



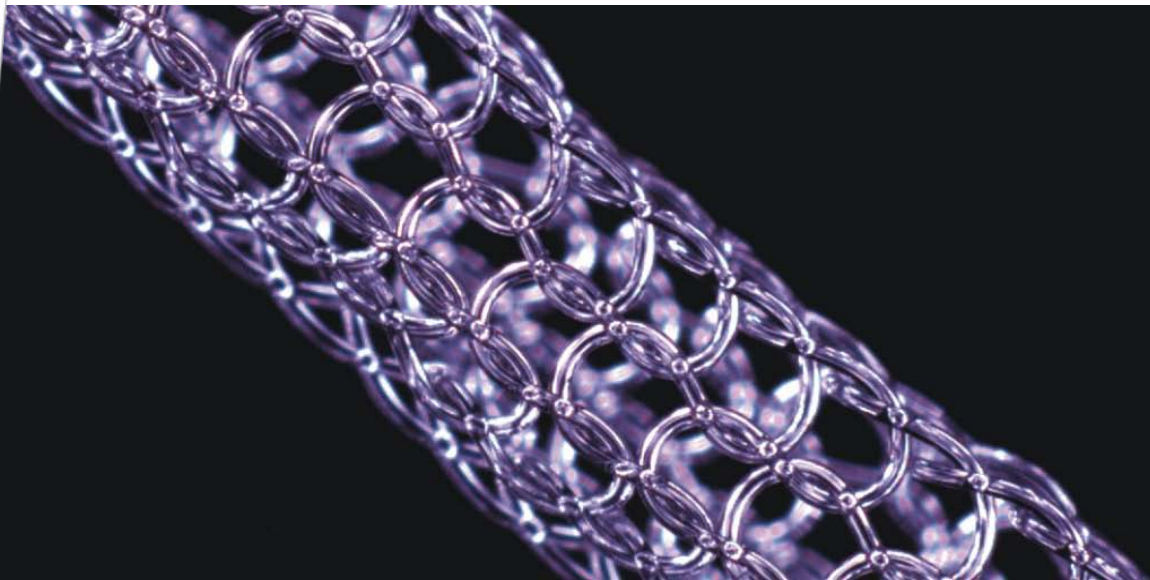
Microscopy Report

Materials Science & Engineering
Report Number: 2886
Date: 20th February 2012

Client Name: All Type Flooring
Attention: Barry Gibb

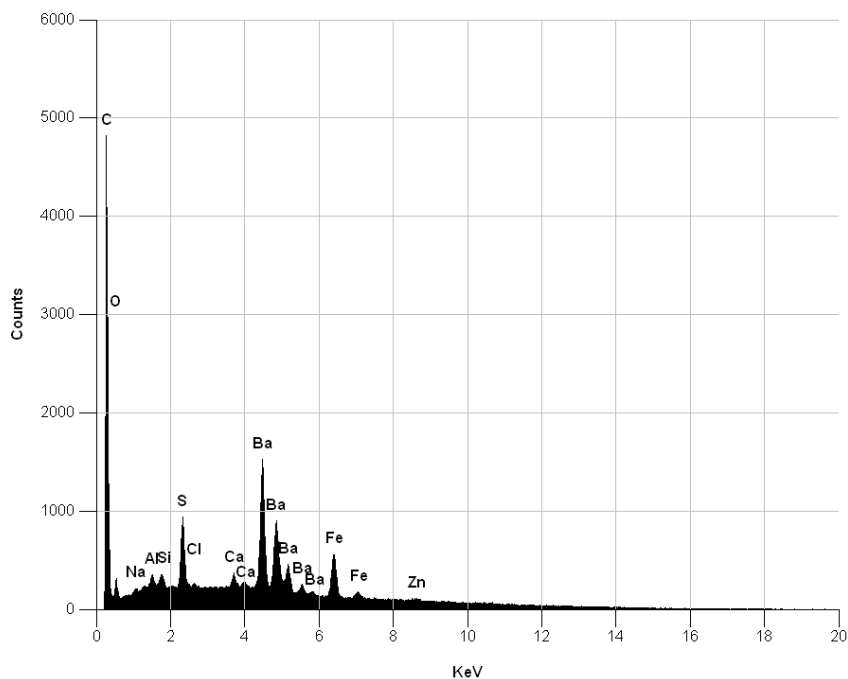
CSIRO Contact: Colin Veitch

Commercial-in-confidence



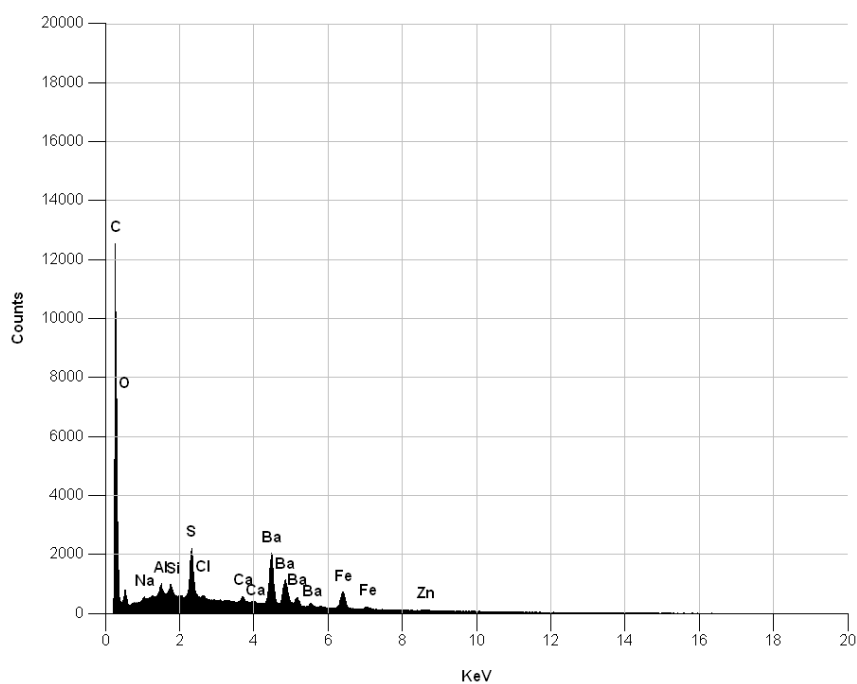
A piece of each component (the green “grass”, the pale “grass”, the rubber backing and the fibrous material from the backing) of the “Exquisite Turf Hawaii Cool” artificial turf was placed on conductive carbon tape on a sample holder. The samples were then coated with 20 nm of carbon to improve electrical conductivity. The samples were analysed in the Hitachi S4300 SE/N Scanning Electron Microscope utilising a Vortex EM x-ray detector with WinEDS software. In each case an accelerating voltage of 30 kV was used with a working distance of 20 mm. The magnification was set at 200 times. This ensured the largest possible analysis area giving a more averaged result for each sample.

The following figures show spectra from each component of the sample – green “grass” (figures 1 and 2), pale “grass” (figures 3 and 4), the rubber backing (figure 5) and the fibrous material from the backing (figure 6). In each case the large peak at the low energy end of the spectrum is carbon (C). There were traces of oxygen (O), sodium (Na), aluminium (Al), silicon (Si), sulphur (S), chlorine (Cl), calcium (Ca), barium (Ba), iron (Fe) and zinc (Zn) in the green “grass” and traces of oxygen (O), aluminium (Al), silicon (Si), calcium (Ca) (figure 4) and iron (Fe) in the pale grass. The rubber backing material contained oxygen (O), sodium (Na), magnesium (Mg), silicon (Si), sulphur (S), calcium (Ca), and iron (Fe). There was a small amount of calcium (Ca) in the fibrous material from the backing. There was no evidence of lead in the sample.



