

The New Version of NACE MR0103

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Q: How do the requirements in this International Organization for Standards (ISO) document differ from those in the previous version?

A: Following in the footsteps of MR0175/ISO 15156, MR0103/ISO 17945 was released in 2016. This new version replaced the 2012 version of MR0103. Too many small changes to the wording were made to comprehensively describe in one column; however, a brief overview of key changes is provided here.

Some of the most visible changes were to the format of the document; the numbering and layout conventions were changed to conform to ISO style. Several sections were added to the beginning of the ISO version, including normative references, terms and definitions, and symbols and abbreviated terms. As a result, paragraph numbers from the previous MR0103 will not reference the same clauses in the ISO version.

Most of the technical requirements (environmental conditions, hardness, composition, heat treatment, microstructure, etc.) of MR0103-2012 have been transferred over to MR0103/ISO 17945 without change. Two major exceptions are Appendices C and D of MR0103-2012. Non-mandatory Appendix D, Duplex Stainless Steel Welding Consideration, was dropped from the standard entirely in the ISO version. Mandatory Appendix C (Annex C in the ISO version), which deals with welding procedure qualification hardness survey layouts, has been extensively rewritten as outlined below.

A clause was added to Annex C in MR0103/ISO 17945 to address when temper bead technique is used for weld qualifications. This clause directs the user to the hardness testing survey requirements for temper-bead qualifications described in ASME [American Society of Mechanical Engineers] Boiler & Pressure Vessel Code Section IX.

The hardness survey line locations and indentation locations have been changed for all the figures in Annex C, placing a greater emphasis on the heat-affected zone (HAZ) and weld metal immediately adjacent to the fusion line on the toes of the weld at both the cap and the root.

In addition to changes in the location and number of indentations required for butt, fillet and overlay weld qualification hardness surveys, MR0103/ISO 17945 Annex C also added a figure for partial penetration welds and a figure for special repair weld qualifications that may be used when deemed necessary.

MR0103/ISO 17945 Annex C makes an allowance for hardness surveys performed on prior welding procedure qualifications. MR0103/ISO 17945 allows hardness surveys performed in accordance with MR0175/ISO 15156 before 2009 for carbon steel and before 2011 for all other materials requiring hardness surveys. Hardness surveys performed in accordance with MR0103 or NACE SP0472 prior to the release of MR0103/ISO 17945 also do not have to be redone.

In summary, users of MR0103/ISO 17945 will find that the technical requirements remain largely unchanged, but documentation may need to be updated to reflect the new paragraph numbers. Existing weld procedure qualification hardness surveys can be used without modification but new hardness surveys will need to follow the new hardness survey figures in Annex C. Please refer to the standards for more detailed review of the modifications.

Nicholas Rohrdanz is a materials engineering specialist at Emerson for Fisher products (www.fisher.com). Reach him at nicholas.rohrdanz@emerson.com