



TTT_Tapping-Torque- Testsystem

Laboratory "screening- & analysis"
measurement system

TTT_Laboratory Testbars

Conditions and tolerances

The following test materials and test tools will be delivered in consistent quality every time. Will be used for customer specific laboratory examinations / requirements. **Further complementary test-methods** and -materials are in treatment

Dimensions & Methods

Test bar sizes: 125 x 47 x 18 mm with counter sinking
140 drilled array at 6 mm for TTT StandardTools – M4F and M4S
A - Diameter 3,3 mm / 12 mm (3xD) depth for TTT-Tool M4S
B - Diameter 3,7 mm / 12 mm (3xD) depth for TTT-Tool M4F
C - Diameter 3,65 mm / 12 mm (3xD) depth for TTT-Tool M4F

Aluminium

AlMgSi1 / 3.2315 / 6082 (EN/ASTM/AiSi/SAE)

Hardness R_m 420-450 N/mm² / $R_{p0,2}$ 340-370 N/mm²

Ultimate elongation A5 > 5-7% / 140 HB / $R_{p0,2}$ min. 340 N/mm²

AlSi9Cu3 / 3.2163 / 1774 / 12844 (EN/ASTM/AiSi/SAE) New

Hardness R_m 240-350 N/mm² / $R_{p0,2}$ 140-220 N/mm²

Ultimate elongation A5 > 0-3 % / 80-115 HB / $R_{p0,2}$ min. 100 N/mm²

AlSi17Cu4Mg / 1706 (EN/ASTM/AiSi/SAE) New

Hardness R_m 230-295 N/mm² / $R_{p0,2}$ 77-83 N/mm²

Ultimate elongation A5 > 0,5-1% / 110-120 HB / $R_{p0,2}$ min. 340 N/mm²

AlZnMgCu0,5 / 3.4345 / E7022 (EN/ASTM/AiSi/SAE)

Hardness R_m 420-450 N/mm² / $R_{p0,2}$ 340-370 N/mm²

Ultimate elongation A5 > 5-7% / HB 140 / density 2.78 Kg/dm³

Machinery standard/classic - good for "Duktilitaet"

AlZnMgCu01,5 / 3.4365 / 7075 EN/ASTM/AiSi/SAE / JIS A7075

Hardness 420-450 N/mm² / $R_{p0,2}$ = 420 N/mm²

Ultimate elongation A5 > 5-7% / HB 140 / density 2.78 Kg/dm³

Aircraft - CarEngine standard/classic

G-AlSi12Cu / 3.2583 / GD-3-2983 / ASTM/AiSi/SAE 413.1 / JIS ADC1

Hardness R_m 150-290 N/mm² / $R_{p0,2}$ 80-130 N/mm²

Ultimate elongation A5 (1-3,5%) / HB 50 / density 2,65 Kg/dm³

Price each test bar
Price for delivery 5 resemble pieces

€ 320,-- / pcs.

€ 270,-- / pcs.

microtap GmbH / TTTsystem - when monitoring lubricants
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info@microtap.de

TTTsys_Measurement-Equipment.doc



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Laboratory Testbars Measuring Tools

Steel / Titan

Carbon steel

C45N/C45E / 1.1730 (1.1191) / AiSi/SAE/ASTM –1045 / JIS S48C
Hardness R_m 600N/mm² / 175 HB / 85 PSIx1000
Ultimate elongation A 5 (%) > 14 / R_e>355N/mm²

Price each test bar
Price for delivery 5 resemble pieces

€ **380,-- / pcs.**
€ **300,-- / pcs.**

Stainless Steel

X6CrNiMoTi17-12-2 / 1.4571(V4A) / ASTM 316Ti / JIS SUS316Ti
Hardness 725N/mm² / 225 HB / 112 PSIx1000
Ultimate elongation A 5 (%) > 40 / R_m = 775N/mm²

Price each test bar
Price for delivery 5 resemble pieces

€ **400,-- / pcs.**
€ **320,-- / pcs.**

Heat treated steel

42CrMo4V -/ 1.7225 / AiSi/SAE/ASTM 4140 / JIS SNB7(SCM440(H)
Hardness R_m 1100N/mm² / 300 HB / 145 PSIx1000
Ultimate elongation A 5 (%)

Price each test bar
Price for delivery 5 resemble pieces

€ **450,-- / pcs.**
€ **370,-- / pcs.**

Titan Grad 5

TiAl6V4 / 3.7164 /TiAl6V4 / AiSi/SAE/ASTM 49-11-28-35-54-65-67
Hardness R_m 1150N/mm² / 340 HB / 163 PSIx1000 / 36 HRC
Ultimate elongation / R_em²

