

Steel Construction Institute Assessed and Approved

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Construction Of Structures Unavoidably Involves Connections



Fire protection of bolted connection

No standards or test specification and tradition specifies same protection as steel structure with manual touch up on site – weather dependent and variably quality



Bolt Cap offers Productive Quality Protection with cost saving, time saving, any weather application and consistent quality







Bolt Caps - Productive Protection Method of Fire Protection For Connections Problems

appearance

Difficult access to ensure application?

Inconsistent thickness of coating Poor quality bolt protection

Coating cracking on bolts

Uncoated threads

Inspection And Remedy Costs Time And Money



- Method of Fire Protection For Connections **Problems**
 - Use Of Galvanised Bolts The process of galvanising bolts is called spun-galvanising which is hot dip galvanising with a post operative spinning process to remove the excess zinc.

Unfortunately zinc melts at 420°C, but more dangerously peels at around 200°C (the Kirkendall effect) as shown by the enclosed graph



This peel is confirmed indirectly by the graph below that compares a bare bolt to a painted bolt to a capped bolt. As can be seen the painted and capped bolt perform at a similar level until the Kirkendall peel temperature onset is reached and then they show divergence in performance.



Bolt Caps - Productive Protection Method of Fire Protection For Bolted Connections Choices - Speed, Time & Finish

Intumescent coatings with on site touch up weather dependant and lots of preparation



Timed test on 2 hour beam connection shows time to apply intumescent paint to protocol was 20 minutes per <u>connection</u> versus a minute for a bolt cap



Intumescent coatings with bolt caps applied in any weather and no preparation on structural steel and pipe racks etc

<u>Eliminate the problems and inspection time of</u> painting bolted connections - Use Bolt Caps

> Quick And Easy To Apply – up to 9 times faster

Built Environment

BS-476 (2 hrs) ASTM E-119 / UL 263 (3 hrs) Oil & Gas Markets

UL 1709 (up to 4 hrs pool fire) ISO 22899 (2 hr jet fire)



Complements Intumescent Coatings

All Weather Application

Metric, Imperial & Custom Sizes & Shapes Available

Tap on And Screw On Fittings Available

Masking Inserts Available

Health & Safety – Less Working Time At Height





- Extensively Tested, Evaluated & Accepted
 - Lloyds Certified Extensively Tested & Evaluated Accepted By Major Global Companies Specified By Major Engineering Consultant's Negligible VOC Steel Construction Institue Assessed & Approved





- Standard Metric & Imperial Cap Size Available In Stock
- Custom Sizes And Shapes Made To Order







	BOLT SIZE	DIMENSION & (mm)	DIMENSION 8 (mm)	WALL THICKNESS (mm)
	W16	47.0	43.0	5
в	M20	53.0	45.0	5
	M24	59 Ø.	53.0	5
A	M30	70.0	63.4	1

Imperial Bolt Cap overall dimensions



	BOLT SIZE	DIMENSION A (mm)	DIMENSION B (mm)	WALL THICKNESS (mm
в	340	50.1	#7.0	. 5
	TAP.	56.0	\$3.0	5
	1e.	63.0	58.0	5
A				

Standard caps sized for bolt specified to BSEN 15048, AS 1111, EN ISO 4014 (DIN 931) and ASTM A325/F436 www.boltcap.com

Global Acceptance -Project Examples

- Up to 3 hours cellulosic protection,
- Up to 4 hours hydrocarbon protection
- Up to 2 hours jet fire protection



Fire threats ranging from cellulosic to hydrocarbon protection on these projects

Save now, the bolt cap is used on many projects globally as the **most effective** solution to the fire protection of connections **applicable in** <u>any weather</u>.

For fire threats both **cellulosic** and **hydrocarbon**, as well as corrosion protection in harsh environments.

It shows both **significant savings**, as well as ease of cyclic inspection of connections if required and less working time at height.



Productivity Enhanced Masking Options For Offsite Coating Of Steel Elements Or Assemblies

> The masking inserts are placed in the end plate or connection face prior to painting. The facing surfaces are left unpainted.

Once the fire protection is dry they can be removed leaving a clean surface for the bolts to be placed and tightened without damage to paint,

Bolt caps are then installed over to close the gap and fully protect the connection, reducing the need for site touch up or site painting so saving cost and programme time.



- Typical steel frame building & structural assembly means large numbers of connection visits to paint the bolted connection properly by cherry picker.
- Cost and time is eliminated if the bolt cap is fitted when floor levelling or bolt tightening.
- Quality assured protection at minimum cost with no wet trades on site, can be applied in any weather. Quality finish and aesthetics.
 - **Caps give cost saving over the proper painting cost** carried out to the fire certificate test standard, and **save significant build programme** time.
 - **Easy subsequent gloss/colour painting** for exposed connections, no special primers/paints required.
 - **Allows easy sustainability** for a construction with ease of subsequent bolt re-use if required.

Easy to clean connections when installed for critical facilities such as pharma plant and food processing facilities.



 Bolted connections are critical to structural integrity.
 Paint protected bolted connections can be <u>under-</u> protected in fire, potentially leading to premature structure collapse as well as installation issues.

Bolt cap technology ensures optimal fire protection

Fast, competitive all weather installed cost Universal application with variety of PFP systems Protection from cellulosic, hydrocarbon & jet fire scenarios Easy to inspect connections are fully protected







Take the clear road to more **quicker**, **easier all weather** and safer construction now with negligible VOC



Tapon Bolt Caps are available globally for both cellulosic and hydrocarbon protection direct or via distributors

 Benefit Now With Clean Quick Finish

— Try Bolt Caps And See For Yourself







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www.boltcap.com

