



Events & Lectures Cell
Outreach & Dissemination Services Office
CSIR – Central Building Research Institute
Roorkee – 247667 (UK)



CSIR-CBRI Expert Lecture Series - 01

Galvanised Steel Bars for Concrete Structures - Current Status and Future Developments

April 11, 2023

The institute has taken new initiative to acquire the latest knowledge on the building science and technology available across the world through online/offline interactions with eminent experts. Through its CSIR-CBRI Expert Lecture Series, the first lecture on '*Galvanised Steel Bars for Concrete Structures - Current Status and Future Developments*' was delivered by **Prof. Stephen Yeomans**, School of Metallurgy, University of New South Wales, Sydney, Australia (Online Mode) on April 11, 2023. Prof. Yeomans recognized expert on the characteristics and use of galvanized reinforcement. He has published widely in this area and presented numerous papers on galvanized reinforcement at international conferences and specialist seminars.



The corrosion of steel reinforcement in concrete is a worldwide problem that impacts the long-term durability and serviceability of concrete construction. Should reinforcement corrode, this may have serious consequences on the longevity and sustainability of concrete construction as well as its economic viability. While the provision of good-quality concrete is fundamental to ensuring adequate durability of concrete and primary protection of the reinforcement, the galvanizing of reinforcement (i.e., coating with zinc) provides additional corrosion protection to embedded steel in the event of a lack of durability of the concrete mass and where a long maintenance-free life is required.

In this lecture **Prof. Stephen Yeomans** has given a brief review of the characteristics and performance of galvanized coatings for concrete reinforcement. The focus was on the traditional hot-dip galvanizing (HDG) of steel reinforcement, for which there is an extensive record of laboratory-based research and field studies of existing structures, some well more than 50-60 years old. Also he discussed on the newer technology of the continuous galvanizing of reinforcement (CGR) that provides an improved economy and speed of production. Some brief comment was also made on the duplex coating of reinforcement in which a galvanized layer is over coated with an epoxy. He also discussed few case studies of historical applications of galvanised reinforcement and some recent installations of both hot dipped and continuously galvanised reinforcement.

CSIR-CBRI Lecture Series

58:53

Take control Pop out Chat People Raise React View Q&A Rooms Apps More Camera Mic Share Leave

Galvanized Steel Bars for Concrete Structures – Current Status and Future Developments

Dr Stephen Yeomans
Australia

CSIR – Central Building Research Institute
Roorkee, India
Lecture Series, April 2023

Stephen Yeomans (Guest)

Welcome by Director, CSIR-CBRI

CSIR-CBRI Lecture Series

01:16:21

Take control Pop out Chat People Raise React View Q&A Rooms Apps More Camera Mic Share Leave

CSIR-CBRI Expert Lecture, April 2023

Hot Dip Galvanized **Continuously Galvanized**
ASTM A767 - 85µm min. **ASTM A1094 - 50µm min.**

Eta (100% Zn) 70 DPN
 Zeta (94% Zn, 6% Fe) 180 DPN
 Delta 90% Zn, 10% Fe 245 DPN
 Gamma 75% Zn, 25% Fe 250 DPN
 Steel (100% Fe) 159 DPN

Eta layer 40-50µm
 Typically 120-150µm
 Pure zinc coating

50 µm

Minor additions of aluminium (0.2%) to the zinc bath in continuous galvanizing impedes the growth of both the delta and zeta phases resulting in the formation of an essentially pure zinc coating.

Stephen Yeomans (Guest)

SY

Stephen Yeomans (Guest)

RK 55

Technical Session by Prof. Stephen Yeomans