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Powder-actuated fasteners and fastening screws in steel construction

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Section 3.1.2.8

Screws should only be used in non-corrosive applications, regardless of their coating, unless they are specifically listed as being suitable for outdoor or exposed conditions. More detailed corrosion resistance guidelines for Hilti screw fasteners are provided in the Hilti North American Product Technical Guide Volume 1: Direct Fastening 2011, Section 3.6.1.6 on page 145.

Section 3.1.3

More detailed guidance on Hilti screw fastener installation instructions is provided in the Hilti North American Product Technical Guide Volume 1: Direct Fastening 2011, Section 3.6.1.7 on page 146. Screw fasteners should be installed with screwdrivers equipped with a torque clutch or depth gauge at the appropriate rpm's. Caution should be taken with the use of rotary impact wrenches for installation of self-drilling screws in thin metal, as this can lead to over-driving and thread stripping.

Section 4.1.2.2

As of the printing of this article, certain seismic fastening applications are now recognized by the International Code Council – Evaluation Services (ICC-ES) for the use of powder-actuated fasteners. Recent revisions to the ASCE 7 reference standard and by incorporation, the IBC 2012, allow for the use of powder-actuated fasteners to resist seismic forces under certain conditions. Subsequent revisions to the ICC-ES Acceptance Criteria for Fasteners Power-Driven into Concrete, Steel and Masonry Elements, AC70, and powder-actuated fastener ESRs are underway consistent with ASCE 7-10 Section 13.4.5 and the IBC 2012. Interested readers should refer to the AC70 ESRs or contact Hilti for guidance.

Screw fasteners for cold-formed steel connections subjected to seismic forces are addressed through the American Iron and Steel Institute (AISI) S100 North American Specification for the Design of Cold-Formed Steel Structural Members. AISI S100 is referenced in the IBC 2012, and does not prohibit the use of screw fasteners for resisting seismic forces. Interested readers should refer to AISI S100, AC118 ESRs or contact Hilti for guidance.

Please direct powder-actuated and screw fastening technical inquiries to your local Hilti Field Engineer or Technical Support at 1-877-749-6337.

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Notes by the publisher Ernst & Sohn:

Updated annually, the "Stahlbau-Kalender" has been accompanying key developments in steel construction and related areas in Germany since 1999.

The Calendar is both a compendium for planning and construction using steel as well as a guide to its correct calculation and design. Timeliness, quality and the practical content of the contributions emphasize the significance of the "Stahlbau-Kalender" as a reliable source of information and aid, such that it has become an essential handbook for engineers and architects who manage steel construction projects of all sizes.

The editor, Professor Ulrike Kuhlmann, is head of the Institute for Design and Construction at the University of Stuttgart, and her choice of authors is determined by a continuous search for real-life examples. The contributors thus work within the industry, in engineering offices or at the interface of research and practice in academia and are renowned experts in their respective fields.

