



Differences between EN 13445:2014 and EN 13445:2021

The 2021 edition of each part of EN 13445 contains the 2014 edition of the standard and all Amendment(s) and/or correction(s) issued in the meantime. Subsequent to the modification in the publication method, if an amendment has been published, it has been consolidated in the body of the standard without delay upon its publication.

Significant technical changes are listed hereafter and take into consideration amendment published after 2021.

NOTE The changes referred include the significant technical changes but is not an exhaustive list of all modifications

Part 1

- ✧ Modification of Clause 1 – "Scope"
- ✧ Updating of Clause 3 – "Definition"
- ✧ Updating of Annex B – "Index"
- ✧ Addition of Annex X – "List of Essential Safety Requirements"

Part 2

- ✧ Modification of Clause 1 "Scope" to inform that metallic materials other than steel, such as spheroidal graphite cast iron, aluminium, nickel, copper, titanium are covered by other parts
- ✧ Modification of B.2.2.4 on Bolt and nuts of Annex B to take into account evolution of EN 10269:2013 Steels and nickel alloys for fasteners with specified elevated and/or low temperature properties
- ✧ Modification of the minimum lowest temperatures of the metal for austenitic stainless steels in Annex B (§ B.2.2.5)
- ✧ Addition of a new Annex F – "Special provisions for materials and components"
- ✧ Addition of the Amendment A1 in 2023 which updates of the normative references, modifies Table 4.1-1 "Maximum carbon-, phosphorus- and sulfur contents for steels intended for welding of forming" and modifies Table A.1 "Grouping system for steels".

Part 3

- ✧ Removal of Annex GA – "Alternative design rules for flanges and gasketed flange connections"
- ✧ Modification of the Clauses 6 "Maximum allowed values of the nominal design stress for pressure parts", 15 "Pressure vessels of rectangular section", 17 "Simplified assessment of fatigue life" and 22 "Static analysis of tall vertical vessels on skirts" and of some subclause of Clause 16 "Additional non-pressure loads"
- ✧ Modification of the Annexes J "Alternative method for the design of heat exchanger tubesheets", M "In service monitoring of vessels operating in fatigue or creep service", R "Coefficients for creep-rupture model equations for extrapolation of creep-rupture strength"



and U "Guidance on negligibility of additional thermal cycles in fatigue and ratcheting assessment"

- ✧ Addition of a new Subclause 5.3.2.4 and Clause C.8

Part 4

- ✧ Modification of 7.4 Qualification of welders and welding operators in order to take into account EN ISO 9606-1:2017, Qualification testing of welders — Fusion welding — Part 1: Steels.
- ✧ Addition of the Amendment A1 in 2023 which updates the normative references and modifies subclauses 7.1 "Weld details – General", 8.3 "Welding procedure qualification record" and 9.4.3 "Longitudinal weld tensile test"

Part 5

- ✧ Modification of Table 6.6.1-1 "Testing groups for steel pressure vessels" on extent of NDT;
- ✧ Modification of Table ZA "Relationship between this European Standard and the essential requirements of Directive 2014/68/EU aimed to be covered" to be more accurate.
- ✧ Addition of the Amendment A1 in 2024, which deletes definition of joint batch, modifies subclauses 6.5.2 "Verification of welder and welding operator", 6.6.2.5 "When less than 100% NDT is required by the selected testing group in Table 6.6.1-1", 6.6.6 "Procedure for non-destructive retesting", Clause 7 "Subcontracted items", 10.2.3.2 "Basic requirements", 10.2.3.3 "Standard hydrostatic test" and Clause 11 "Marking and declaration of compliance with the standard" and modifies some Annexes including Annex ZA "Relationship between this European Standard and the essential requirements of Directive 2014/68/EU aimed to be covered".

Part 6

- ✧ Introducing the concept of group for fluids;
- ✧ Modification of the designation of the materials and characteristics according to uniform European Standards EN1563 and EN 13835;
- ✧ Updating of test and inspection methods.

Part 8

- ✧ Additions relate to flat ends (6.7), design by experiment (6.8), port-hole extruded tubes (6.9), tolerances (7.3), and the allowable design strength values (Annex A)

Part 10

No significant technical changes.