



MISCONCEPTIONS

Miss Conception puts it "straight"

"Miss Conception" rectifies incorrect impressions concerning hot dip galvanizing.

Hot dip galvanizing of high strength fasteners is not recommended, due to the propensity for fracture as a result of hydrogen embrittlement.

True or false?

Provided that correct procedures are maintained by the hot dip galvanizer, the possibility of fracture during service of galvanized fasteners; even up to grade 12.9, is highly remote.

The same cannot be said in the case of electro deposition; (zinc electroplating), where hydrogen in nascent form can be absorbed by the steel, not only during acid cleaning but also by way of the actual electroplating mechanisms. This applies particularly to high strength steels. In contrast, the hot dip galvanizing process after acid cleaning has the opposite effect in that hydrogen which may have been absorbed during acid cleaning is normally diffused from the steel at the molten zinc temperature which for fasteners is best maintained at 440°C.

Meanwhile, an approved hot dip galvanizer of threaded articles and other small components will ensure that, as an added precaution, acid cleaning is undertaken in acid containing an inhibitor while the immersion cycle in acid is kept as short as possible.

There is another phenomenon frequently confused with hydrogen embrittlement and this is strain – age embrittlement. Strain ageing can occur in the case of hot dip galvanized fasteners under tension if surface defects in the underlying steel are excessive. This is because micro cracks in the extremely hard Fe/Zn alloy layers of the coating may propagate into the steel itself if situated over a steel surface stress raising defect.

It must be emphasised that embrittlement problems in hot dip galvanized material can be avoided if the coating is applied by a technically experienced and approved hot dip galvanizer.

For further information concerning the benefits obtained by hot dip galvanizing and the measures to be taken to avoid embrittlement, refer to *Walter's Corner* – "The Hot Dip Galvanizing of Threaded Articles" which appears in this issue. 📧

FEATURES 2008

In order to streamline production of the magazine, while still ensuring the contents remain interesting and topical, only a few preferred features have been retained. In addition to the regular articles including: Case History; Coating Report; Galvanizing Failures; Misconceptions, etc. the magazine will from time to time highlight other interesting articles.

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