



# **EAC**

# **No. 139-46**

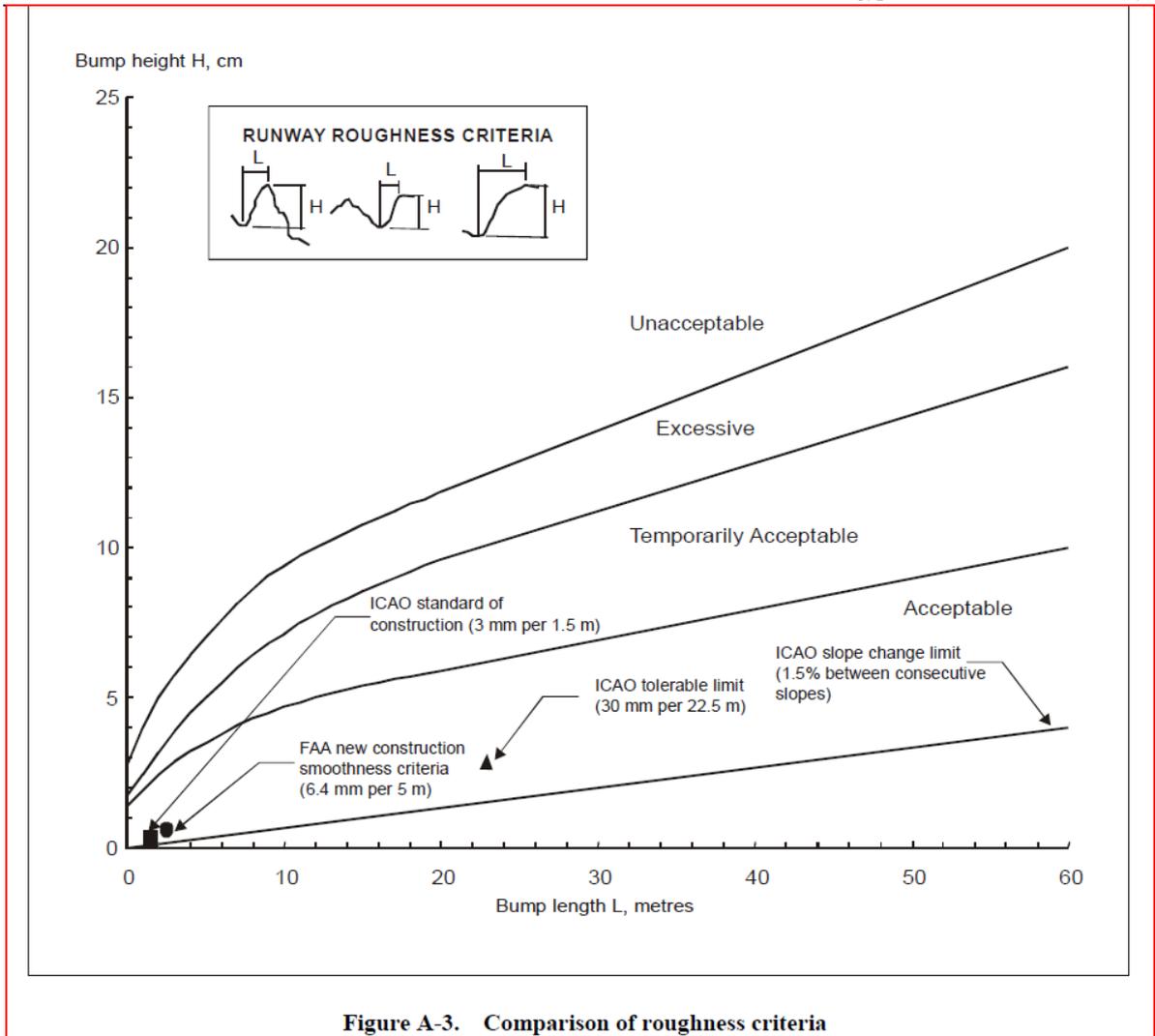
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**Assessing THE surface**  
**FRICION CHARACTERISTICS OF slush , .... COVERED PAVED SURFACES**

