AEROSPACE STANDARD

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Superseding AS291E

Surface Texture, Roughness, Waviness and Lay

RATIONALE

This noncurrent standard has been stabilized.

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1. SCOPE:

   This standard provides a method of applying surface roughness, waviness and lay control. The data included herein also covers the method of applying surface roughness symbols and related designations to drawings and specifications of parts when applicable. This standard is based on the Arithmetical Average (AA) method of instrumentation. Data compiled are based on current manufacturing practices. It also includes a summary of data published in the latest issue of the American Standards Association publication ASA B46.1.

2. SURFACE CHARACTERISTICS:

   The following illustration depicts the terminology of the various elements involved in surface roughness control.

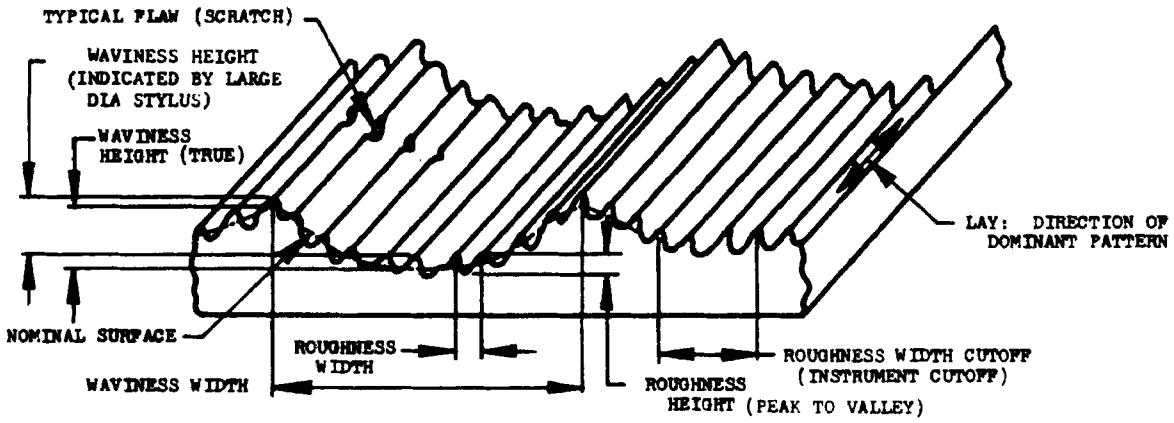

FIGURE 1

2.1 Definitions:

2.1.1 Surface: The individual surface of a part is that area which continues uninterrupted until it adjoins a fillet, corner, or another individual surface.

2.1.2 Nominal Surface: The imaginary true surface which would result if all surface irregularities (peaks, waves, ridges and hollows) were leveled off to zero value; or, non-existent. It is this nominal surface or "mean line" from which the surface irregularities deviate.

2.1.3 Surface Irregularities: Deviations from the nominal surface, as follows:

2.1.3.1 Roughness: Relatively finely spaced irregularities; the height, width, shape and direction of which, establish the predominant surface pattern.

2.1.3.2 Waviness: Irregularities of the nominal surface evidenced by recurrent forms of waves. Waviness may be caused by factors such as machining deflections, vibration, heat treatment, or warping strains (See Fig. 1)

2.1.3.3 Flaws: Irregularities of any sort which occur at only one place or at relatively infrequent and widely varying random intervals on a surface. A flaw may be a scratch, ridge, hole, peak, crack, check, etc. Unless otherwise specified, the effect of flaws shall not be included in the roughness height measurement.

2.1.4 Roughness Height Rating: Roughness height rating is a height rating of surface roughness over a length equal to the roughness width cutoff obtained by averaging the microinch deviations from the nominal surface. This method is described in paragraph 2.1.4.5.

2.1.4.1 Roughness Width: The distance in inches between successive ridges which constitute the predominant pattern of the surface roughness.

2.1.4.2 Roughness Width Cutoff (Instrument Cutoff): The unit length in inches over which the irregularities of the surface profile are to be averaged. The roughness width cutoff must always be greater than the roughness width in order to obtain a true roughness height rating.

2.1.4.3 Microinch (Mu In.): One millionth (0.000001) part of the U.S. Standard linear inch.

2.1.4.4 Contact Area: The designated surface required to contact a mating surface within the limits specified. The contact area shall be distributed uniformly over the surface.