CONSTRUCTION FIXINGS association INSIGHT

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Issue 1

# BS 8539: What is it and what is the purpose?

## Ensuring best practice - saving lives

The recently published BS 8539 is the first British Standard that provides recommendations for the safe selection and installation of anchors for use in concrete and masonry. The intention is to provide practical guidance for designers, specifiers, manufacturers, suppliers, contractors, installers and testers of anchors. BS 8539 is also linked to the relevant European regulations, especially with respect to selecting products with the correct ETA's for the application.

BS 8539 is restricted to the use of anchors inserted into concrete and masonry drilled holes and it is intended to facilitate all stakeholders involved in the design, selection and use of anchors to achieve the security required.

Recommendations for the safe selection and installation of anchors for use in concrete and masonry.

## Main causes of fixing failures:

- Wrong fixing being selected, or fixing not designed
- Specified fixing being changed without proper care
- Poor installation

## Who does it affect?

The code is aimed at everyone involved in the use of the fixings:

- Contractors
- Distributors
- Manufacturers
- Installers
- Site Testers
- Designers
- Specifiers


# What does BS 8539 mean for…

## Contractors

The Contractor

The contractor should ensure that the specification is followed and the installer is capable of correctly installing the anchor. If any party proposes an alternative anchor to that specified, the contractor should ensure that the change management procedure outlined in Clause 10 is followed.

If the contractor is aware of any changes to the assumptions made by the specifier in designing / selecting the specified anchor (for example changes in the strength of the base material) he should inform the specifier and await instructions.

Installation is certified in CFA Form 8539/03, available from CFA website.

## Distributors and Manufacturers

The anchor distributor / manufacturer should provide sufficient information to allow the specifier and installer to ensure the safe selection, specification, installation, use, maintenance, cleaning, dismantling or disposal of the anchor without risk to safety or health.

For example:

- Designation of anchor including size and type
- Performance data including:
- Characteristic resistance
- Design resistance (or partial safety factor for the material to allow calculation)
- Recommended resistance (or appropriate safety factor to allow calculation)
- Setting details including min. thickness of base material, edge and spacing criteria
- Installation instructions and equipment needed.

# What does BS 8539 mean for…

## Installers

The installer must be competent and should follow the correct installation procedures as advised by the manufacturer of the anchor. They should also ensure that the correct drilling and installation accessories are available and used.

If due to site conditions (for example hitting reinforcement during drilling) the anchor cannot be installed in accordance with the manufacturer's instructions then the installer should refer back to the specifier and/or the manufacturer of the anchor and await instructions. It may be necessary to review the design and suggest an alternative fixing / alternative method of installation.

The Installer

## Designers

The designer should take into account the preliminary design considerations and supply the necessary information to the specifier to complete the anchor selection process.

For example:

- Confirmation that the structure can sustain the characteristic action
- Concrete status i.e. cracked or non-cracked, redundancy and robustness, environment conditions and required durability.
- Is the application safety relevant

Design information is summarised in CFA form BS 8539/01.

The Designer

## Site Testers

Site testers should carry out tests using the appropriate procedure as set out in Annex B.

Before testing, the anchors should be installed as per the manufacturer's instructions and in the locations prescribed by the specifier or contractor. Test results should be recorded in a full and comprehensive manner and communicated to the specifier or contractor.

The "CFA form 8539/04 Test request" is downloadable from the website.

Site testing equipment

## Specifiers

The specifier should determine the most appropriate anchor for the particular application, by following the selection process in Clause 5 and using the appropriate design method for that anchor. Specification of the chosen anchor should be made explicitly and completely, so that the anchor installed on site fulfils the design criteria and the anchor is procured correctly.

Information about the selected anchor provided to the contractor/installer should include:

- Full description – make, type, ETA no. (when available), size, designation, manufacturers ref / order no.
- Installation instructions
- Guidance on what to do if reinforcement is hit when drilling

Selection is completed in CFA form 8539/02, available for download from CFA website.

**The CFA has been directly involved in the development of BS 8539:2012, more details and BS related tables can be found on our website: www.the-cfa.co.uk**

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# It's not worth taking the risk!

Sometimes it is difficult to fully understand the consequences of an incorrectly selected or installed fixing without seeing some examples of what can happen when things go wrong. Here are two examples of construction incidents that were caused directly or indirectly by fixing failures and poor health and safety practice.

## Scaffolding collapse kills one and injures two

Major scaffolding collapse on Jury's Inn site
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A major scaffolding collapse on a Jury's Inn site in Milton Keynes cost two construction firms £126,000 as one man was killed and two others were seriously injured. All three of the men fell to the ground and were trapped under the rubble after falling 40 metres.