1. There is an operational need for reliable and uniform information concerning the surface condition of contaminated runways. Contaminant type, distribution and for loose contaminants, depth are assessed for each third of the runway. An indication of surface friction characteristics is helpful in conducting runway condition assessment. It can be obtained by friction measuring devices; however, there is no international consensus on the ability to correlate the results obtained by such equipment directly with aircraft performance. However, for contaminants such as slush, contaminant drag on the equipment's measuring wheel, amongst other factors, may cause readings obtained in these conditions to be unreliable.
  
2. Any friction measuring device intended predict aircraft braking performance according to an agreed local operational procedure should be shown to correlate such performance in a manner acceptable to the State. Information on the practice of one State providing correlation directly with aircraft braking performance can be found in Appendix A of Assessment, Measurement and Reporting of Runway Surface Conditions (ICAO Cir 329)
  
3. The friction conditions of a runway can be assessed in descriptive terms of "estimated surface friction". The estimated surface friction is categorized as good, medium to good, medium, medium to poor, and poor, and promulgated in ECAR 173, format as well as in PANS-ATM, Chapter 12.3-ATC phraseologies.



4. The table below with associated descriptive terms was developed from friction data collected should not therefore be taken to be absolute values applicable in all conditions. If the surface is affected by( slush,...) and the estimated surface friction is reported as “good”, pilots should not expect to find conditions as good as on a clean dry runway (where the available friction may well be greater than that needed in any case). The value “good” is a comparative value and is intended to mean that aeroplanes should not experience directional control or braking difficulties, especially when landing. The figures in the “Measured Coefficient  $\mu$ ” column are given as an indication. At each aerodrome a specific table can be developed according to the measuring device used on the aerodrome and according to the standard and correlation criteria set or agreed by ECAA. The  $\mu$  values given will be specific to each friction measuring device as well as to the surface being measured and the speed employed. For more information refer to EAC139-19

<i>Measured coefficient <math>\mu</math></i>	<i>Estimated surface friction</i>	<i>Code</i>
0.40 and above	Good	5
0.39 to 0.36	Medium to good	4
0.35 to 0.30	Medium	3
0.29 to 0.26	Medium to poor	2
0.25 and below	Poor	1

5. Relating braking action to friction measurements has been elusive over the years. The main reason is that the industry to date has not achieved the ability to control the total uncertainty associated with the readings from these devices. Consequently, readings from a friction measuring device should only be used as part of an overall runway condition assessment. A major difference between the decelerometer type of devices and the other types is that when using the decelerometer type the operator is an integrated part of the measuring process. In addition to carrying out the measurement, the operator can feel the behavior of the vehicle where the decelerometer is installed and by that feel the deceleration process. This gives additional information in the total assessment process.

6. It has been found necessary to provide assessed surface condition information, including estimated surface friction, for each third of a runway. The thirds are called A, B and C. For the purpose of reporting information to aeronautical service units, section A is always the section associated with the lower runway designation number. When giving landing information to a pilot before landing, the sections are however referred to as first, second or third part of the runway. The first part always means the first third of the runway as seen in the direction of landing. Assessments are made along two lines parallel to the runway, i.e. along a line on each side of the centre line approximately 3 m or that distance from the centre line at which most operations take place. The objective of the assessment is to determine the type, depth and coverage of the contaminants and their effect on estimated surface friction, given the prevailing weather conditions for sections A, B and C. In cases where a continuous friction measuring device is used, the mean values are obtained from the friction values recorded for each section. In cases where a spot measuring friction measuring device is used as part of the total assessment of estimated surface friction, each third of the runway should have a minimum of three tests carried out on it, where achievable. Information collected and assessed on the state of pavement surface is disseminated using forms (see EAC 139-19).

7. EAC 139-19 provides guidance on the uniform use of test equipment and other information on removal of surface contamination and improvement of friction conditions