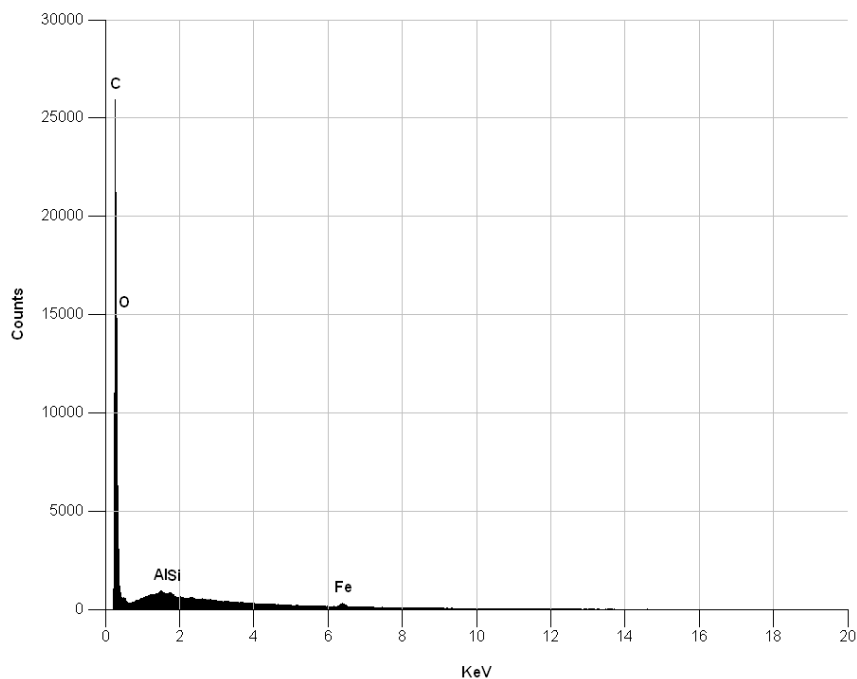
Title: 2886a Exquisite Turf Hawaii Cool "green grass"

Figure 1



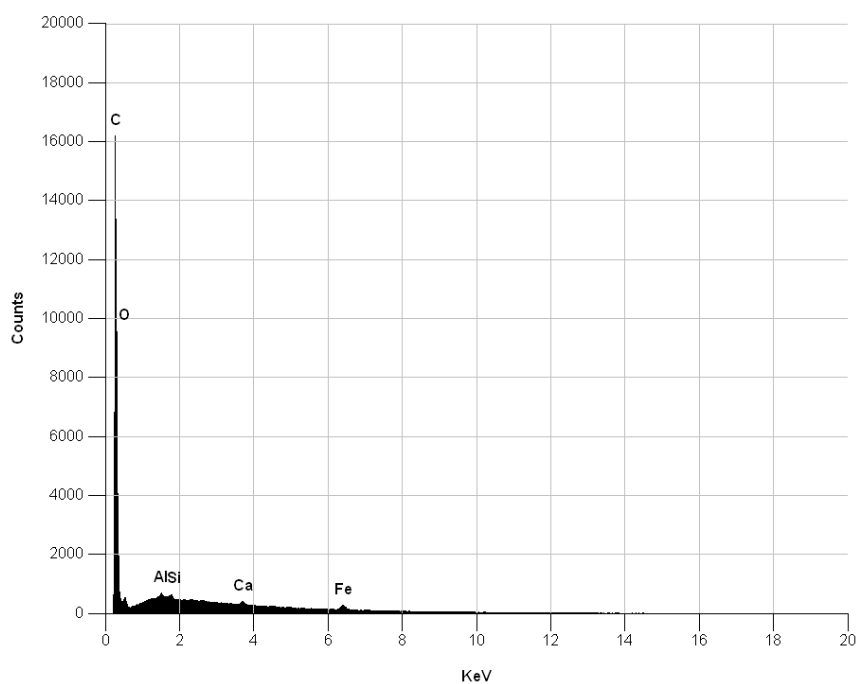
Title: 2886b Exquisite Turf Hawaii Cool "green grass"

