TECHNICAL DATA FOR KÖCO-WELDING STUDS

All KÖCO welding studs are made from materials suitable for stud welding. Dimensions and design of our standard products conform to EN ISO 13918, any non-standard products supplied will be produced to correspond to the norm. If you wish to use a type of stud other than those listed, please send us your enquiry and consult our specialists about your welding task.

KÖCO welding studs are available in different materials. Upon request the properties of each can be documented by test report 2.2 or inspection certificate 3.1 or 3.2 (EN 10204).

Non-alloy structural steel:
KÖCO non-alloy structural steel welding studs are manufactured from S235 according to EN 10025:2005 with more stringent requirements for carbon content, degree of purity, grain size and surface properties. This makes the material ideally suited for stud welding. Through cold forming the material's tensile strength and yield strength are enhanced and a favourable grain structure is also achieved.

For threaded studs, pins, tapped studs and similar products, we guarantee mechanical properties according to EN ISO 898-1, property class 4.8.

Tensile strength R_m	≥ 420 N/mm²
Yield strength R_{eL}	≥ 340 N/mm²
Elongation A_5	≥ 14%

We supply shear connectors manufactured from S235J2+C470 or S355 according to EN 10025:2005 with the following mechanical properties:

Tensile strength R_m	≥ 470 N/mm²
Tensile strength R_m S355	≥ 510 N/mm²
Yield strength R_{eL}	≥ 375 N/mm²
Elongation A_5	≥ 15%

KÖCO shear connectors exceed the requirements of EN ISO 13918. The CE-conformity with the European Technical Approval ETA-03/0039 dated May 31, 2010 by Deutsches Institut für Bautechnik (DIBt, German Institute for Building Engineering) has been demonstrated.

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Stainless steel:
We supply KÖCO threaded studs, pins, tapped studs and similar products made from 1.4301/03 according to DIN EN ISO 3506-1.

Tensile strength R_m	≥ 500 N/mm²
Yield point $R_{p0,2}$	≥ 210 N/mm²
Elongation A_5	≥ 25%

KÖCO welding studs made from stainless and acid-resistant steels such as 1.4541, 1.4571, 1.4401, 1.4404 in various property classes are available upon request.

We supply stainless steel shear connectors made of 1.4301 in accordance with EN 10088:2005 with the following mechanical properties:

Tensile strength R_m	540-780 N/mm²
Yield point $R_{p0,2}$	≥ 350 N/mm²

The CE-conformity with the European Technical Approval ETA-03/0039 dated May 31, 2010 by Deutsches Institut für Bautechnik (DIBt, German Institute for Building Engineering) has been demonstrated.

Heat- and scale-resistant KÖCO welding studs are manufactured from 1.4713, 1.4742, 1.4762, 1.4828, 1.4841, 2.4851 or 2.4856. Other materials are available upon request.

Stud dimensions:
Generally, the nominal length is the length of the stud "after welding". The studs delivered are 1 to 5 mm longer than their specified nominal length (except KÖCO KKS boiler tube studs and KÖCO KHS concave pins). This enables the welding parameters to be checked by measuring the stud length after welding.

Threads:
The threads of KÖCO studs are cold rolled and manufactured in accordance with DIN 13-20, tolerance 6g. Non-standard threads are available upon request.

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Flux:
KÖCO studs for welding with ceramic ferrules are provided with an aluminium tip as required by the welding process, to facilitate the ignition of the arc, to stabilize the arc and to deoxidize the welding pool. The correct amount of flux used is an essential factor in obtaining perfect welding results.

Surface protection:
Unless specified otherwise, KÖCO welding studs are delivered uncoated. The manufacturing process requires surface coating of the wire, which cannot be removed from the stud shank but does not impair weldability.

The codes for materials and types of surface are given in the last three digits of the article number, according to the following table (excerpt):

001	Non-alloy structural steel, uncoated
002	Stainless steel 1.4301/03
005	A4-50
008	1.4713 (Sicromal 8)
009	1.4742 (Sicromal 10)
011	1.4828
012	1.4841
053	1.4845
018	16Mo3
013	2.4851 (Inconel 601)
054	19MnB4, hardened
062	K 800
057	2.4856 (Inconel 625)
101	4.8, A2L zinc-plated and yellow chrome-plated
100	4.8, A2K (zinc-plated) without Cr VI
103	4.8, C2E (copper-plated)
102	4.8, G2E (nickel-plated on copper-plated base)
112	4.8, flZnnc-600h without Cr VI zinc-flake coating

In the case of zinc-plated studs, the zinc coating is removed at the welding tip to prevent contamination of the welding pool.

Ceramic Ferrules:
The ceramic ferrules can be used only once. The ferrules required for welding are generally included in the delivery of the studs. Ceramic ferrules are not available without studs.

Weld collar:
In the course of stud welding a weld collar is formed where the stud is joined to the work-piece. Its dimensions depend on the welding parameters as well as the ceramic ferrule used. In this area threads, for example, cannot be utilised.

Ordering example:
KÖCO threaded stud PD M 20 x 100, material 4.8, weldable, uncoated: Article No. 001-0487-001, ceramic ferrule PF 20.

In case of other materials or surface coatings the last three digits of the article number must be changed as shown in the table above.

Neuse, 11.02.2021