

# Gauge Blocks with a Calibrated CTE

## Gauge Blocks with a Calibrated Coefficient of Thermal Expansion

These are metric gauge blocks with a calibrated coefficient of thermal expansion. They offer you the following benefits:

- Mitutoyo offers top-level gauge blocks (steel and ceramic) which are superior to K class blocks, with their quality supported by Mitutoyo's best technologies.
- They feature an accurately calibrated thermal expansion coefficient measured with a proprietary double-faced interferometer (DFI).
- Each gauge block is calibrated for length on a highly accurate gauge block interferometer (GBI) system.
- Uncertainty of thermal expansion coefficient:  $0,035 \times 10^{-6} / \text{K}$  ( $k=2$ ).
- Uncertainty of length measurement: 30 nm ( $k=2$ ), for 100mm blocks.



### Ceramic

No.	Accuracy	Length [mm]
613681-01B	EN ISO 3650, Grade K	100
613802-01B	EN ISO 3650, Grade K	125
613803-01B	EN ISO 3650, Grade K	150
613804-01B	EN ISO 3650, Grade K	175
613682-01B	EN ISO 3650, Grade K	200
613805-01B	EN ISO 3650, Grade K	250
613683-01B	EN ISO 3650, Grade K	300
613684-01B	EN ISO 3650, Grade K	400
613685-01B	EN ISO 3650, Grade K	500

### Steel

No.	Accuracy	Length [mm]
611681-01B	EN ISO 3650, Grade K	100
611802-01B	EN ISO 3650, Grade K	125
611803-01B	EN ISO 3650, Grade K	150
611804-01B	EN ISO 3650, Grade K	175
611682-01B	EN ISO 3650, Grade K	200
611805-01B	EN ISO 3650, Grade K	250
611683-01B	EN ISO 3650, Grade K	300
611684-01B	EN ISO 3650, Grade K	400
611685-01B	EN ISO 3650, Grade K	500



Calibration Certificate

**Report of calibration / 校正結果**

Product name: Gauge Block / 品名: ゲージブロック  
Nominal Length: 500mm / 呼び寸法: 500mm  
Code No.: 611685-01A / Date of calibration: 2005-01-20  
Serial No.: 040805 / Material: Steel / 材質: スチール  
Calibration Item: Coefficient of thermal expansion / 校正項目: 熱膨張係数

Measurement expanded uncertainty (coverage factor: k=2)  
校正後の拡張不確か率 (包含係数 k=2): U = 0.035 × 10<sup>-6</sup> / K

Result of calibration / 校正結果 / 熱膨張係数: α = 10.818 × 10<sup>-6</sup> / K

Using DFI Double Facing Interferometer, at each temperature (setting value) of 17 °C, 20 °C, and 23 °C, size measurement is performed after sufficient temperature stable, and a Coefficient of Thermal Expansion is computed from the result.

許容偏差未満(校正結果) (DFI Double Facing Interferometer) に基づき、17°C、20°C、23°Cの各温度(設定値)にて、十分に温度安定状態、寸法測定を完了し、その結果から熱膨張係数を算出します。

Setting temperature / 設定温度 (°C)	17	20	23
Actual temperature / 実際の温度 (°C)	17.110	20.227	22.763
The amount of change of a size / 寸法変化量 (μm)	-16.660	0	13.715

It is based on a size with a setting temperature of 20 °C.  
設定温度 20°C の寸法を基準とします。

The amount of change of a size / 寸法変化量

Chief inspector: S. Suda / S. Suda  
Mitutoyo Corporation

To each final dimension a factory certificate is supplied.