

ICAO - ACR - PAVEMENT RATING LEGACY BOEING AIRCRAFT

The ACR-PCR system follows ICAO Annex 14, Aerodromes, Volume I, "Aerodrome Design and Operations," Ninth Edition, July 2022, and guidance from ICAO Doc 9157-AN/901, Aerodrome Design Manual, Part 3, "Pavements," Third Edition, 2022, replacing the ACN/PCN system used throughout the world. ACR is the Aircraft Classification Rating and PCR is the Pavement Classification Rating. The ACR-PCR system allows an aircraft having an ACR equal to or less than the PCR to operate on the pavement subject to any limitation on the tire pressure. Numerically, the ACR is two times the derived single-wheel load expressed in hundreds of kilograms, where the derived single wheel load is defined as the load on a single tire inflated to 218 psi (1.5 MPa) that would have the same pavement requirements as the aircraft.

The method of pavement evaluation is left up to the airport with the results of their evaluation presented as follows:

PCN/ PCR	PAVEMENT TYPE	SUBGRADE CATEGORY	TIRE PRESSURE CATEGORY	EVALUATION METHOD
	R = Rigid	A = High	W = No Limit	T = Technical
	F = Flexible	B = Medium	X = To 254 psi (1.75 MPa)	U = Using Aircraft
		C = Low	Y = To 181 psi (1.25 MPa)	
		D = Ultra Low	Z = To 73 psi (0.5 MPa)	

ACR values at any mass on rigid and flexible pavements are calculated for the following four subgrade categories:

Code A - High strength; characterized by E = 200 MPa (29,008 psi) and representing all E values equal to or above 150 MPa, for rigid and flexible pavements.

Code B - Medium strength; characterized by E = 120 MPa (17,405 psi) and representing a range in E equal to or above 100 MPa and strictly less than 150 MPa, for rigid and flexible pavements.

Code C - Low strength; characterized by E = 80 MPa (11,603 psi) and representing a range in E equal to or above 60 MPa and strictly less than 100 MPa, for rigid and flexible pavements.

Code D - Ultra-low strength; characterized by E = 50 MPa (7,252 psi) and representing all E values strictly less than 60 MPa, for rigid and flexible pavements.

To determine the ACR of an aircraft on flexible or rigid pavement, both the aircraft gross weight and the subgrade strength category must be known. The following table provides ACR data in tabular format, where the numerical value of ACR is rounded to the nearest ten for reporting. If the ACR for an intermediate weight between maximum taxi weight and the minimum weight specified in the table is required, please refer to the Federal Aviation Administration "ICAO-ACR 1.4" program to calculate the ACR values for aircraft on flexible and rigid airport pavements." It is available for download at:

<https://www.airporttech.tc.faa.gov/Products/Airport-Safety-Papers-Publications/Airport-Safety-Detail/ICAO-ACR-14>

