ISO 3690:2018 (E)

Welding and allied processes — Determination of hydrogen content in arc weld metal

Contents

Foreword

1 Scope

2 Normative references

3 Terms and definitions

4 Principle

5 Test procedures

5.1 Production of weld specimens
5.1.1 Summary
5.1.2 Welding fixture
5.1.3 Test piece assemblies
5.1.4 Welding and test piece storage
5.1.5 Recording of data
5.2 Welding procedures for the production of weld specimens
5.2.1 Summary
5.2.2 Manual metal arc welding
5.2.2.1 Electrodes
5.2.2.2 Making the test welds
5.2.2.3 Recording of welding data and results report form
5.2.3 Submerged arc welding
5.2.3.1 Electrode wire
5.2.3.2 Flux
5.2.3.3 Making the test welds
5.2.3.4 Recording of welding data and results report form
5.2.4 Tubular cored electrode with or without gas shield and wire electrode with gas shield
5.2.4.1 Filler material
5.2.4.2 Shielding gas
5.2.4.3 Making the test welds
5.2.4.4 Recording of welding data and results report form
5.3 Measurement of hydrogen in the test weld
5.3.1 General
5.3.2 Displacement of mercury method
5.3.2.1 Preparation of gas burette
5.3.2.2 Test piece cleaning and handling
5.3.2.3 Test piece loading
5.3.2.4 Analytical procedure
5.3.3 Thermal conductivity detector method
5.3.3.1 General
5.3.3.2 Test piece cleaning and handling
5.3.3.3 Test piece loading
5.3.3.4 Measurement method by hot carrier gas extraction
5.3.3.5 Measurement method for collection and subsequent measurement of hydrogen
5.3.4 Calibration
5.3.5 Linearity
5.3.6 Calculation and expression of results
5.3.6.1 Diffusible hydrogen in deposited metal, HD
5.3.6.2 Diffusible hydrogen in fused weld metal, HF
5.3.7 Reporting of results
5.4 Measurement of total hydrogen content in the weld metal — Rapid methods

5.5 Rounding procedure

Annex A (informative) Recommendations and restrictions in regard to older methods of measurement using mercury

Annex B (informative) Recommendations and restrictions in regard to older methods of measurement using glycerine

Annex C (informative) Accuracy and reproducibility

C.1 General
C.2 Accuracy
C.3 Reproducibility

Page count: 23