INTERNATIONAL STANDARD 1880

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Instruments for the measurement of surface roughness by the profile method — Contact (stylus) instruments of profile transformation — Profile recording instruments

Instruments de mesurage de la rugosité des surfaces par la méthode du profil — Instruments (à palpeur) avec contact à transformation progressive du profil — Enregistreurs de profil

First edition — 1974-08-15

UDC 62-408 : 621.7.015 + 621.9.015 : 681.2 **Ref. No. ISO 1880-1974 (E)**

Descriptors : measuring instruments, surface condition, roughness, vocabulary.

Price based on 2 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 57 has reviewed ISO Recommendation R 1880 and found it suitable for transformation. International Standard ISO 1880 therefore replaces ISO Recommendation R 1880-1970.

ISO Recommendation R 1880 was approved by the Member Bodies of the following countries :

Austria	Hungary	Portugal
Belgium	India	Romania
Canada	Israel	South Africa, Rep. of
Chile	Italy	Sweden
Czechoslovakia	Japan	Switzerland
Denmark	Norway	United Kingdom
Egypt, Arab Rep. of	New Zealand	U.S.A.
Germany	Peru	U.S.S.R.
Greece	Poland	

The Member Bodies of the following countries expressed disapproval of the Recommendation on technical grounds :

- Australia
- France

The Member Bodies of the following countries disapproved the transformation of ISO/R 1880 into an International Standard :

- France
- United Kingdom

Printed in Switzerland

Instruments for the measurement of surface roughness by the profile method — Contact (stylus) instruments of profile transformation — Profile recording instruments

1 SCOPE AND FIELD OF APPLICATION

This International Standard relates to contact profile recording instruments used for the measurement of surface roughness. It specifies

— the basic terms, definitions and symbols relating to profile recording instruments;

— the main parameters of these instruments and their numerical values;

— the standards of accuracy for profile recording instruments (admissible values for errors of vertical and horizontal magnifications, deviations of the tip radius of the stylus and stylus angle).

2 TERMS AND DEFINITIONS

2.1 profile recording instrument : An instrument recording the coordinates of the profile of the surface.

2.2 vertical magnification of a profile recording instrument (V_v) : The scale of transformation of the profile coordinates, by the profile recording instrument, in the direction of stylus displacement normal to the surface.

2.3 horizontal magnification of a profile recording instrument (V_h) : The scale of transformation of the profile coordinates, by the profile recording instrument, in the direction of stylus displacement along the surface.

NOTE — (Definitions 2.2 and 2.3.) By "scale of transformation" is meant the relationship between the recorded quantity and the displacement of the stylus in the relevant direction. In the case of a profile graph it is therefore the ratio of the movement of a pen or a carrier to that of the stylus in the relevant direction.

2.4 relative error of vertical magnification of a profile recording instrument (δ_v) : The difference between the real and the nominal values of the vertical magnification of a profile recording instrument, referred to the nominal value and expressed as a percentage.

2.5 relative error of horizontal magnification of a profile recording instrument (δ_h): The difference between the real and the nominal values of horizontal magnification of a profile recording instrument, referred to the nominal value and expressed as a percentage.

2.6 recording traversing length : The maximum recording movement of the stylus along the surface, as permitted by the construction of the instrument.

2.7 static measuring force of a contact profile recording instrument : The force which the stylus exerts on the examined surface, without taking into account the dynamic components arising in the process of traversing the surface by a stylus.

2.8 rate of change of measuring force of a contact profile recorder : The change, per unit displacement, of the static measuring force acting on the stylus along its axis.

Definitions of the terms "surface roughness" and "irregularities" used in this International Standard are given in ISO/R 468, *Surface roughness.*

Definitions of the terms "instrument for the measurement of surface roughness by the profile method" and "contact (stylus) instrument of progressive transformation of a profile" are given in ISO 1879, *Instruments for the measurement of surface roughness by the profile method — Vocabulary.*

3 BASIC PARAMETERS

3.1 Stylus tip radius

The nominal value of the tip radius of the stylus shall be selected from the following series :

2 μm 5 μm 10 μm

3.2 Included angle of the stylus

The nominal value of the included angle of the stylus shall be

1,05 rad (60°) or 1,57 rad (90°)