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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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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.

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