

Environmental Eligibility Requirements for Powered Aircraft¹

Government of the Republic Regulation No. 225 of 7 July 2000

(RT² I 2000, 59, 384),

entered into force 20 July 2000.

This Regulation is established on the basis of subsection 15 (2) of the Aviation Act (RT I 1999, 26, 376).

Chapter 1

General Provisions

§ 1.

This Regulation provides the environmental eligibility requirements for powered aircraft used in civil aviation and the requirements for issue of certificates of environmental quality (form appended). Certificates of environmental quality declare powered aircraft to be environmentally eligible and permit their operation in civil aviation.

§ 2.

A powered aircraft is environmentally eligible if the exhaust gas contaminated emissions of power plants (emissions) and the noise level of the aircraft comply with the limit values of exhaust gas contaminated emissions established in Chapter 2 and noise level established in Chapter 3 of the Regulation.

§ 3.

The Civil Aviation Administration shall issue a certificate of environmental quality to a powered aircraft entered in the Republic of Estonia national civil aircraft register for five years, and the certificate is renewed at the request of the operator if the aircraft meets the environmental eligibility requirements.

§ 4.

The basis for issue or amendment of a certificate of environmental quality is documentation issued by the manufacturer or a competent aviation authority which confirms that the aircraft complies with the environmental eligibility standards and requirements of the International Civil Aviation Organisation (ICAO). The measurements which are the basis for compliance shall be carried out in laboratories accredited on the basis of the recommended standards EN 45001 or ISO 10000 according to the methods recognised by the ICAO.

§ 5.

The limit values of exhaust gas contaminated emissions and noise level shall be established with regard to the following aircraft:

- 1) subsonic jet aeroplanes;
- 2) propeller-driven aeroplanes;
- 3) helicopters.

§ 6.

The Civil Aviation Administration may make exceptions and not apply the limit values of exhaust gas contaminated emissions and noise level with regard to powered aircraft operated in the air space of the Republic of Estonia if these are:

- 1) aircraft of historic interest;
- 2) aircraft operated for non-profit purposes;
- 3) subsonic jet aeroplanes the required length of the runway of which with the maximum take-off weight is 610 meters or less;
- 4) aircraft which are designed for use in aerial work and acrobatic flights;
- 5) obligations assumed by international agreements.

§ 7.

In this Regulation, the following abbreviations are used:

- 1) EPNdB – the effective perceived noise level in decibels which takes into account the noise spectrum and the duration of noise;
- 2) SELdB – continuous sound level the duration of which is one second and during which the same amount of acoustic energy is released as during the whole noise event;
- 3) dB(A) – the unit of measurement of sound power level (noise level) if an A-weighting filter is used upon measurement;
- 4) F_{00} – the nominal power of power plants in kilo newtons – the maximum power which is permitted upon take-off of an aircraft in normal operating conditions;
- 5) π_{00} – the recommended pressure ratio of power plants which is determined in the course of testing.

Limit Values of Exhaust Gas Contaminated Emissions of Powered Aircraft

§ 8.

For certification, the following shall be measured in the exhaust gases of power plants of aircraft:

- 1) opacity (SN);
- 2) emission of hydrocarbon (CH);
- 3) emission of carbon monoxide (CO);
- 4) emission of nitrogen oxides (NO_x);

§ 9.

The exhaust gas contaminated emissions during the take-off and landing cycle (D_p) shall be measured in grams.

§ 10.

The opacity (SN) of exhaust gases measured in power plants of aircraft manufactured on 1 January 1983 or later shall not exceed the limit value calculated according to the following formula:

$$SN = 83.6(F_{oo})^{-0.274}$$

If the result of calculation is smaller than 50, it is deemed that SN = 50.

§ 11.

(1) The ratio of the results of measurement of exhaust gas contaminated emissions of power plants to the nominal power of power plants of aircraft which have been manufactured on 1 January 1986 or later and the nominal power of which is 26.7 kN or more shall not exceed the limit values calculated according to the formulas set out in the following subsections.

(2) Hydrocarbon (CH): $D_p/F_{oo} = 19.6$.

(3) Carbon monoxide (CO): $D_p/F_{oo} = 118.0$.

(4) In the case of nitrogen oxides (NO_x), the following shall be taken into account:

1) the type or model of a power plant the prototype of which has been manufactured before 31 December 1995 and the power plant itself before 31 December 1999:

$$D_p/F_{oo} = 40 + 2\pi_{oo};$$

2) the type or model of a power plant the prototype of which has been manufactured after 31 December 1995 and the power plant itself after 31 December 1999:

$$D_p/F_{oo} = 32 + 1.6\pi_{oo};$$

3) the type or model of a power plant the prototype of which is manufactured after 31 December 2003 and the pressure ratio of which is 30 or less if the maximum power is over 89 kN:

$$D_p/F_{oo} = 19 + 1.6\pi_{oo};$$

and if the maximum power is more than 26.7 kN but not over 89 kN

$$D_p/F_{oo} = 37.572 + 1.6\pi_{oo} - 0.2087/F_{oo};$$

4) the type or model of a power plant the prototype of which is manufactured after 31 December 2003 and the pressure ratio of which is more than 30 but less than 62.5 if the maximum power is over 89 kN

$$D_p/F_{oo} = 7 + 2.0\pi_{oo};$$

and if the maximum power is more than 26.7 kN but not over 89 kN

$$D_p/F_{oo} = 42.71 + 1.4286\pi_{oo} - 0.4013F_{oo} + 0.00642\pi_{oo} \cdot F_{oo};$$

5) the type or model of a power plant the prototype of which is manufactured after 31 December 2003 and the pressure ratio of which is 62.5 or more:

$$D_p/F_{oo} = 32 + 1.6\pi_{oo}$$

Chapter 3

Limit Values of Noise Level of Powered Aircraft

§ 12.