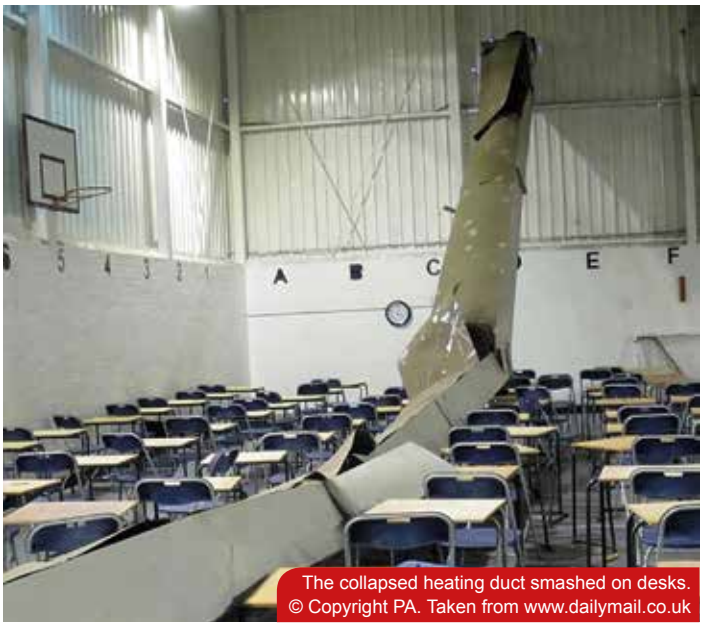
One man died from a pulmonary embolism caused by a serious injury to his leg, and the other men suffered injuries to their legs and arms, broken ribs and vertebra and even a punctured lung in the incident.

Huntingdon Crown Court fined the principle contractor and cladder that were on the site and ruled that a combination of failures led to the incident that took place. Despite directions supplied by the HSE, the stability and strength of the scaffolding was deemed to be insufficient and the inspections carried out were inadequate.

**The HSE Principle Inspector Stephen Hartley: "It is totally unacceptable for companies to disregard the safety of their workers. If the scaffolding had been designed, erected and managed properly, this incident would never have happened."**

Taken from HSE Website;
http://www.hse.gov.uk/press/2009/coie10009.htm

## Students injured by heating duct collapse in exam hall



The collapsed heating duct smashed on desks.
© Copyright PA. Taken from www.dailymail.co.uk

Twelve students were injured when a heating duct collapsed from the ceiling of a school sports hall during an exam in Sheerness, Kent, with four of the pupils suffering serious injuries to the head, neck and back.

Around 150 pupils were in the sports hall when the duct fell between rows of desks set up in exam conditions. It was claimed that the hall itself had been subject to regular maintenance checks and the building itself had shown no cause for concern prior to the incident.

Inspectors concluded that there were serious failings in the installation of the heating duct by the original contractors who carried out the work.

Ambulance taking the injured to hospital.
© Copyright PA. Taken from www.dailymail.co.uk

Taken from DailyMail:
http://www.dailymail.co.uk/news/article-1180788

# CONSTRUCTION FIXINGS association

## Everything you need to know about drilled in fixings and anchors for concrete, masonry & plasterboard.

First established in 1979 the Construction Fixings Association represents the major manufacturers of fixing systems which are set in drilled holes in all construction materials including Concrete, Brickwork, Blockwork, Stonework and Plasterboard - many with European Technical Approvals (ETAs).

The CFA offers support to all stakeholders involved in the "Fixings chain" - Specifiers, Distributors, Contractors, Installers and Testers and works with UK and European bodies to satisfy our mission statement of "Ensuring best fixings practice". The CFA is a Company Limited by Guarantee i.e. it is non-profit making and distributes no dividend.

As an association we:

- Publish a series of free Guidance Notes
- Are directly involved in the development of the Guidelines for European Technical Approval assessment of anchors for safety critical applications.
- Are active in various BSI and European standards committees.
- Are actively involved with other influential bodies such as BBA, CIRIA, BSRIA, CEN, ISO and government departments.
- Support specific industries in the development of guidelines for their use of fixings.

CONSTRUCTION FIXINGS association

## ENSURING BEST FIXING PRACTICE...

**By working with National & European bodies i.e. BBA, CIRIA, BSRIA, CEN, ISO and government departments.**


**Publishing:**

- Guidance Notes
- Articles
- Sample Method Statements
- Sample Fixing Specifications

**Free to download from our website at**
**www.the-cfa.co.uk**

CONSTRUCTION FIXINGS association
8539 TOOLKIT

**Should you wish to know more, please visit our 8539 Toolkit at www.the-cfa.co.uk**