

ISO 3506-1:2020-04 (E)

Fasteners - Mechanical properties of corrosion-resistant stainless steel fasteners - Part 1: Bolts, screws and studs with specified grades and property classes

Contents		Page
Foreword		v
Introduction		vii
1	Scope	1
2	Normative references	2
3	Terms and definitions	2
4	Symbols	3
5	Designation system for stainless steel grades and property classes	4
5.1	General	4
5.2	Designation of stainless steel grades (first block)	5
5.3	Designation of property classes (second block)	6
6	Materials	6
6.1	Chemical composition	6
6.2	Heat treatment for martensitic stainless steel fasteners	7
6.3	Finish	8
6.4	Corrosion resistance	8
7	Mechanical and physical properties	8
8	Applicability of test methods and inspection	14
8.1	Applicability of test methods	14
8.2	Loadability of fasteners	14
8.2.1	Fasteners with full loadability	14
8.2.2	Fasteners which have reduced loadability due to their geometry	15
8.3	Manufacturer's inspection	16
8.4	Supplier's inspection	16
8.5	Purchaser's inspection	16
8.6	Delivery of test results	17
9	Test methods	17
9.1	Tensile test for fasteners	17
9.1.1	General	17
9.1.2	Test procedure for the simultaneous determination of R _{mf} , R _{pf} , and A	18
9.1.3	Reference test procedure for the determination of stress at 0,2 % non-proportional elongation, R _{pf}	19
9.1.4	Alternative test procedure for the determination of elongation, A	21
9.1.5	Test results and requirements for tensile strength, R _{mf}	22
9.1.6	Test results and requirements for stress at 0,2 % non-proportional elongation, R _{pf}	22
9.1.7	Test results and requirements for elongation after fracture, A	23
9.2	Tensile test for bolts and screws with reduced loadability due to head design	23
9.2.1	General	23
9.2.2	Test procedure	23
9.2.3	Test results and requirements for ultimate tensile load, F _{mf}	23
9.3	Tensile test for fasteners with reduced loadability due to shank design	23
9.3.1	General	23

9.3.2	Test procedure	24
9.3.3	Test results for tensile strength	24
9.4	Wedge tensile test	24
9.4.1	General	24
9.4.2	Test procedure	26
9.4.3	Test results and requirements	26
9.5	Torsional test	26
9.5.1	General	26
9.5.2	Test procedure	27
9.5.3	Test results and requirements	28
9.6	Hardness test	28
9.6.1	General	28
9.6.2	Test procedure	28
9.6.3	Test results and requirements	28
10	Fastener marking and labelling	29
10.1	Fastener marking	29
10.1.1	General requirements for marking	29
10.1.2	Marking of property class for fasteners with full loadability	29
10.1.3	Marking of property class for fasteners with reduced loadability	29
10.1.4	Additional marking	30
10.2	Manufacturer's identification mark	30
10.3	Marking on the fasteners	30
10.3.1	Hexagon head bolts and screws	30
10.3.2	Hexagon socket or hexalobular socket bolts and screws	31
10.3.3	Other types of bolts and screws	32
10.3.4	Studs (one-end and double-end studs)	32
10.3.5	Fully threaded studs	33
10.3.6	Left-hand thread marking	33
10.4	Marking of the packages (labelling)	34
Annex A (informative) Mechanical properties at elevated temperatures -- Application at low temperatures		35
Bibliography		37