Figure 2



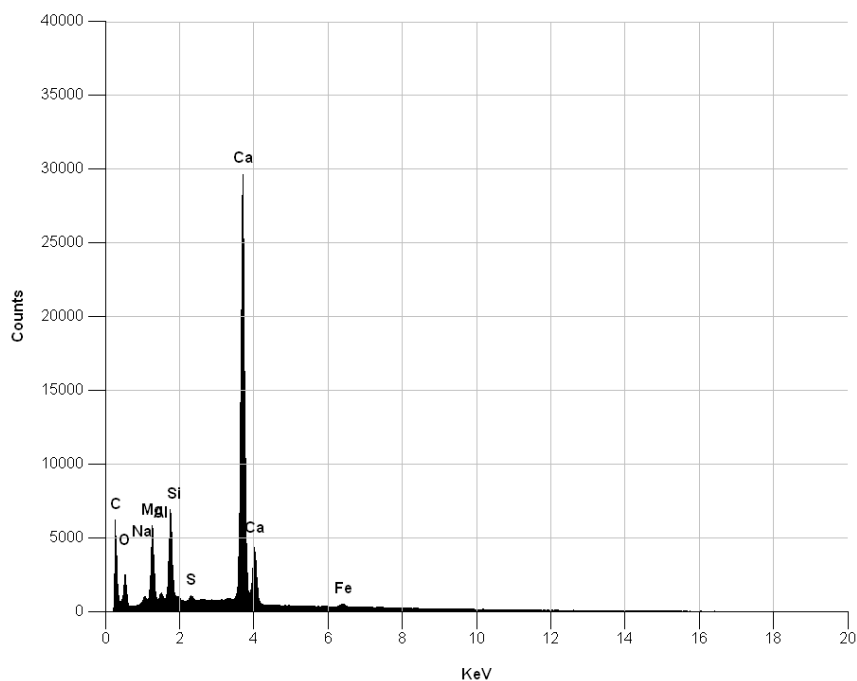
Title: 2886c Exquisite Turf Hawaii Cool "pale grass"

Figure 3



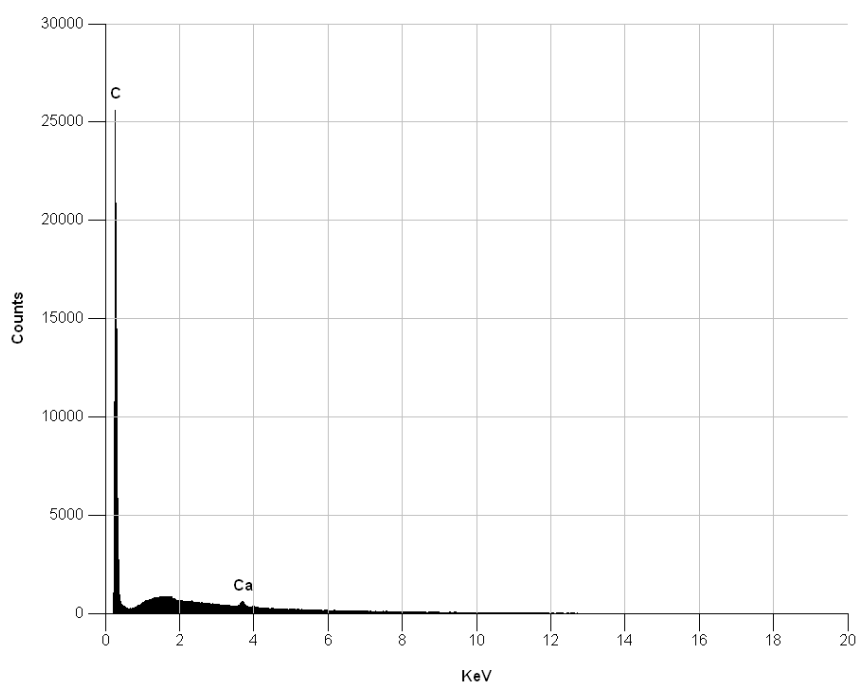
Title: 2886d Exquisite Turf Hawaii Cool "pale grass"

Figure 4



Title: 2886e Exquisite Turf Hawaii Cool "rubber backing"

Figure 5



Title: 2886f Exquisite Turf Hawaii Cool "ribbon from backing"

Figure 6

This Report is a summary of the results obtained from the Services carried out on the Client Contributions both of which are described above. CSIRO will accept no responsibility for any interpretation, opinion or conclusion that any person forms as a result of reading this Report. The results contained in this Report apply only to the sample submitted to the laboratory. This Report must not be reproduced without the written authority of CSIRO and then must only be reproduced in full.

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