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Confidential report for:

Campden BRI

FAO: Microscopy Section
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Report on:

Investigation of Corrosion on External Surface of Cans

Work performed by Campden BRI (Chipping Campden) Limited
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[DC: R-AC-9-5-15: 11/18 (29) : R/KAH]



SAMPLE INFORMATION

Date sample(s) received : 23rd March 2018
Packaging : Original product packaging
Storage conditions : Ambient temperature
Date(s) sample(s) examined : 27th March – 11th April 2018

METHODS AND REFERENCES

Analyst reference : ZL
Method reference(s) : TES-AC-192 : Light Stereomicroscopy
TES-AC-198 : Scanning Electron Microscopy and X-ray
Microanalysis
Deviations from the
method reference(s) : None

INTRODUCTION

A single, opened, empty can was received by the Microscopy section, for the investigation of external corrosion. The client had stated that the same type of corrosion had been seen in multiple locations on numerous cans. The can was photographed as received and can be referred to in Plate 1.

RESULTS

Examination visually and under a stereomicroscope showed that the corrosion was contained to a single area on the body of the can (Plate 2). No hole could be seen in this area and no corrosion was seen internally.

A reference area and the area showing the corrosion were examined using x-ray microanalysis. The reference area showed the presence of carbon, oxygen, iron, silicon and high peaks of tin (Figure 1). The area showing corrosion showed the presence of carbon, high peaks of oxygen, higher peaks of iron, silicon, chlorine and reduced peaks of tin; trace amounts of sodium, magnesium, aluminium, phosphorus and sulphur were also seen (Figure 2). Together these spectra confirm the absence of a tin coating and exposure of steel in the corroded area. The corroded area also showed the presence of chlorine, which is commonly found in cooling water.

CONCLUSIONS

It was concluded that the can submitted for analysis showed corrosion in one area on the body of the can, the corrosion was restricted to the surface only and no hole or internal corrosion was seen. Elemental analysis showed the presence of chlorine in the corroded area, chlorine residues from water treatment left on the surface of a can, followed by insufficient drying techniques can lead to corrosion. Due to the level of chlorine exhibited in the corroded area this was thought to be the cause of the corrosion.

Sample

PLATE 1 Shows the complaint can photographed as received to show the presence of corrosion on the body (circled), against a millimetre-squared background

