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Confidential report for:

Campden BRI

FAO: Microscopy Section

Station Road

Chipping Campden

Gloucestershire

GL55 6LD

Report on:

Examination of a Foreign Body Reported from Steak and Ale Pie and a Comparison Metal Sample

Work performed by Campden BRI (Chipping Campden) Limited

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Our ref: Metal Report

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SAMPLE DETAILS

Initial Complaint Date: 20th January 2018
Use By: 20/1/2018
Complaint Reference: 25625356284HH
Purchase Order No.: 1254859652

SAMPLE INFORMATION

Date sample(s) received : 28th February 2018
Packaging : Complaint Sample: In a plastic bag
Comparison Sample : In a plastic pot
Storage conditions : Ambient temperature
Date(s) sample(s) examined : 1st March 2018

METHODS AND REFERENCES

Analyst reference : SDA
Method reference(s) : TES-AC-192 : Light Stereomicroscopy
TES-AC-193 : Compound Light Microscopy
TES-AC-198 : Scanning Electron Microscopy and X-ray
Microanalysis
Deviations from the method reference(s) : None

RESULTS

The complaint sample consisted of two pieces of silver coloured metal, which were photographed as received and can be referred to in Plate 1. The pieces could be fitted together to form a single fragment and had an overall appearance of metal swarf, with one shiny convex surface and an opposing rough, concave surface. The complaint sample was not attracted to a magnet.

A small amount of surface deposit was seen adhered to the complaint sample, which was removed and examined under the compound microscope. Here it was possible to see muscle fibres (Plate 2), gelatinised wheat starch granules (Plate 3) and oil droplets.

The comparison sample consisted of two pieces of silver coloured metal, which were photographed as received and can be referred to in Plate 4. The sample had an overall appearance of metal swarf, with one shiny convex surface and an opposing rough, concave surface.

X-ray microanalysis was performed on the complaint sample (Figure 1) and the comparison sample (Figure 2). The complaint sample showed the presence of carbon, oxygen, iron, nickel, silicon, molybdenum, chromium and manganese. This is a composition consistent with type 316 stainless steel. The comparison sample showed the presence of carbon, oxygen, iron, nickel, silicon and chromium. This is a composition consistent with stainless steel. The comparison sample showed no presence of molybdenum and a lower nickel peak compared to the complaint sample.

CONCLUSIONS

It was concluded that the complaint sample consisted of two pieces of type 316 stainless steel swarf and was not a match to the comparison sample, which consisted of two pieces of stainless steel swarf. Type 316 stainless steel has enhanced corrosion resistance and is commonly used for food processing machinery and tools. Stainless steel has a wide range of uses and applications including (but not limited to); general structural applications, machinery, tools and bearings. Swarf can be produced from the collision of two hard objects which in turn may cause small fragments, typically from the softer of the two objects, to be gouged out. Additionally, metal swarf can originate from a drilling/machinery/maintenance operation. Surface deposits examined from the complaint showed the presence of oil droplets, gelatinised wheat starch granules and muscle fibres, which indicated contact with the reported product.

PLATE 1 Shows the complaint sample photographed as received against a millimetre-squared background

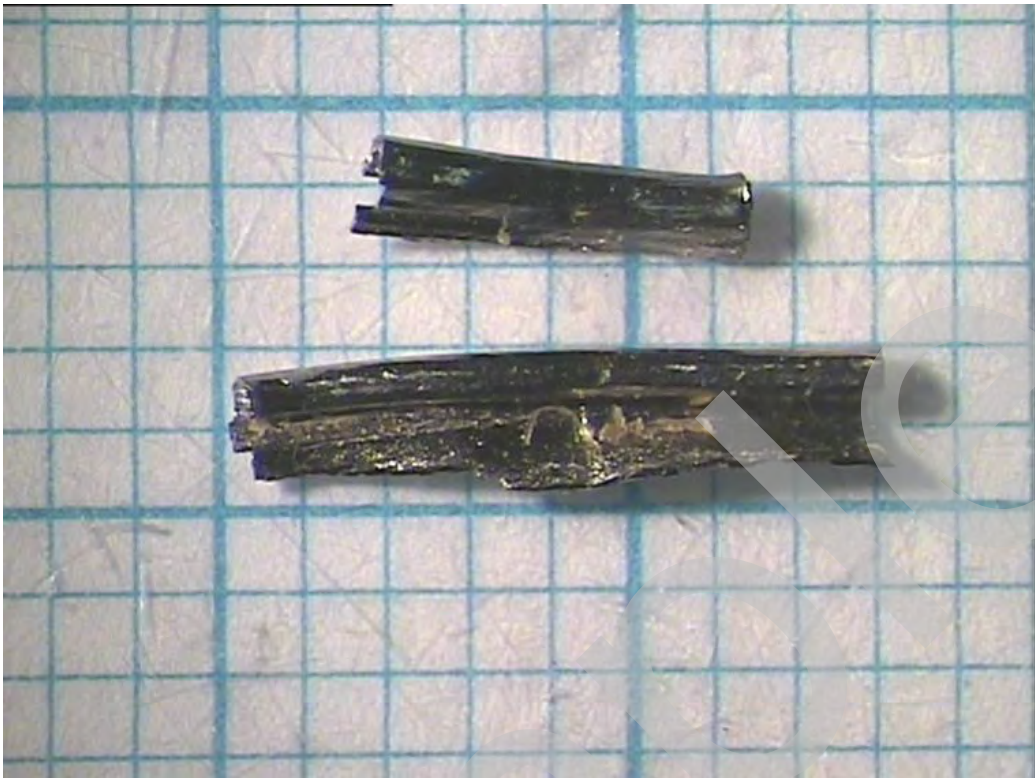


PLATE 2 Shows an example of the muscle fibres, seen in the surface deposits removed from the complaint sample. Magnification x 435

