

## **3M UK Corporate Analytical Services - Report No 7607**

To : Mark Nursall

Subject : Analysis of Fluorinert™ FC-77 from Alcatel

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### **Background**

A sample of Fluorinert™ FC-77 retrieved from a decommissioned electronics unit was submitted for testing to determine if the fluid had degraded to form any perfluoroisobutylene or hydrofluoric acid (PFIB or HF).

### **Analysis Results and Discussion**

The sample was analysed using Gas Chromatography-Mass Spectrometry (GC-MS) using direct liquid injection. A 1.5mL aliquot was taken from the supplied sample and analysed against a lab sample of FC-77 for comparison. The resultant chromatograms are shown in figure 1.

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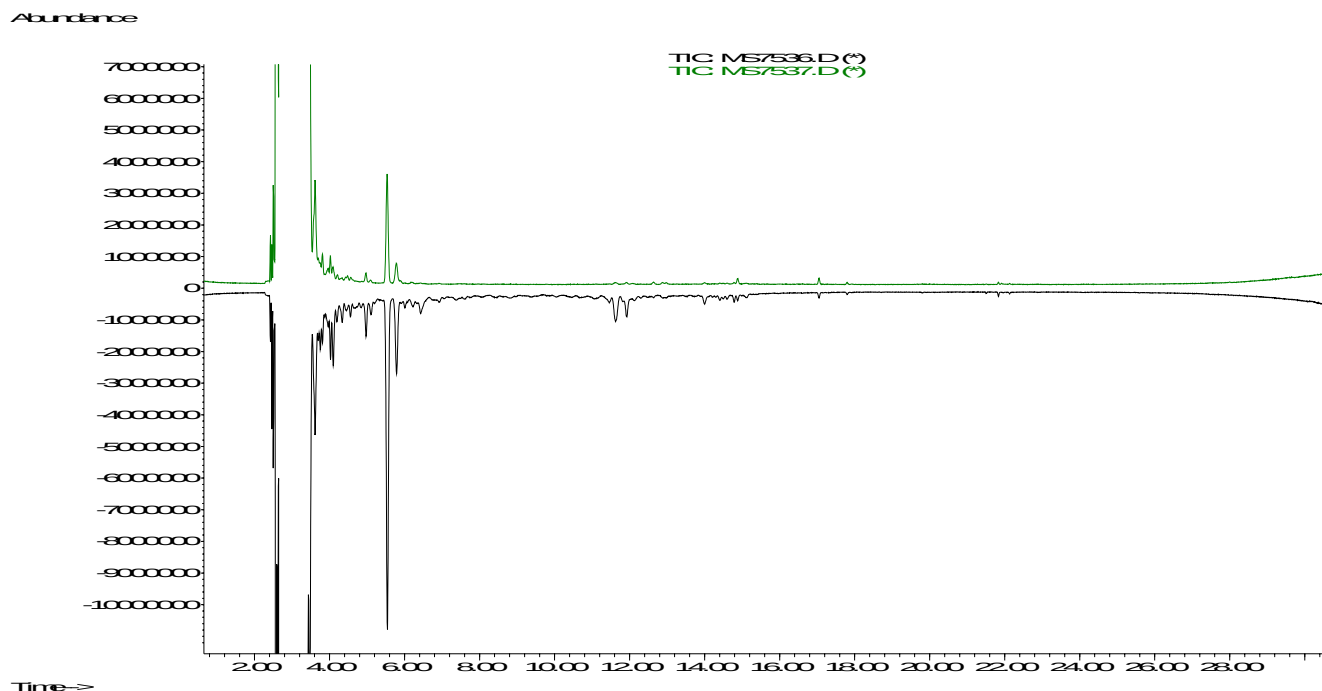


Figure 1. GC-MS chromatograms for the FC-77, Alcatel sample top and lab sample bottom.

The chromatograms indicate that there are no unusual peaks in the sample from Alcatel and show a similar trace to the lab sample. There are some differences in peak heights but this is likely due to batch to batch variation. The chromatogram indicates that there are no detectable levels of PFIB in the sample.

The sample was also checked for acidity using pH. 5mL of the FC-77 sample was washed with 10mL of de-ionised water. The pH was then measured, the presence of HF in the sample would cause a drop in the pH against a sample of unwashed de-ionised water.

De-ionised water, pH = 7.0

De-ionised water washed with sample FC-77, pH = 7.1

The pH of the washed water indicated a slight increase in pH suggesting that there is no acid being washed into the aqueous phase, therefore this indicates that the sample has not produced any HF.

### **Conclusions**

- The analysis by CG-MS did not indicate any degradation in the sample from Alcatel, with no significant difference from a lab sample of FC-77.
- pH measurements do not indicate the presence of any acid in the sample from Alcatel.

David Gurden-Williams  
Group Leader

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