



Liquid Penetrant Testing Classroom Training Book second edition

Errata – 1st printing 04/19

The following text correction pertains to the second edition of *Liquid Penetrant Testing Classroom Training Book*. Subsequent printings of the document will incorporate the corrections into the published text.

The attached corrected page applies to the first printing 04/19. In order to verify the print run of your book, refer to the copyright page. Ebooks are updated as corrections are found.

Page	Correction
78	In the last sentence, the unit of measurement should be $\mu\text{W}/\text{cm}^2$.

18 in. (46 cm) from the surface. Sandblasting continues until a uniform matte surface is obtained. It is the sandblasted surface that is used in performing tests.

Preparation for Use

Before use, the panels are cleaned by degreasing, heated to 160 °F (71 °C), and then allowed to cool to room temperature in a dry area.

Low Cycle Fatigue Blocks

Titanium or nickel-chromium-iron (NiCrFe) plates are commonly used to manufacture standards with low cycle fatigue (LCF) block cracks in various size ranges. The cracks are started from electrical discharge machined notches or spot welds, which are later ground away after the starter cracks are grown. Tensile stressing or reverse bending of the plates achieves additional crack length extension. Titanium or nickel-chromium-iron plates are commonly sold in a set of three plates, with a total of 18 possible cracks in the set.

LCF blocks are used like other known discontinuity standards, except that the total number of detected cracks per inspection of the plate set is recorded and monitored in a running summary per procedure supplied with the plates. When fewer cracks are detected, the technician is warned that something has shifted in the process capability, or that the cracks have been improperly cleaned.

LCF blocks are cleaned and stored in acetone or equivalent solvent, or in a foam form made for them, as long as they are cleaned with alcohol or acetone before and after each use. LCF blocks can also be returned to the manufacturer for extensive cleaning, if necessary.

Liquid Penetrant Material Tests

The in-service quality of the materials used in PT is determined by a check of sensitivity, water content, contamination, and washability. The tendency toward fading of the penetrant dyes is also checked by a simple comparison test. The tests described as follows are typical of those performed on used or questionable penetrants. These tests should be performed by qualified laboratory technicians.

Sensitivity Comparison Test

When performing a sensitivity comparison test, the penetrant is applied to one-half of the reference block, and the reference or control penetrant is applied to the remaining half. The processing used, including dwell time, emulsification or removal, and developing, is recommended by the penetrant manufacturer.

The indications are then visually compared under the appropriate lighting (normal or white light for visible dye penetrant indications and UV radiation for fluorescent indications). If a noticeable difference exists in the sensitivity or intensity of indications (as determined by visual observation), the penetrant is discarded. Likewise, if the penetrant shows evidence of contamination from dirt, it is discarded.

For the visual testing (VT) of fluorescent indications, the UV radiation source must have an intensity of at least 1000 $\mu\text{W}/\text{cm}^2$ at the test surface.