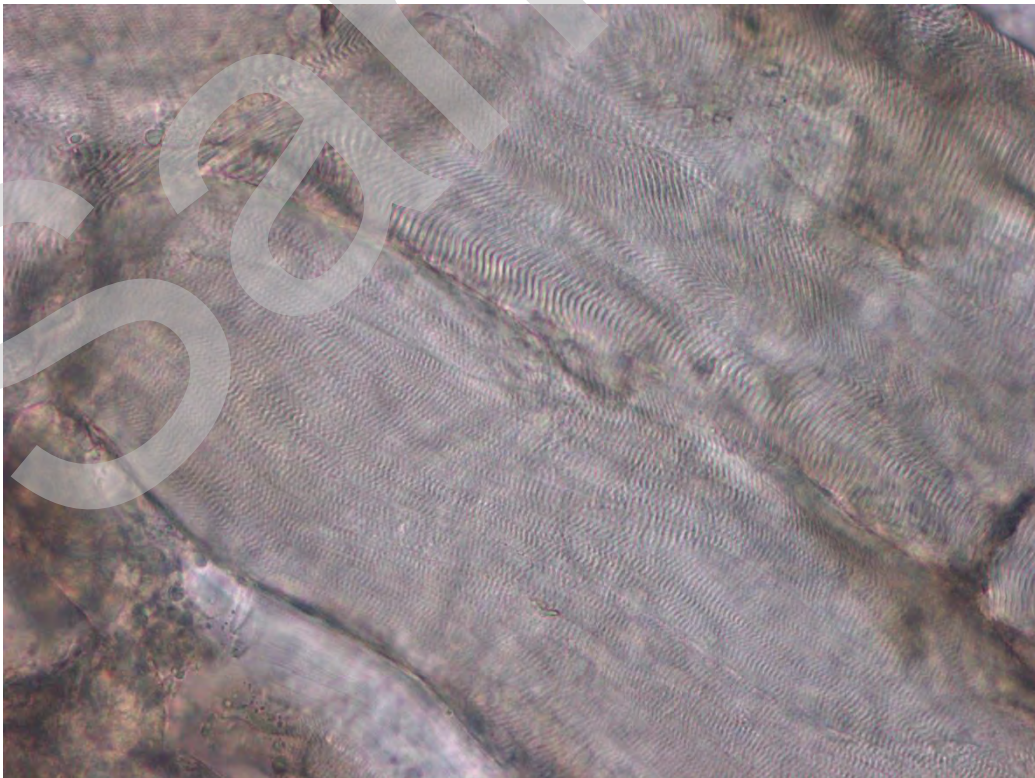


PLATE 3 Shows an example of the gelatinised wheat starch granules, seen in the surface deposits removed from the complaint sample. Magnification x 109

