# EAC

# No. 139-58

***The aircraft classification rating-pavement classification***
***Rating (ACR-PCR) method of reporting pavement strength.***

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Note: The aircraft classification rating-pavement classification Rating (ACR-PCR) method of reporting pavement strength. Applicable from 28/11/2024

# 1. THE ACN-PCN METHOD OF REPORTING PAVEMENT STRENGTH

## 1. Overload operations

1.1 Overloading of pavements can result either from loads too large, or from a substantially increased application rate, or both. Loads larger than the defined (design or evaluation) load shorten the design life, whilst smaller loads extend it. With the exception of massive overloading, pavements in their structural behaviour are not subject to a particular limiting load above which they suddenly or catastrophically fail. Behaviour is such that a pavement can sustain a definable load for an expected number of repetitions during its design life. As a result, occasional minor overloading is acceptable, when expedient, with only limited loss in pavement life expectancy and relatively small acceleration of pavement deterioration. For those operations in which magnitude of overload and/or the frequency of use do not justify a detailed analysis, the following criteria are suggested :

(a) For flexible pavements, occasional movements by aircraft with ACN not exceeding 10 per cent above the reported PCN should not adversely affect the pavement ;
(b) For rigid or composite pavements, in which a rigid pavement layer provides a primary element of the structure, occasional movements by aircraft with ACN not exceeding 5 per cent above the reported PCN should not adversely affect the pavement ;
(c) If the pavement structure is unknown, the 5 per cent limitation should apply; and
(d) The annual number of overload movements should not exceed approximately 5 per cent of the total annual aircraft movements.

1.2 Such overload movements should not normally be permitted on pavements exhibiting signs of distress or failure. Furthermore, overloading should be avoided during any periods of thaw following frost penetration, or when the strength of the pavement or its subgrade could be weakened by water. Where overload operations are conducted, the airport operator should review the relevant pavement condition regularly, and should also review the criteria for overload operations periodically since excessive repetition of overloads can cause severe shortening of pavement life or require major rehabilitation of pavement.

## 2. ACNs for several aircraft types

For convenience, several aircraft types currently in use have been evaluated on rigid and flexible pavements founded on the four subgrade strength categories in Subpart E, 139.307(f)(6)(ii) and the results tabulated in EAC 139-11.

## 2- The aircraft classification rating-pavement classification Rating (ACR-PCR) method of reporting pavement strength.

## Applicable from 28/11/2024

# 1. Overload operations

*1.1* Overloading of pavements can result either from loads too large, or from a substantially increased application rate, or both. Loads larger than the defined (design or evaluation) load shorten the design life, whilst smaller loads extend it. With the exception of massive overloading, pavements in their structural behaviour are not subject to a particular limiting load above which they suddenly or catastrophically fail. Behaviour is such that a pavement can sustain a definable load for an expected number of repetitions during its design life. As a result, occasional minor overloading is acceptable, when expedient, with only limited loss in pavement life expectancy and relatively small acceleration of pavement deterioration. For those operations in which magnitude of overload and/or the frequency of use do not justify a detailed analysis, the following criteria are suggested:

a) for flexible and rigid pavements, occasional movements by aircraft with ACR not exceeding 10 per cent above the reported PCR should not adversely affect the pavement; and

b) the annual number of overload movements should not exceed approximately 5 per cent of the total annual movements excluding light aircraft.

*1.2* Such overload movements should not normally be permitted on pavements exhibiting signs of distress or failure. Furthermore, overloading should be avoided during any periods of thaw following frost penetration, or when the strength of the pavement or its sub grade could be weakened by water. Where overload operations are conducted, the appropriate authority should review the relevant pavement condition regularly, and should also review the criteria for overload operations periodically since excessive repetition of overloads can cause severe shortening of pavement life or require major rehabilitation of pavement.

# 2. ACRs for several aircraft types

For convenience, a dedicated software is available on the ICAO website, for computing any aircraft ACRs at any mass on rigid and flexible pavements for the four standard subgrade strength categories detailed in Subpart E, 139.307.f(ii)