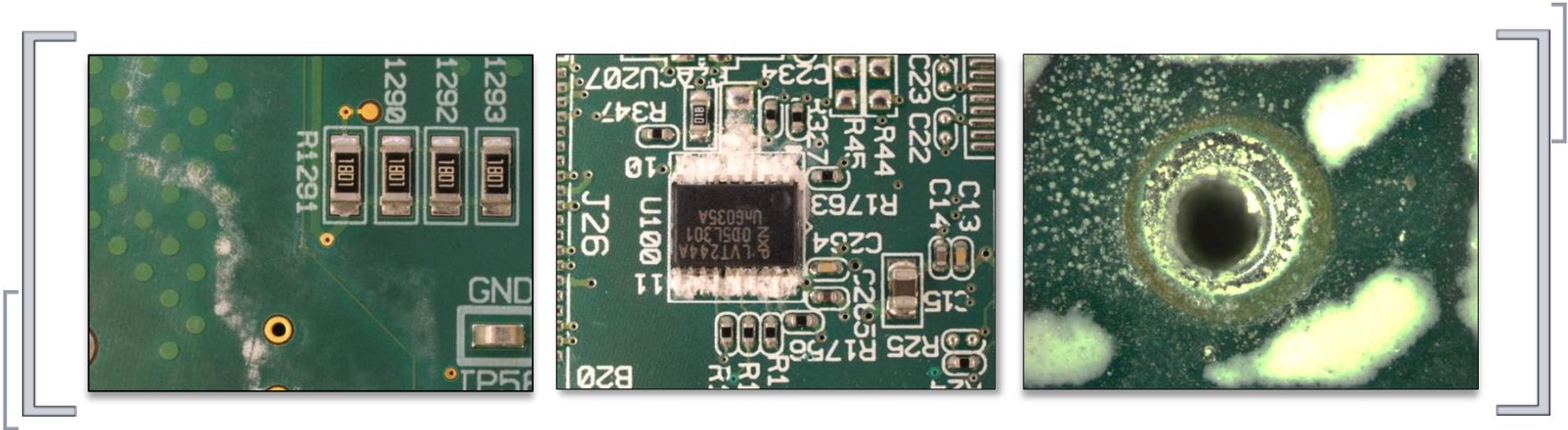


White Residues On Electronic Assemblies

What Are They and Will They Cause a Problem?



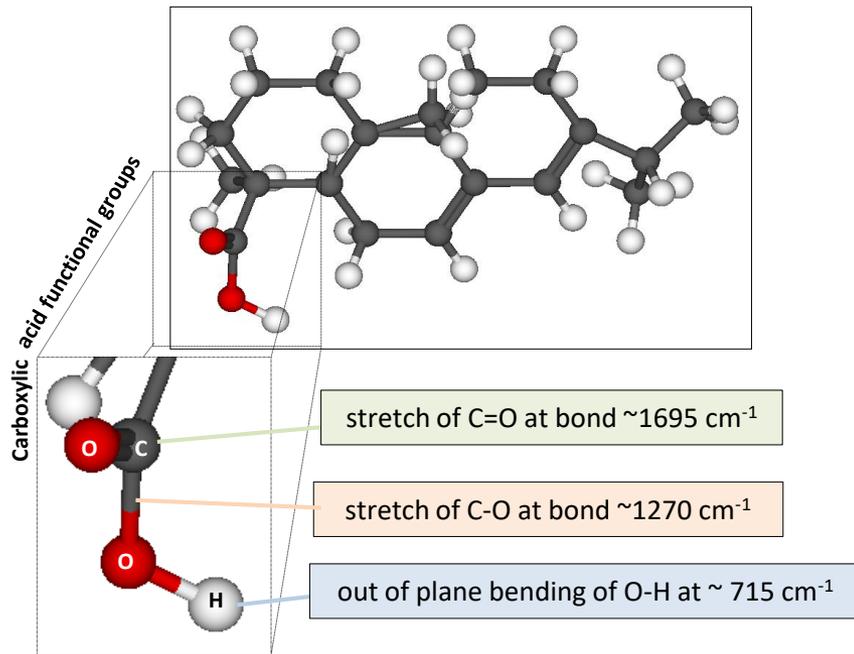
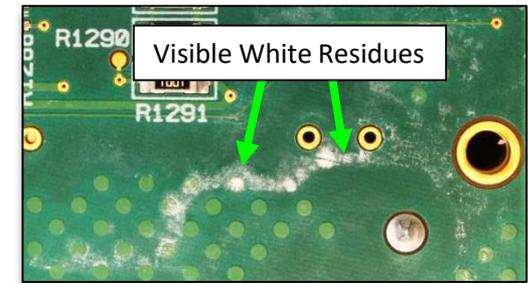
Positive Material Identification using
Fourier Transform Infrared Spectroscopy (FT-IR)



