

E6012 electrodes. They are also suitable for making groove welds because of their concave weld face and easily removable slag. In addition, the weld metal is definitely freer of slag and oxide inclusions than E6012 weld metal and exhibits better soundness. Welds with the smaller diameter E6013 electrodes often meet the Grade 1 radiographic requirements of this specification.

A7.4.4 E6013 electrodes usually cannot withstand the high amperages that can be used with E6012 electrodes in the flat and horizontal welding positions. Amperages in the vertical and overhead positions, however, are similar to those used with E6012 electrodes.

A7.5 E7014 Classification

A7.5.1 E7014 electrode coverings are similar to those of E6012 and E6013 electrodes, but with the addition of iron powder for obtaining higher deposition efficiency. The covering thickness and the amount of iron powder in E7014 are less than in E7024 electrodes (see A7.10).

A7.5.2 The iron powder also permits the use of higher amperages than are used for E6012 and E6013 electrodes. The amount and character of the slag permit E7014 electrodes to be used in all positions.

A7.5.3 The E7014 electrodes are suitable for welding carbon and low alloy steels. Typical weld beads are smooth with fine ripples. Joint penetration is approximately the same as that obtained with E6012 electrodes (see 7.3.1), which is advantageous when welding over a wide root opening due to poor fit. The face of fillet welds tends to be flat to slightly convex. The slag is easy to remove. In many cases, it removes itself.

A7.6 Low Hydrogen Electrodes

A7.6.1 Electrodes of the low hydrogen classifications (E7015, E7016, E7018, E7018M, E7028, and E7048) are made with inorganic coverings that contain minimal moisture. The covering moisture test, as specified in Section 15, Moisture Test, converts hydrogen-bearing compounds in any form in the covering into water vapor that is collected and weighed. The test thus assesses the potential hydrogen available from an electrode covering. All low hydrogen electrodes, in the as-manufactured condi-

tion or after conditioning, are expected to meet a maximum covering moisture limit of 0.6% or less, as required in Table 10.

A7.6.2 The potential for diffusible hydrogen in the weld metal can be assessed more directly, but less conveniently, by the diffusible hydrogen test, as specified in Section 17, Diffusible Hydrogen Test. The results of this test, using electrodes in the as-manufactured condition or after conditioning, permit the addition of an optional supplemental diffusible hydrogen designator to the classification designation according to Table 11. See also A9.2 in this Appendix.

A7.6.3 In order to maintain low hydrogen electrodes with minimal moisture in their coverings, these electrodes should be stored and handled with considerable care. Electrodes which have been exposed to humidity may absorb considerable moisture and their low hydrogen character may be lost. Then conditioning can restore their low hydrogen character. See Table A2.

A7.6.4 Low hydrogen electrode coverings can be designed to resist moisture absorption for a considerable time in a humid environment. The absorbed moisture test (see Section 16, Absorbed Moisture Test), assesses this characteristic by determining the covering moisture after nine hours exposure to 80°F (27°C), 80% relative humidity air. If, after this exposure, the covering moisture does not exceed 0.4%, then the optional supplemental designator, "R", may be added to the electrode classification designation, as specified in Table 10. See also A9.3 in this Appendix.

A7.6.5 E7015 Classification

A7.6.5.1 E7015 electrodes are low hydrogen electrodes to be used with dcep (electrode positive). The slag is chemically basic.

A7.6.5.2 E7015 electrodes are commonly used for making small welds on thick base metal, since the welds are less susceptible to cracking (see A6.13.4). They are also used for welding high sulphur and enameling steels. Welds made with E7015 electrodes on high sulphur steels may produce a very tight slag and a very rough or irregular bead appearance in comparison to welds with the same electrodes in steels of normal sulphur content.