SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Technical Guidance Material
for the Calculation of the Pavement Classification Number (PCN) of a Runway Pavement Strength
Advisory Circular

Subject: TECHNICAL GUIDANCE MATERIAL FOR THE CALCULATION OF THE PCN OF RUNWAY PAVEMENT STRENGTH

Date: 25 FEBRUARY 2019

APPLICABILITY

This Technical Guidance Material (TGM) is applicable:

To all aerodromes which accommodate aircraft with a maximum take-off weight of more than 5700 ~~Kgs~~ *Kilograms*.

PURPOSE

1. The purpose of this document is to assist aerodrome authorities in the determination and reporting of the (PCN) bearing strength of runways.

2. This document is provided for information and guidance purposes. It also provides the format in which the strength of the ~~payment~~ *pavement* is to be submitted to the CAA in order to be published in the AIP.

REFERENCE AND REQUIREMENTS:

i. South African Civil Aviation Regulations Part 139.
ii. South African Technical Standards Part 139.
iii. ICAO- Annex 14 Volume I
iv. ICAO Doc 9157 AN/901 Part 3

1. ACN – PCN METHOD

1.	2.	3.	4.	5.
PCN no.	Type Pavement	K value or CBR range	Tyre pressure allowed	Evaluation method

Table 1: Reporting strength

For example: PCN 57/F/C/W/T

a) PCN no. = value

b) Type Pavement: F = flexible
R = rigid

c) Subgrade strength category :

Rigid pavements	K (MN/m³)	Range K-value (MN/m³) Representing
A = High strength	150	K > 120
B = Medium strength	80	60 < K < 120
C = Low strength	40	25 < K < 60
D = Ultra Low strength	20	K < 25

Table 2: Rigid Pavements

Flexible pavements	CBR Range	CBR representing
A = High strength	15	CBR > 13
B = Medium strength	10	8 < CBR < 13
C = Low strength	6	4 < CBR < 8
D = Ultra Low strength	3	CBR < 4

Table 3: Flexible Pavements

d) Tyre pressure allowed

W = High = No pressure limit
X = Medium = up to 1, 50 MPa
Y = Low = up to 1, 00 MPa
Z = Very Low = up to 0, 50 MPa

e) Evaluation method : T = technical
U = observed

2. OVERLOAD OPERATIONS

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.

d) The annual number of overload movements should not exceed approximately 5 per cent of the total annual aircraft movements.

e) Such overload movements should not normally be permitted on pavements exhibiting signs of distress or failure. Where overload operations are conducted, the appropriate authority should review the relevant pavement condition regularly, since excessive repetition of overloads can cause severe shortening of pavement life.

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