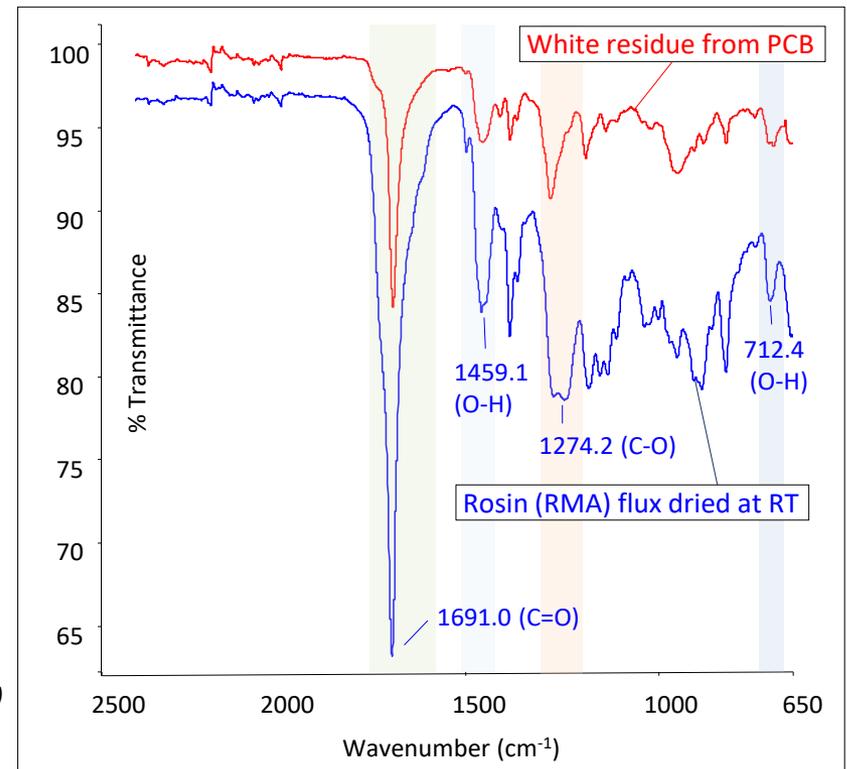
+44(0) 131 440 9090
info@materials-consult.co.uk
www.themcsgroup.co.uk



- The appearance of white residues on your PCB surface after cleaning usually indicates that something in the soldering/cleaning process has gone out of control. The chemicals used, the instability of solvents, and the changing heat used in the assembly of PCBA's can all contribute to formation of white residues.
- Using FT-IR we can define the chemical composition of the white residue and determine the amount of active (corrosive) chemistry. *We can determine whether residues are a reliability risk or may be considered a cosmetic defect.*
- Active parts of the flux residue can cause increased water absorption due to their hygroscopic nature and lead to corrosion resulting in intermittent or permanent failures.



The model shown above represents the resin acid structure of a Rosin (mildly active -MA) flux, the carboxylic acid functional groups are highlighted in the box. The fingerprint regions of the spectra (right) illustrates the activity of the white residue removed from a PCB surface compared to a reference Rosin (MA) flux - dried at room temperature.