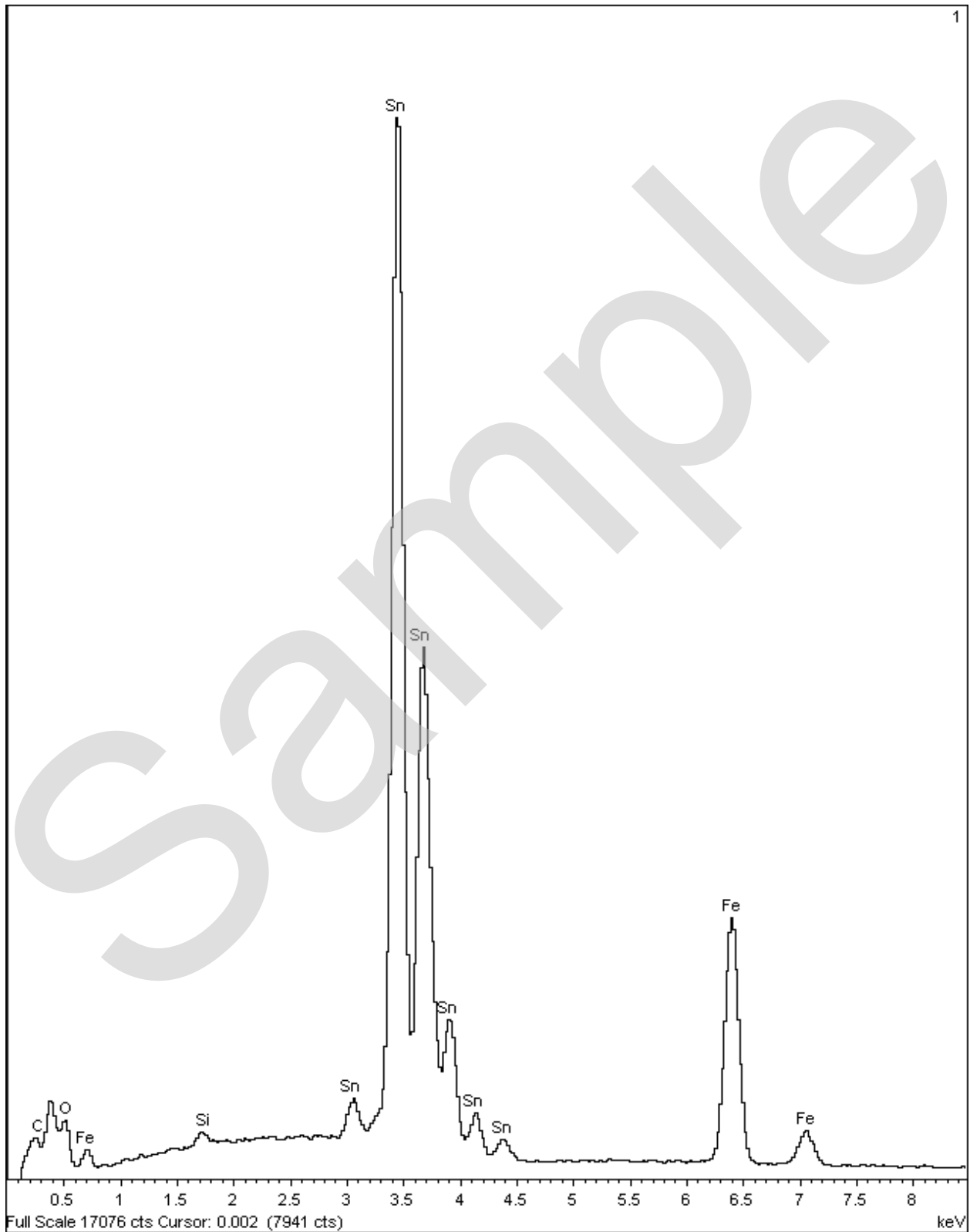


PLATE 2 Shows a close up of the area showing corrosion viewed under stereo-microscope. (Note the gold colour effect to the can is an artefact of light)



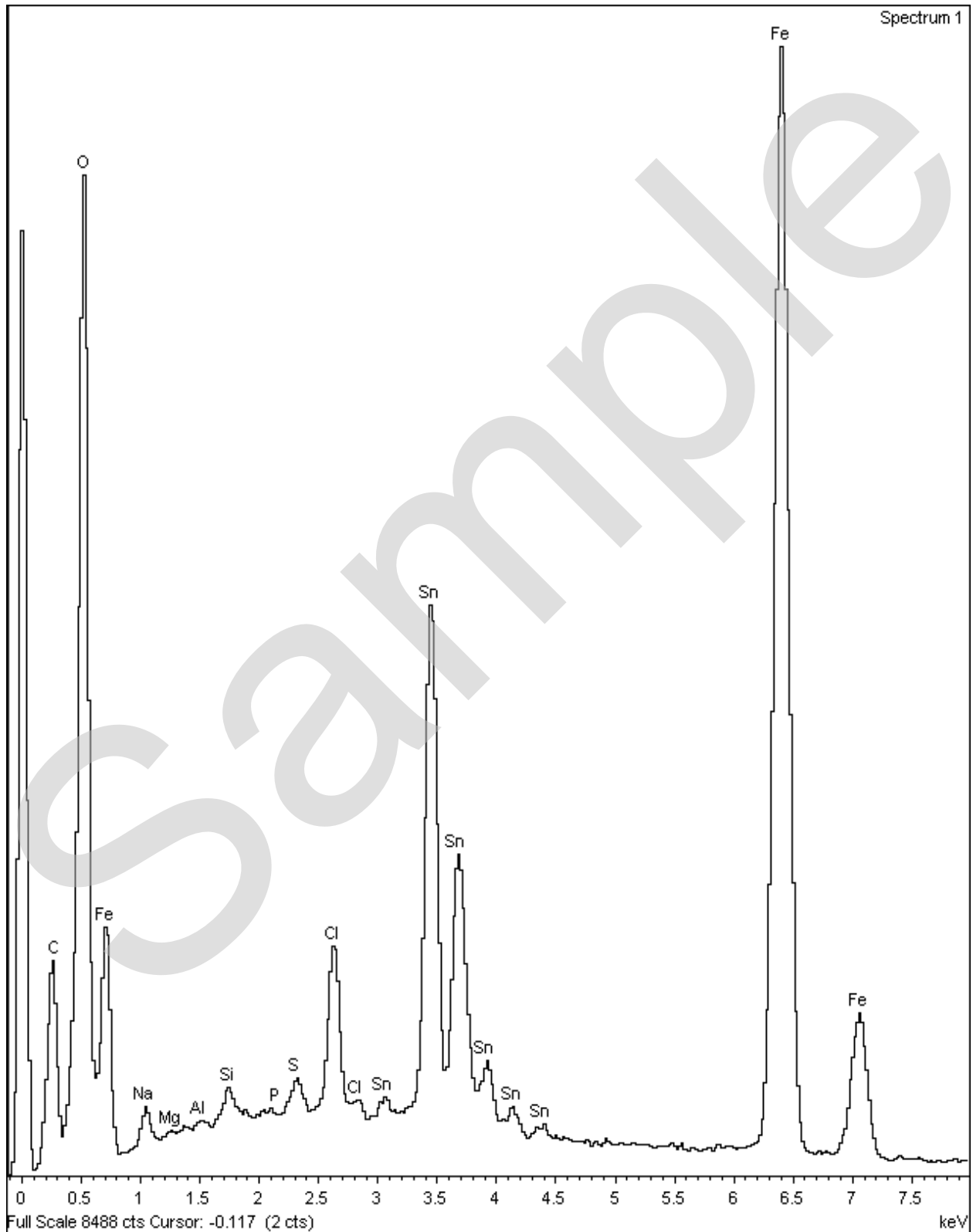
Investigation of Corrosion on External Surface of Cans

LIMS Project Number : 180423-00919
Reference area of the complaint can



Investigation of Corrosion on External Surface of Cans

LIMS Project Number : 180423-00919
Area showing corrosion of the complaint can



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