



Engineering Sciences Section – 2005

C36 Detecting Liquid Metal Embrittlement Cracking of Galvanized Structural Steel

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After attending this presentation, attendees will learn the basics of Liquid Metal Embrittlement; and learn what non-destructive examination methods that can be applied to the detection of LME.

Liquid Metal Embrittlement (LME), or Liquid Metal Assisted Cracking (LMAC), as it is known in the UK, is a rare but potentially catastrophic mode of failure. The forensic community will become aware of this mode of failure. It has been postulated that terrorists may utilize other liquid metals to cause catastrophic failure of bridges and structures. This presentation will impact the forensic community and/or humanity by educating the forensic community to the damages and methods of detecting Liquid Metal Embrittlement cracking.

The author presents causes, problems, and recommendations for reducing and detection of galvanization related cracking of post hot dipped welds and base materials. LME: Liquid Metal Embrittlement causes and remedies are outlined. Post hot dipped welding problems and solutions are reviewed. The author will discuss the problem in the North America and the UK. Current, traditional and future nondestructive inspection technologies are compared including: Visual, Magnetic Particle, Ultrasonics, manual and automated Shear Wave, and Phased Array UT, Eddy current and ACFM Alternating Current Field Measurement are profiled.

Liquid Metal Embrittlement, Non-Destructive Examination, Structures