

DIN EN ISO 6892-3:2015-07 (E)

Metallic materials - Tensile testing - Part 3: Method of test at low temperature (ISO 6892-3:2015)

Contents		Page
Foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	6
4	Symbols and designations	7
5	Principle	8
6	Test piece	8
7	Determination of original cross-sectional area (S_0)	8
8	Marking the original gauge length (L_0)	8
9	Apparatus	8
9.1	Force measuring system	8
9.2	Extensometer	8
9.3	Cooling device	8
9.3.1	General	8
9.3.2	Permitted deviations of temperature	9
9.3.3	Measurement of temperature	9
9.3.4	Verification of the temperature-measuring system	10
10	Test conditions	10
10.1	Setting the force zero point	10
10.2	Gripping of the test piece, fixing of the extensometer and cooling of the test piece, not necessarily in the following sequence	10
10.2.1	Method of gripping	10
10.2.2	Fixing of the extensometer and establishing the gauge length	10
10.2.3	Cooling of the test piece	11
10.3	Testing rate based on strain rate control (Method A)	11
10.3.1	General	11
10.3.2	Strain rate for the determination of the upper yield strength (R_{eH}) or proof strength properties (R_p and, if required, R_t)	11
10.3.3	Strain rate for the determination of the lower yield strength (R_{eL}) and percentage yield point extension (A_e) if required	12
10.3.4	Strain rate for the determination of the tensile strength (R_m), percentage elongation after fracture (A), percentage reduction area (Z), and, if required, percentage total extension at the maximum force (A_{gt}), percentage plastic extension at maximum force (A_g)	12
10.4	Method of testing with expanded strain rate ranges (Method B)	12
10.4.1	General	12
10.4.2	Rate for the determination of yield strength or proof strength properties	12
10.4.3	Rate for the determination of tensile strength	13
10.5	Choice of the method and rates	13
10.6	Documentation of the chosen testing conditions	13

11	Determination or calculation of the properties	13
12	Test report	13
13	Measurement uncertainty	14
14	Figures	15
15	Annexes	16
	Annex A (informative) Addition to ISO 6892-1:2009, Annexes B and D	17
	Annex B (informative) Example for cooling curves of steel depending on test piece dimensions and the specified test temperature in ethanol and liquid nitrogen	22
	Annex C (informative) Measurement uncertainty	26
	Bibliography	27