Spotlight/Frontier FT-IR System

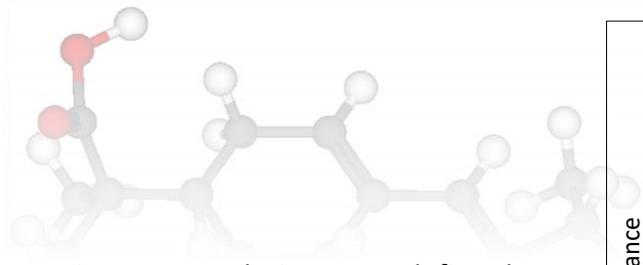


Activity of white residue at a PCB surface

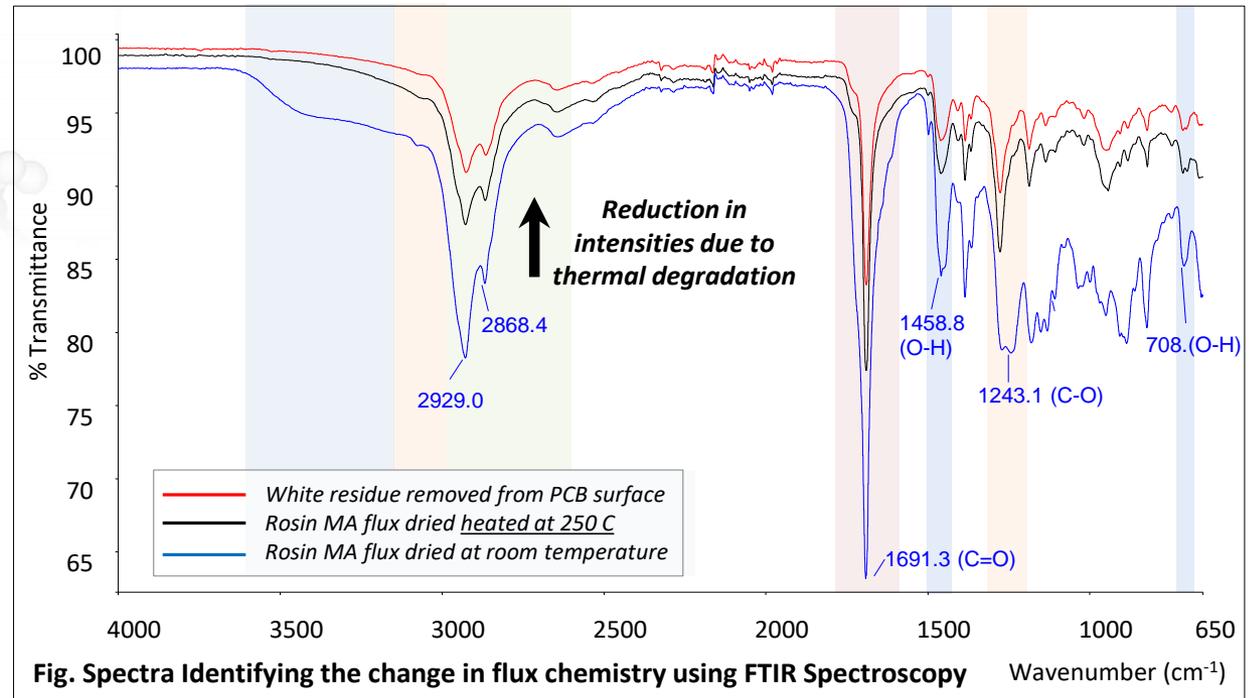
Spectra from white residues on a PCB show a decrease in peak intensities resulting from thermal degradation of the acid components of a flux. Ideally the active components are made safe (decompose) during the high temp soldering processes.

In this case however, that there are still significant quantities of acid groups which tell us that a level of (corrosive) activity remains within the flux residue.

The white residue (red spectrum) is shown relative to reference samples in raw and dried form (blue and black spectra).



- Using FT-IR analysis we can define the behaviour of the flux compounds and determine the amount of active chemistry within the residue at the PCB surface.
- At MCS we have in-house capabilities and expertise to carry out the appropriate analysis, interpret results and identify solutions.
- We provide expert support and unambiguous results.



Problem Solving for Electronics Using Fourier Transform Infrared Spectroscopy (FT-IR)

- ✓ **State-of-the-art FT-IR microscopy services.**
- ✓ Expert knowledge of electronics materials and manufacturing processes.
- ✓ **Fast, Effective** and **Reliable** problem solving.
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