DIN EN ISO 18276:2024-12 (E)

Welding consumables - Tubular cored electrodes for gas-shielded and non-gas-shielded metal arc welding of high strength steels - Classification (ISO 18276:2024)

Contents

Page

European foreword ... **4**

Foreword ... **5**

Introduction ... **6**

1 Scope ... **7**

2 Normative references ... **7**

3 Terms and definitions ... **8**

4 Classification ... **8**
4.1 General ... 8
4.2 Classification systems ... 8
4.3 Compulsory and optional sections in classifications ... 9

5 Symbols and requirements ... **10**
5.1 Symbol for the product or process ... 10
5.2 Symbol for tensile properties of all-weld metal ... 10
5.3 Symbol for impact properties of all-weld metal ... 11
5.4 Symbol for chemical composition of all-weld metal ... 12
5.5 Symbol for type of electrode core – Classification by yield strength and 47 J impact energy – System A ... 16
5.6 Symbol for usability characteristics of the electrodes – Classification by tensile strength and 27 J impact energy – System B ... 16
5.7 Symbol for shielding gas ... 17
5.8 Symbol for welding position ... 17
5.9 Symbol for hydrogen content of deposited metal ... 17
5.10 Symbol for conditions of post-weld heat treatment ... 18
5.10.1 Classification by yield strength and 47 J impact energy – System A ... 18
5.10.2 Classification by tensile strength and 27 J impact energy – System B ... 18

6 Rounding procedure ... **18**

7 Mechanical tests ... **18**
7.1 General ... 18
7.2 Preheating and interpass temperatures ... 18
7.3 Pass sequence ... 19
7.4 Post-weld heat treatment (PWHT) condition ... 20
7.4.1 Classification by yield strength and 47 J impact energy – System A ... 20
7.4.2 Classification by tensile strength and 27 J impact energy – System B ... 20

8 Chemical analysis ... **20**

9 Retesting ... **20**

10 Technical delivery conditions ... **21**

11 Examples of designations ... **21**
11.1 General ... 21
11.2 Example 1 - Classification by yield strength and 47 J impact energy – System A ... 21
11.3 Example 2 - Classification by tensile strength and 27 J impact energy – System B ... 21
11.4 Example 3 – Classification by yield strength and 47 J impact energy - System A ... 22
11.5 Example 4 – Classification by tensile strength and 27 J impact energy – System B ... 23

Annex A (informative) **Classification systems** **25**

Annex B (informative) **Description of composition designations for electrodes in the classification system based upon tensile strength and average impact energy of 27 J – System B** **28**

Annex C (informative) **Description of types of electrode core in the classification system based upon yield strength and average impact energy of 47 J – System A** **29**

Annex D (informative) **Descriptions of types of usability characteristics in the classification system based upon tensile strength and average impact energy of 27 J – System B** **30**

Annex E (informative) **Notes on hydrogen content** **32**

Bibliography **33**