

CERTIFICATE OF CALIBRATION



Issued By: NWML
 Calibration Team
 Stanton Avenue, Teddington, Middlesex, TW11 0JZ
 Tel: 020 8943 7222 Fax: 020 8943 7270
 Internet: www.nwml.gov.uk

Approved Signatories:
 J Pain
 R M Hynds

Calibration Team Manager: J Pain

Issued under Section 6 of the Weights and Measures Act 1985

Client: Advent Tools Limited
 Unit 5 Century Park,
 Starley Way,
 Bickenhill,
 Solihull,
 West Midlands
 B37 7HF

Equipment: A dual marked 16ft/5 metre x 25 mm steel pocket tape.

Department No: 20603

Description: A coated flexible steel tape. The upper edge is graduated in feet and inches which are further subdivided and marked every 1/16". The subdivisions are further subdivided into 1/32" over the first 6 inches. The lower edge is graduated in metres and centimetres, which are further subdivided into millimetres and marked every half centimetre. It is numbered in metres and centimetres. The hook at the zero end of the tape forms part of the measure, the edge of the hook being the terminal plane.

Markings: On tape: 16^{FEET} (1) 5m
 On case: Advent Master precision 5m/16ft 25mm Wide Blade class I accurate
 ◀ 77mm ▶

Calibration method: The tape was supported throughout its length on a flat surface with the sliding hook in either its interior or exterior position. The calibrated intervals were measured interferometrically using a frequency stabilised helium-neon laser. Traceability has been provided by comparison of the optical frequency of this laser, with that of a reference laser, which was operated in accordance with the 1983 recommendations of the International Committee for Weights and Measures for the practical realisation of the metre.

Calibrated by: I. JAMES

Reference: C2201/0040/1

Date of calibration: 19 August 2008

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Table of results:

Bottom edge of tape. Sliding hook in exterior position (inside edge of the hook is the reference edge).

Interval in millimetres	Length at 20°C in millimetres	Error from nominal in millimetres	Class I MPE in millimetres	Uncertainty of measurement in millimetres
0 - 1000	999.98	-0.02	± 0.3	± 0.22
0 - 2000	2 000.08	0.08	± 0.4	± 0.26
0 - 3000	2 999.98	-0.02	± 0.5	± 0.30
0 - 4000	3 999.90	-0.10	± 0.6	± 0.34
0 - 5000	4 999.83	-0.17	± 0.7	± 0.38

Bottom edge of tape. Sliding hook in interior position (outside edge of the hook is the reference edge).

Interval in millimetres	Length at 20°C in millimetres	Error from nominal in millimetres	Class I MPE in millimetres	Uncertainty of measurement in millimetres
0 - 1000	1 000.04	0.04	± 0.3	± 0.22

Case dimension in millimetres	Length in millimetres	Error from nominal in millimetres	Class I MPE in millimetres
77 (Metric edge)	75.88	-1.12	± 0.3
77 (Imperial edge)	76.37	-0.63	± 0.3

The lengths quoted above refer to the intervals as measured from the reference edge to the centre of each graduation along the bottom edge of the tape.

Each observation was made at a recorded temperature within the range of 21.19°C to 21.50°C.

The lengths at 20°C were calculated using a coefficient of linear thermal expansion of $10.7 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$.

FOR INFORMATION ONLY

The following Table details the Maximum Permissible Error (MPE) limits defined in:
 DIRECTIVE 2004/22/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
 of 31 March 2004
 on measuring instruments
 ANNEX MI-008
 MATERIAL MEASURES
 CHAPTER I — Material measures of length

The MPE, positive or negative in mm, between two non-consecutive scale marks is $(a + bL)$, where:

— L is the value of the length rounded up to the next whole metre; and

— a and b are given in Table below.

When a terminal interval is bounded by a surface, the MPE for any distance beginning at this point is increased by the value c given in Table below.

Accuracy Class	a (mm)	b	c (mm)
I	0,1	0,1	0,1
II	0,3	0,2	0,2
III	0,6	0,4	0,3

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