				ACR FOR FLEXIBLE PAVEMENT SUBGRADES				ACR FOR RIGID PAVEMENT SUBGRADES			
AIRCRAFT TYPE	MINIMUM WEIGHT MAXIMUM TAXI WEIGHT lb (kg)	LOAD ON ONE MAIN GEAR LEG (%)	TIRE PRESSURE psi (MPa)	HIGH (A) E = 200 MPa	MEDIUM (B) E = 120 MPa	LOW (C) E = 80 MPa	ULTRA LOW (D) E = 250 MPa	HIGH (A) E = 200 MPa	MEDIUM (B) E = 120 MPa	LOW (C) E = 80 MPa	ULTRA LOW (D) E = 250 MPa
707-320C	155,100 (70,352)	89.7	180 (1.24)	150	160	170	180	150	160	180	200
	336,000 (152,407)			340	380	450	600	410	480	540	610
717-200 (111K LB)	67,500 (30,617)	96.3	152 (1.05)	130	150	160	180	170	180	190	200
	111,000 (50,349)			230	260	290	340	310	330	340	350
717-200 (115K LB)	67,500 (30,617)	96.1	158 (1.09)	130	150	160	180	170	180	190	200
	115,000 (52,163)			240	270	310	360	330	350	360	370
717-200 (117K LB)	67,500 (30,617)	96	161 (1.11)	130	150	160	180	170	180	190	200
	117,000 (53,070)			240	280	320	370	340	350	370	380
717-200 (119K LB)	67,500 (30,617)	95.86	164 (1.13)	140	150	160	180	170	180	190	200
	119,000 (53,977)			250	280	320	380	340	360	370	390
717-200 (122K LB)	68,500 (31,071)	94.4	164 (1.13)	140	150	160	180	170	180	190	200
	122,000 (55,338)			250	290	330	380	350	370	380	390
727-200 (49x17 tires)	97,600 (44,271)	95.3	148 (1.02)	190	200	220	240	230	250	260	270
	173,000 (78,471)			340	390	440	500	460	490	510	540
727-200 (50x21 tires)	97,600 (44,271)	93	167 (1.15)	190	200	220	240	230	250	260	270
	210,000 (95,254)			430	490	560	640	590	620	640	660
737-100	62,000 (28,123)	91.89	157 (1.08)	120	120	130	140	140	150	150	160
	111,000 (50,349)			210	230	250	290	280	290	310	320
737-200	65,300 (29,620)	91.91	182 (1.25)	130	130	140	150	150	160	170	180
	128,600 (58,332)			260	280	310	350	340	360	380	390
737-300	72,540 (32,904)	90.85	201 (1.39)	150	150	160	170	180	190	190	200
	140,000 (63,503)			290	310	350	390	390	400	420	430
737-400	74,170 (33,642)	93.77	185 (1.28)	150	160	170	180	180	190	200	210
	150,500 (68,265)			320	350	390	450	430	450	460	480
737-500	69,030 (31,311)	92.24	194 (1.34)	140	140	150	160	170	180	180	190
	136,500 (61,915)			290	310	340	380	380	400	410	420
747-100	358,000 (162,386)	92.78	192 (1.32)	190	190	200	210	180	190	210	240
	753,000 (341,555)			400	430	480	620	460	540	610	680
747-200/-300	342,180 (155,210)	90.96	190 (1.31)	170	180	180	200	170	180	190	220
	836,000 (379,203)			430	470	540	720	510	610	680	770
747SP	325,660 (147,717)	87.68	205 (1.41)	160	160	170	180	160	170	180	200
	703,000 (318,875)			350	380	420	530	410	470	530	600
DC-8	171,000 (77,564)	95.5	182 (1.25)	180	190	210	240	190	210	230	270
	358,000 (162,386)			400	470	590	800	520	610	680	750

DC-9-15	70,000 (31,751)	92.4	130 (0.9)	120	140	160	180	160	180	190	200
	91,500 (41,504)			170	190	220	260	230	250	260	270
DC-9-21	70,000 (31,751)	94.3	143 (0.99)	130	150	160	180	170	180	190	200
	101,000 (45,813)			200	230	260	300	270	290	300	310
DC-9-32	70,000 (31,751)	92.4	155 (1.07)	130	150	160	180	170	180	190	200
	109,000 (49,442)			220	250	280	330	300	310	320	340
DC-9-41	70,000 (31,751)	93.3	160 (1.1)	140	150	160	180	170	180	190	200
	115,000 (52,163)			230	260	300	340	320	330	350	360
DC-9-51	70,000 (31,751)	93.94	172 (1.18)	140	150	160	180	180	190	200	210
	122,000 (55,338)			260	290	330	380	350	370	380	390
DC-10	240,000 (108,862)	92.6	195 (1.34)	250	260	260	280	240	260	280	320
	558,000 (253,105)			590	640	750	990	710	840	940	1050
MD-11	290,000 (131,542)	94.33	206 (1.42)	260	260	270	290	250	270	290	330
	633,000 (287,124)			570	610	690	900	670	780	880	990
MD-83	80,000 (36,287)	94.76	195 (1.34)	170	180	190	210	210	220	230	240
	161,000 (73,028)			360	410	460	530	490	510	530	540
MD-87	80,000 (36,287)	94.77	170 (1.17)	160	170	180	210	200	220	230	240
	141,000 (63,957)			300	340	380	440	410	430	440	460
MD-90-30	88,171 (39,994)	96.48	200 (1.38)	190	200	220	240	250	260	270	280
	157,000 (71,214)			360	410	460	530	490	510	520	540