Contents

1	Introduction	5		
2	Powder-actuated fastening technology	6		
2.1	Basic principles	6		
2.1.1	Methods and terminology	6		
2.1.2	From high-velocity tools to low velocity piston tools	8		
2.1.3	CE marking and C.I.P. approval of powder-actuated fastening tools	8		
2.1.4	Powder-actuated fasteners: Features and characteristics	9		
2.1.4.1	Geometry and form	9		
2.1.4.2	Knurling	10		
2.1.4.3	Washers	10		
2.1.4.4	Fastener materials and mechanical properties	11		
2.1.4.5	Corrosion protection	11		
2.1.4.6	Blunt tip powder-actuated fasteners	12		
2.1.4.7	Manufacturing process	12		
2.1.5	Interdependency: powder-actuated fastener – fastening tool – cartridge	12		
2.2	Powder-actuated fastening terms and definitions	13		
2.2.1	Depth of penetration and fastener stand-off	13		
2.2.2	Application range and application limits	13		
2.3	Anchorage in unalloyed structural steel	14		
2.3.1	Anchorage mechanisms	14		
2.3.2	Load-displacement characteristics	15		
2.3.3	Parameters influencing anchorage	16		
2.3.3.1	Depth of penetration	16		
2.3.3.2	Base material thickness	18		
2.3.3.3	Base material strength	18		
2.3.3.4	Knurling	19		
2.3.4	Robustness of the anchorage	19		
2.3.4.1	Vibrational loading of powder-actuated fasteners	20		
2.3.4.2	The influence of static stress in the base material	22		
2.3.4.3	The influence of vibration of the base material	23		
2.3.4.4	Influence of ground fastener points	24		
2.3.4.5	The influence of temperature	24		
2.4	Fastener anchorage in alloyed steels, cast iron and non-ferrous metals	24		
2.5	Influence on the base material structural steel	26		
2.5.1	Influence on net section efficiency	26		
2.5.2	Influence on fatigue strength	28		
2.6	Corrosion	29		
3	Fastening screw technology	30		
3.1	Basic principles	30		
3.1.1	Methods and terminology	30		
3.1.2	Fastening screws: features and characteristics	31		
3.1.2.1	Self-tapping screws	31		
3.1.2.2	Self-drilling screws	31		
3.1.2.3	Sandwich panel screws	33		
3.1.2.4	Screws for fastening roofing membranes	33		
3.1.2.5	Screw head shapes and drive types	33		
3.1.2.6	Sealing washers	33		
3.1.2.7	Materials and their mechanical characteristics	34		
3.1.2.8	Corrosion protection	34		
3.1.2.9	The manufacturing process	34		
3.1.3	Interdependency: Screws – screwdrivers	34		
3.2	Definitions used in describing screw fastening	35		
3.2.1	Area of application and application limits	35		
3.3	Anchorage	35		
3.3.1	Anchorage mechanisms	35		
3.3.2	The parameters influencing the anchorage	36		
3.3.2.1	Thickness of the base material	36		
3.3.2.2	The strength of the base material	36		
4	Verification concepts	36		
4.1	Loading capacity	36		
4.1.1	Predominantly static loading	36		
4.1.2	Dynamic loading	37		
4.1.2.1	Vibrational loading	37		
4.1.2.2	Seismic loading	37		
4.1.3	Verification of resistance to fire	38		
4.2	Serviceability	38		
4.3	Durability	38		
4.4	Verification of fastenings with components made from various materials	39		
5	Applications in steel construction	39		
5.1	General information	39		
5.2	Fastening thin gauge cold-rolled profiles	41		
5.2.1	Base material thickness $t_{fl} \geq 6$ mm	41		
5.2.2	Base material thickness $t_{fl} < 6$ mm	42		
5.2.3	Timber and concrete supports	42		
5.2.3.1	Fastening to timber	42		
5.2.3.2	Fastening to concrete	43		
5.3	Fastening of base profiles of glass facades	43		
5.4	Fastening sandwich panels	45		
5.5	Powder-actuated fastening of thick, predrilled metal sheets	45		
5.6	Fastening of wood and wood materials	46		
5.7	Detachable fastenings with threaded studs	48		
5.7.1	General points	48		
5.7.2	Blunt tip threaded studs	48		
5.8	Fastening waterproofing membranes	49		
5.9	Powder-actuated fasteners as a means of connecting steel plates	50		
6	Applications in steel/concrete composite construction	51		
6.1	General points	51		
6.2	The Hilti X-HVB shear connector	52		
6.3	Shear connection in composite tubular columns	53		
7	European Technical Approval and other national approvals	54		
7.1	Basis for approval	54		
7.2	Overview of relevant approvals, status 10/2010	56		
7.3	Future developments	58		
8	European Technical Approval (ETA) for fasteners used to join thin, cold-formed profile sheets	59		
8.1	Test concept and mathematical approach	59		
8.2	Overview of approval tests	60		

8.3	Approval tests – examples of load bearing behavior	62	8.5.1	Substructures made from of thermomechanically-rolled materials	71
8.3.1	Static resistance of sheet metal under tensile load	62	8.5.2	Divergent types of fastening	71
8.3.2	Dynamic resistance of sheet metal under tensile load	62	8.5.3	Base materials with a fire-protection coating	71
8.3.3	Static pullout resistance	63	9	European Technical Approval of sandwich panel fastenings	73
8.3.4	Static shear resistance with single layer and four layers of sheet metal	63	9.1	Approval tests and approval regulations in accordance with CUAP [132]	73
8.3.5	Combined shear and tensile loading tests with double layers of sheet metal with powder-actuated fasteners	66	10	European Technical Approval for fastening waterproofing membranes	73
8.3.6	Application limit	66	11	Powder-actuated fastener and metal construction screw suitability checklist	73
8.4	Structure and content of an ETA	66	11.1	Powder-actuated fasteners	73
8.4.1	General points – attestation of conformity procedures	66	11.2	Fastening screws	76
8.4.2	Powder-actuated fasteners	66	12	Summary	76
8.4.3	Self-drilling screws	69	13	Literature	78
8.4.4	Self-tapping screws	69			
8.4.5	Special applications and interaction	69			
8.5	Deviation from the conditions applicable to the approval	71			