Price each test bar
Price for delivery 5 resemble pieces

€ **500,-- / pcs.**
€ **400,-- / pcs.**

TTT_Tools / microtap measuring tools

TTT_M4F Form-Standard /vaporised / nitrated for forming (F)
TTT_M4F-T for Titan applications / **new**
TTT_M4F-TIN / TIN coated
TTT_M4S Cut-Standard /blank for cutting (S)
TTT_M4S-T1 M4cut for low RPM / Neat-oil and WMF **new**
TTT_M4S-T2 M4cut for high RPM / Neat-oil (restricted for WMF) **new**
TTT_Tolerance-gauge M4F and M4S - go / no go (free 1st. delivery)

Single price
Price for delivery 10 and more pieces

€ **60,-- - 80,-- / pcs.**
10% - 20 % discount

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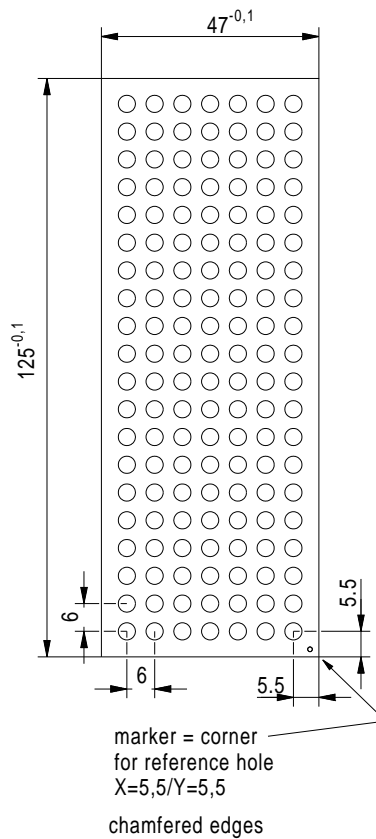
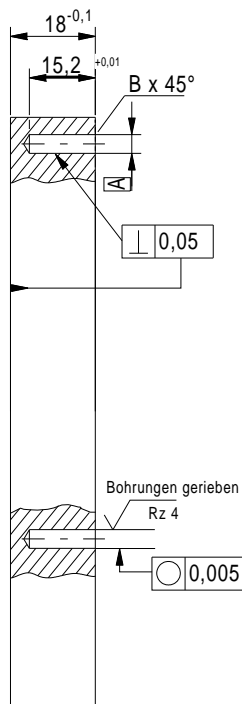
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Laboratory "screening- & analysis"
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Measuring test bars

Material conditions / tolerances
for Standard TTT-tool M4F & M4S



Dimensions & Methods

TTT-Methodology

Forming

special
Counterbore

Cutting

Counterbore

Conditions

Pricing
Payment
Delivery time

Test bars size 125 x 47 x 18 mm / 140 holes – M4

Forming, cutting and special applications

B = 3.70 mm / +0.03 - for standard TTT-Tool M4F

C = 3.65 mm / +0.03 - for more resistance/temperature
0.2 mm

A = 3.3 mm / +0.03 for standard TTT-Tool M4S

0.4 mm

[Terms of delivery](#) of microtap GmbH

€ ex work, excl. packaging

14 days net / Foreign countries payment in advance

Approximately 2-4 weeks after order

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**R_m Hardness
A Fracture strain**

R_e Yield strength

R_{p0,2} 0,2% Yield point

Stress-Strain-Chart

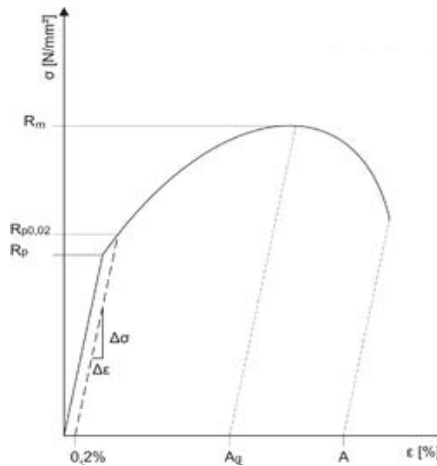
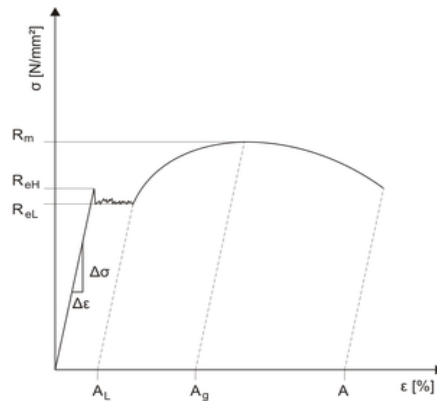
Legend

Indicates the tension at the peak of the stress-strain-chart.

Indicates the remaining distension when breaking. This is the measure for the utmost distension of a material.

Indicates the tension prevailing in material immediately before stretching.

Indicates the tension at which tension test displays a yield point of 0,2 % of plastic deformation after release. R_{p0,2} value is only used with materials lacking a yield strength.



- R_{eH}** Upper yield strength
- R_{eL}** Lower yield strength
- E** Flexibility module
- A_g** Symmetry distension / start of necking
- ϵ** Distension [%]
- σ** Tension [N/mm²]
- A** Fracture

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