



NATIONAL PHYSICAL LABORATORY

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Certificate of Calibration

Determination of the shielding properties of Lead vinyl samples

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FOR:

Kemmetech Ltd
Unit 4 Arnold Business Park
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TN12 5HE

DESCRIPTION:

Determination of Lead equivalence of Lead vinyl samples in accordance with BS EN 61331-1:2002

DATE OF MEASUREMENTS: 4 June 2013

Reference: 2013070243-13

Date of Issue: 15 July 2013

Checked by: *uclg*
DTM

Signed:

Name: G A Bass

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(Authorised signatory)

on behalf of NPLML

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Continuation Sheet

CONDITIONS:

Distance from x-ray tube to target sample: 0.5m
Distance from x-ray tube to detector: 1.1m
Ionisation chamber used: TS100M

All equipment associated with the measurements performed in this report has direct traceability to UK national standards or UKAS accredited calibration facilities. The samples were circular in cross section with a diameter of approximately 110mm.

Table I
61331-1:2002 X-ray beam qualities

<u>X-ray Tube Voltage</u> kV	<u>Additional filtration</u> mmCu
60*	0.075
80	0.15
100	0.25
120*	0.35

*These qualities are in addition to BS EN 61331-1:2002

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RESULTS:

Table II

Galena Scanner Curtain vinyl sheet G8000, 0.45mm nominal Lead equivalent

<u>kV</u>	<u>Equivalent Lead thickness</u> mm	<u>Attenuation</u> %
60	0.5261	99.8
80	0.5673	98.0
100	0.5526	94.2
120	0.5227	91.2

Attenuation = $1 - \text{attenuated/un-attenuated} \times 100$

UNCERTAINTIES:

The uncertainty in the Lead equivalence is 5%. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

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Checked by: *Wahly*
DSM