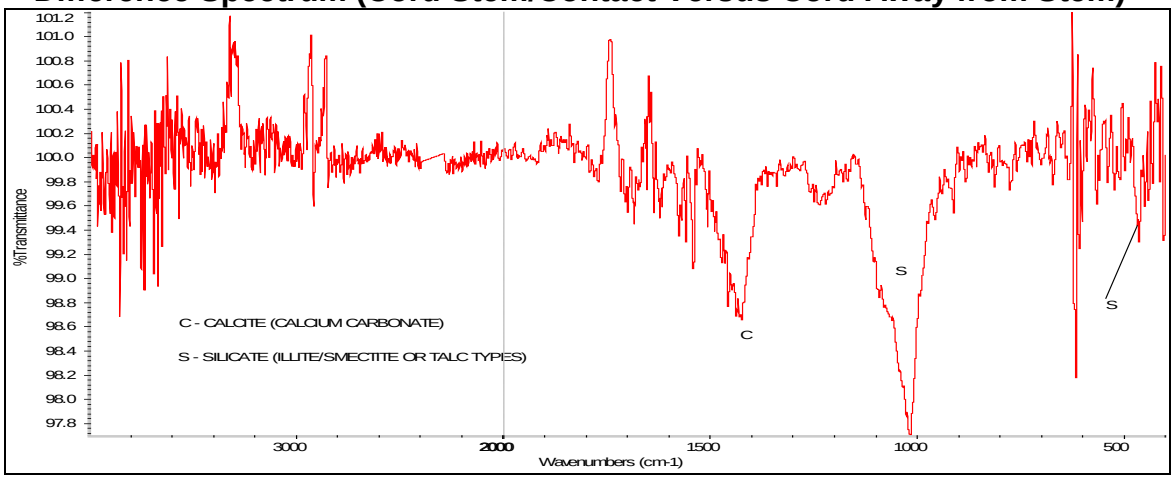
The Balloon Cord

Infrared analysis shows the balloon cord is made of nylon. Therefore, nylon absorption predominates the spectrum taken at the balloon stem/contact point. However, there is subtle additional absorbance between 1100-1000 cm^{-1} which suggests another component. Therefore, a 'reference' spectrum was taken of the cord not in contact with the stem. A difference spectrum was generated between the 'stem' spectrum versus the 'reference' spectrum. This spectrum effectively eliminated the interfering nylon absorbance. It shows only a illite/smectite or talc-like mineral, and calcite (calcium carbonate), which are additives or processing agents from the balloon. Following are the spectra of the cord fastened to the stem, cord away from the stem, and a reference of nylon for comparison. Also displayed is the difference spectrum (cord stem/contact versus cord away from stem) showing the silicate and the carbonate. See pages 6 and 7 for references of these materials.

Infrared Spectra of the Cord Fastened to the Stem, Cord Away from Stem, and Nylon Reference



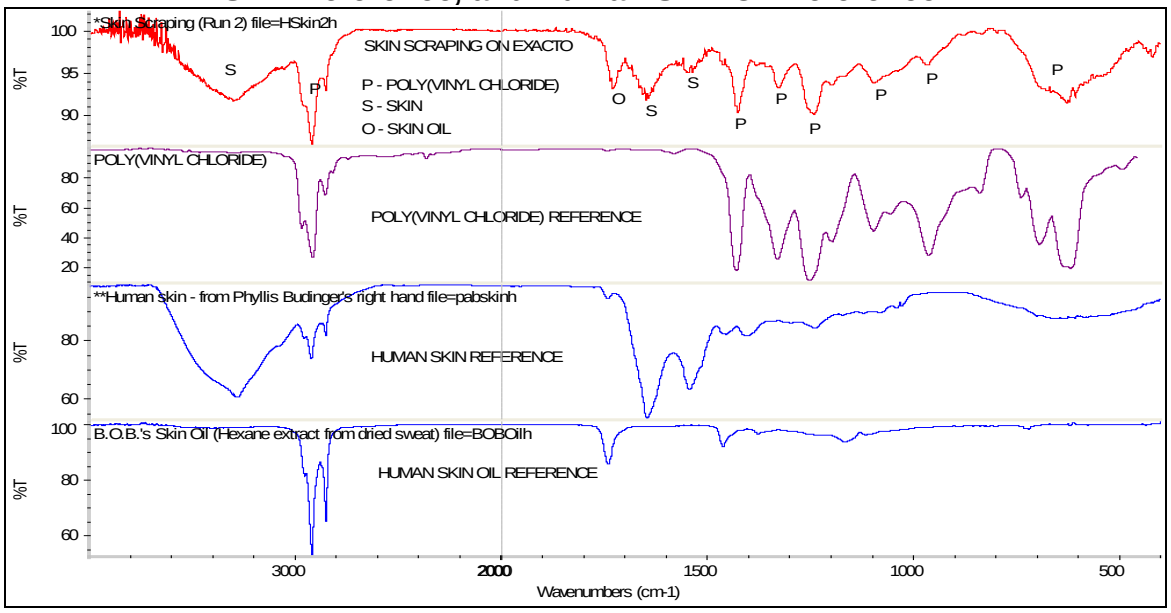
Difference Spectrum (Cord Stem/Contact Versus Cord Away from Stem)



Skin Scrapings

Infrared spectra were obtained of the skin scrapings on the Exacto blade. (There was insufficient sample of a separate submitted skin sample to do this analysis.) The spectra expectedly show skin (protein amide containing material) and skin oils (ester type material). In addition there is predominating absorption from poly(vinyl chloride). This is a common man-made polymer which is contaminating the skin scrapings. It is probably from the Exacto blade. No unusual materials are detected. Following are spectra of the skin along with references of poly(vinyl chloride), human skin, and human skin oil for comparison.

Infrared Spectra of Skin on Exacto, Poly(vinylchloride) Reference, Human Skin Reference, and Human Skin Oil Reference



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