

# AD 359

## Weathering steel bolts

European bolt standards do not specifically cover weathering steel bolts – i.e. bolts of material similar to that of ‘structural steels with improved atmospheric corrosion resistance’ to EN 10025-5. The execution standard, EN 1090-2, notes in Clause 5.6.6 that Type 3 Grade A fasteners to ASTM standard A325 would be suitable. There is limited availability of such fasteners in the UK; the only metric size that is (sometimes) available is M24; in imperial sizes, only the 1 inch size is readily available. The Advisory Desk has been asked on several occasions to clarify the consequences on design of using imperial size bolts to this standard as preloaded bolts.

A325 *Standard specification for structural bolts, steel, heat treated, 120/105 ksi minimum tensile strength*, specifies a minimum ultimate tensile strength for 1 inch size bolts that is almost exactly the same as that specified in EN ISO 898-1 for property class 8.8 fasteners and it specifies a proof strength that is 70% of the UTS. Such bolts will therefore conform to the requirements of EN 1090-2 clause 5.6.6. For design to Eurocodes, the characteristic tensile strength to be used in design is therefore the same as that for class 8.8 fasteners. However, the tensile stress area of a 1 inch bolt is 10% greater than that of an M24 bolt and thus its resistance is 10% greater,

both in shear and in slip resistance (and in tension).

A 1 inch bolt requires a larger hole size and thus the minimum spacing and edge/end distances are greater; the change would affect the bolt layout and plate size if minimum values appropriate to a 26 mm hole (for an M24 bolt) had been chosen when detailing the connection. It is therefore recommended, when detailing bolted connections in a weathering steel structure, to specify M24 bolts but to ensure that the spacing and edge/end distances comply with Table 3.3 of BS EN 1993-1-8 for a hole size of 28 mm, in case 1 inch bolts have to be substituted. The resistance of the connection should nevertheless be determined on the basis of the resistance of M24 bolts in 26 mm holes (this would be conservative if 1 inch bolts were substituted). However, if it is certain that 1 inch size bolts will be used, the slip resistance and the shear resistance in bearing can be taken as the larger value, which might permit a lesser number of bolts to be used.

Contact: **David Iles**  
Tel: **01344 636525**  
Email: **advisory@steel-sci.com**

## New and revised codes & standards

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### BS EN PUBLICATIONS

#### BS 7371-8:2011

Coatings on metal fasteners. Specification for sherardized coatings.  
*Supersedes BS 7371-8:1998*

### BS EN PUBLICATIONS

#### BS EN ISO 4014:2011

Hexagon head bolts. Product grades A and B  
*Supersedes BS EN ISO 4014:2001*

#### BS EN ISO 4016:2011

Hexagon head bolts. Product grade C  
*Supersedes BS EN ISO 4016:2001*

#### BS EN ISO 4136:2011

Destructive tests on welds in metallic materials. Transverse tensile test  
*Supersedes BS EN 895:1995*

#### BS EN ISO 8765:2011

Hexagon headed bolts with metric fine pitch thread. Product grades A and B  
*Supersedes BS EN ISO 8765:2001*

#### BS EN ISO 9016:2011

Destructive tests on welds in metallic materials. Impact tests. Test specimen location, notch orientation and examination  
*Supersedes BS EN 875:1995*

### BRITISH STANDARDS WITHDRAWN

#### BS EN 875:1995

Destructive tests on welds in metallic materials. Impact tests. Test specimen location, notch orientation and examination  
*Supersedes by BS EN ISO 9016:2011*

#### BS EN 895:1995

Destructive tests on welds in metallic materials. Transverse tensile test.  
*Supersedes by BS EN ISO 4136:2011*

### DRAFT BRITISH STANDARDS FOR PUBLIC COMMENT – ADOPTIONS

#### 11/30239473 DC

**BS EN 10025-1** Hot rolled products of structural steels. General technical delivery conditions

#### 11/30239476 DC

**BS EN 10025-2** Hot rolled products of structural steels. Technical delivery conditions for non-alloy structural steels

#### 11/30239479 DC

**BS EN 10025-3** Hot rolled products of structural steels. Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels

#### 11/30239482 DC

**BS EN 10025-4** Hot rolled products of

structural steels. Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels

#### 11/30239485 DC

**BS EN 10025-5** Hot rolled products of structural steels. Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

#### 11/30239488 DC

**BS EN 10025-6** Hot rolled products of structural steels. Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition

#### 11/30239491 DC

**BS EN 10149-1** Hot rolled flat products made of high yield strength steels for cold forming. General delivery conditions

#### 11/30239494 DC

**BS EN 10149-2** Hot rolled flat products made of high yield strength steels for cold forming. Delivery conditions for thermomechanically rolled steels

#### 11/30239497 DC

**BS EN 10149-3** Hot rolled flat products made of high yield strength steels for cold forming. Delivery conditions for normalized or normalized rolled steels

### DOCUMENTS NOT ISSUED AS DPCs

#### EN 1090-2:2008/A1

Execution of steel structures and aluminium structures. Technical requirements for steel structures  
This amendment has been issued under the fast track Unique Acceptance Procedure and therefore no DPC could be issued

### ISO PUBLICATIONS

#### ISO 4017:2011

(Edition 4)  
Hexagon head screws. Product grades A and B  
*Will be implemented as an identical British Standard*

#### ISO 4018:2011

(Edition 4)  
Hexagon head screws. Product grade C  
*Will be implemented as an identical British Standard*

#### ISO 8676:2011

(Edition 3)  
Hexagon head screws with metric fine pitch thread. Product grades A and B  
*Will be implemented as an identical British Standard*