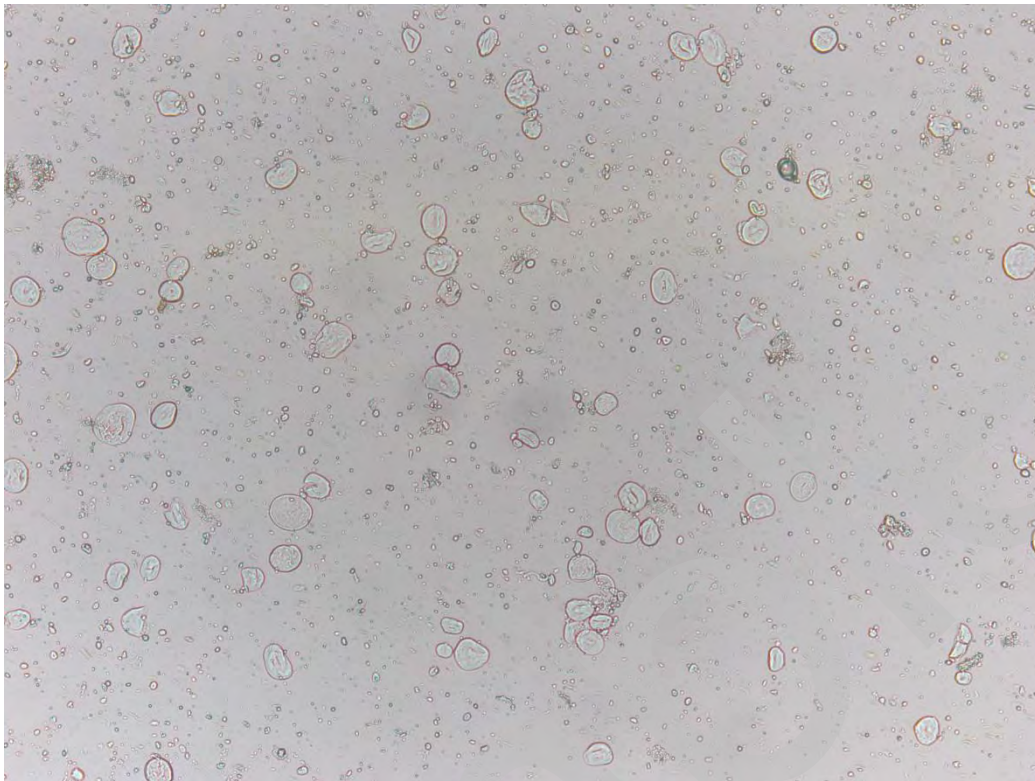
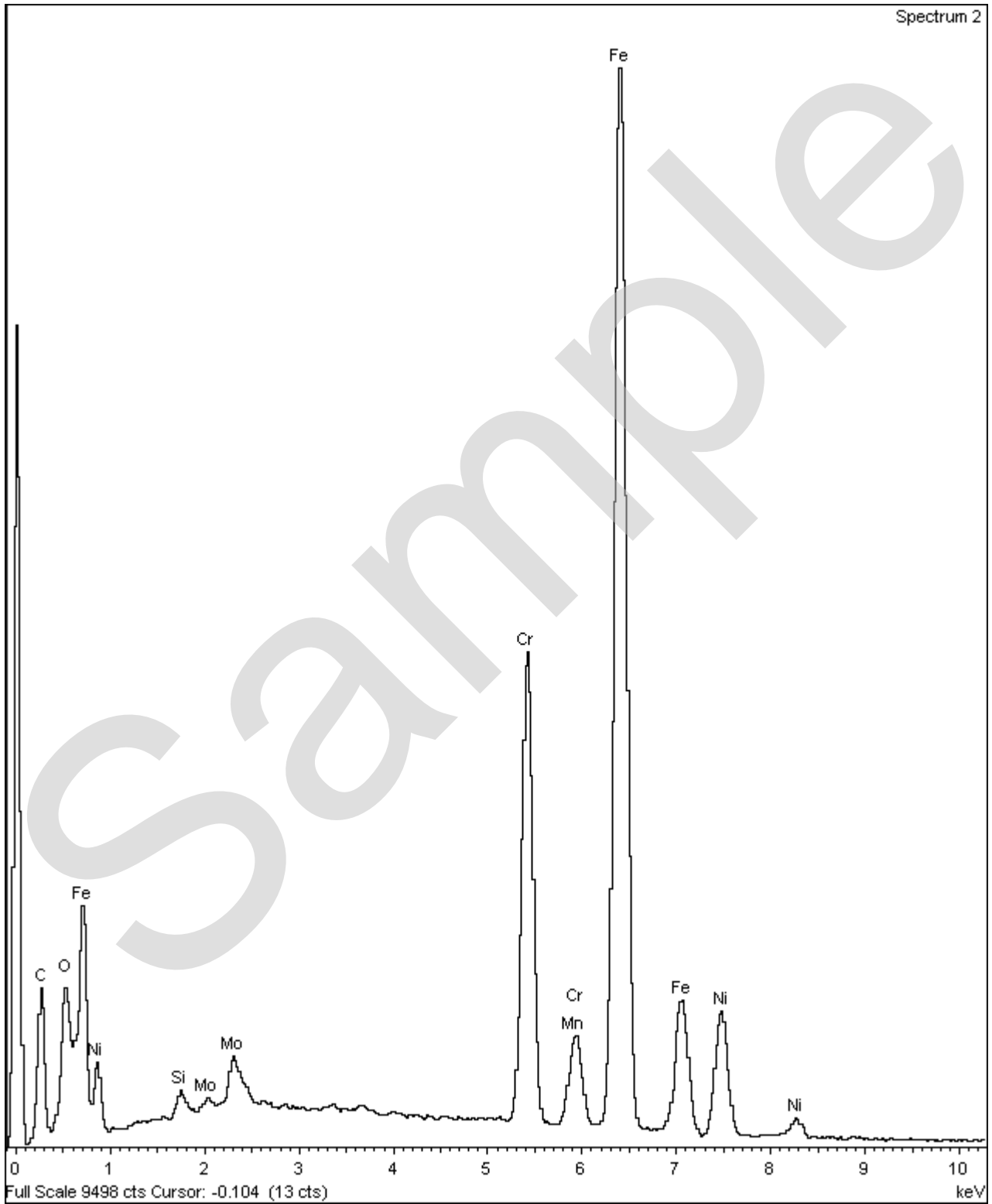


PLATE 4 Shows the comparison sample photographed against a millimetre-squared background



Foreign Body Analysis for Campden BRI

Complaint Sample



Foreign Body Analysis for Campden BRI

Comparison Sample

