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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

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ISO RECOMMENDATION
R 876

SPECIAL METHOD OF MECHANICAL TESTING
TO DETERMINE THE CODING FOR DEEP PENETRATION ELECTRODES

1st EDITION
November 1968

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BRIEF HISTORY

The ISO Recommendation R 876, *Special method of mechanical testing to determine the coding for deep penetration electrodes,* was drawn up by Technical Committee ISO/TC 44, *Welding,* the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1961 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In October 1966, this Draft ISO Recommendation (No. 1040) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Greece	Romania
Australia	India	South Africa, Rep. of
Belgium	Ireland	Spain
Brazil	Israel	Sweden
Canada	Japan	Switzerland
Czechoslovakia	Korea, Rep. of	Turkey
Denmark	Netherlands	U.A.R.
Finland	New Zealand	United Kingdom
France	Norway	U.S.S.R.
Germany	Portugal	Yugoslavia

One Member Body opposed the approval of the Draft :

U.S.A.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in November 1968, to accept it as an ISO RECOMMENDATION.

FOREWORD

This ISO Recommendation is one of a series which also includes the following :

ISO/R 635, *Code of symbols for covered electrodes for arc welding of mild steels and low alloy high tensile steels;*

ISO/R 615, *Methods for determining the mechanical properties of the weld metal deposited by electrodes 3.15 mm or more in diameter;*

ISO/R 632, *Methods of test for determining whether an electrode is a deep penetration electrode.*

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ISO Recommendation R 876 November 1968

SPECIAL METHOD OF MECHANICAL TESTING TO DETERMINE THE CODING FOR DEEP PENETRATION ELECTRODES

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INTRODUCTION

Owing to the special applications of deep penetration electrodes, the method of depositing the weld metal differs from that in normal welding practice. Tests on welded joints are therefore necessary. The results obtained will not be comparable with those of all-weld tests with normal penetration electrodes, but they will nevertheless allow symbols to be allotted to the different types of deep penetration electrodes in accordance with ISO Recommendation R 635, *Code of symbols for covered electrodes for arc welding of mild steels and low alloy high tensile steels.*

1. SCOPE

This ISO Recommendation describes a special method of mechanical testing to determine the coding for deep penetration electrodes. The method consists of taking, from a welded assembly, tensile test pieces and V-notch test pieces for impact testing.

Because high tensile strength, deep penetration electrodes are very seldom made or used, it would have needlessly complicated ISO Recommendation R 635 to take such electrodes into account. Accordingly, only one type of steel has been specified for the parent metal.

2. TEST ASSEMBLY – QUALITY AND DIMENSIONS

The test assembly for mechanical testing should consist of two plates each of minimum dimensions 150 mm × 400 mm (see Fig. 1). The thickness should be 12 mm in order to ensure that impact test pieces can be machined out, and the gap e between the edges should be not more than 1.5 mm. The parent metal should be a mild steel, killed or semi-killed, with a tensile strength between 42 and 50 kgf/mm^2 in the as-rolled condition, and should meet the following requirements for chemical composition :

Carbon	$\leqslant$ 0.18 %
Sulphur	$\leqslant$ 0.04 %
Phosphorus	$\leqslant$ 0.04 %

3. WELDING PROCEDURE

Electrodes of 4 or 5 mm diameter should be used for welding.

The type of current (a.c. or d.c.) and, for a.c., the values of the open circuit voltage which are to be adopted should be in agreement with the recommendations of the electrode manufacturer. The handling conditions, current value and welding speed used should make adequate interpenetration of the two runs possible. Each side should be welded in the flat position.

There should be no cooling interval between the deposition of individual electrodes on any one side of the joint. Between the completion of the deposition of the full run on one side of the joint and the beginning of the other run on the reverse side of the joint, the test assembly should be allowed to cool in still air to a temperature not exceeding 100 °C.