(1) Depending on the take-off weight of aircraft, the noise level of powered aircraft shall not exceed the limit values of noise level indicated in tables set out in the following subsections.

(2) Jet aeroplanes the prototype of which has been approved before 6 October 1977:

M – maximum take-off weight in thousands of kilograms			
M	0	34	272 or more
Noise level beside runway (EPNdB)	102	91.83 + 6.64 log M	108
Noise level upon approaching runway (EPNdB)	102	91.83 + 6.64 log M	108

Noise level during overflight (EPNdB)	93	67.56 + 16.61 log M	108
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(3) A jet aeroplane the prototype of which complies with subsection (2) of this section but the aeroplane has been altered and was certified on 26 November 1981 or later:

M – maximum take-off weight in thousands of kilograms									
M	0	34	35	48.3	66.72	133.45	280	325	400 or more
Noise level beside runway (EPNdB), all aircraft	97		83.87 + 8.51 log M						106
Noise level upon approaching runway (EPNdB), all aircraft	101		89.03+7.75 log M				108		
Noise level during overflight (EPNdB)	2 power plants	93			70.62+13.29 logM			104	
	3 power plants	93	67.56+16.61logM		73.62+13.29logM			107	
	4 power plants	93	67.56+16.61logM			74.62+13.29logM			108

(4) Jet aeroplanes the prototype of which has been approved on 6 October 1977 or later, propeller-driven aeroplanes with a take-off weight exceeding 5700 kg the prototype of which has been approved between 1 January 1986 and 17 November 1988, and propeller-driven aeroplanes with a take-off weight exceeding 9000 kg the prototype of which has been approved after 17 November 1988:

M – maximum take-off weight in thousands of kilograms										
M	0	20.2	28.6	35	48.1	280		385	400 or more	
Noise level beside runway upon total power (EPNdB), all aircraft	94		80.87+8.51logM						103	
Noise level upon approaching runway (EPNdB), all aircraft	98		86.03+7.75logM			105				
Noise level during overflight (EPNdB)	1 or 2 power plants	89				66.65+13.29logM			101	
	3 power plants	89		69.65+13.29logM				104		
	4 or	89	71.65+13.29logM					106		

	more power plants			
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(5) Propeller-driven aeroplanes with a take-off weight exceeding 5700 kg the prototype of which has been approved before 1 January 1985:

M – maximum take-off weight in thousands of kilograms				
M	5.7	34.0	358.9	384.7 or more
Noise level beside runway (EPNdB)	96	$85.83+6.64\log M$		103
Noise level upon approaching runway (EPNdB)	98	$87.83+6.64\log M$		105
Noise level during overflight (EPNdB)	89	$63.56+16.61\log M$	106	

(6) Propeller-driven aeroplanes with a take-off weight not exceeding 9000 kg the prototype of which has been approved before 17 November 1988:

M – maximum take-off weight in thousands of kilograms				
M	0	0.6	1.5	9.0
Noise level dB(A)	68	$60+13.33M$	80	

(7) Propeller-driven aeroplanes with a take-off weight not exceeding 9000 kg the prototype of which has been approved on 17 November 1988 or later:

M – maximum take-off weight in thousands of kilograms				
M	0	0.6	1.4	9.0
Noise level dB(A)	76	$82.23+32.67\log M$	88	

(8) Helicopters with a take-off weight not exceeding 2730 kg the prototype of which has been approved on 11 November 1993 or later:

M – maximum take-off weight in thousands of kilograms				
M	0	0.788	2.73	
Noise level SELdB	82	$83.03+9.97 \log M$		

(9) Helicopters the prototype of which has been approved on 1 January 1985 or later:

M – maximum take-off weight in thousands of kilograms				
M		0	0.788	80.0 or more

Take-off noise (EPNdB)	89	90.03+9.97 logM	109
Noise level upon approaching runway (EPNdB)	90	91.03+9.97 logM	110
Noise level during overflight (EPNdB)	88	89.03+9.97 logM	108

Chapter 4

Implementing Provision

§ 13.

As of 1 April 2002, subsonic jet aeroplanes with a maximum take-off weight of 34 000 kg or more which according to the type certificate have more than nineteen passenger seats shall comply with the limit values of noise level set out in subsection 12 (4).

¹ 1. 80/51/EEC (OJ No. L 018, 24.01.1980, p. 26); 83/206/EEC (OJ No. L 117, 4.05.1983, p. 15).

2. 89/629/EEC (OJ No. L 363, 13.12.1989, p. 27).

3. 92/14/EEC (OJ No. L 076, 23.03.1992, p. 21); 98/20/EC (OJ No. L 107, 07.04.1998, p. 4); 1999/28/EC (OJ No. L 118, 06.05.1999, p. 53).

² RT = *Riigi Teataja* = *State Gazette*

Annex to Government of the Republic Regulation No. 225 of 7 July 2000 “Environmental Eligibility Requirements for Powered Aircraft”

Õhusõiduki keskkonnakõlblikkuse sertifikaat nr

Certificate of Environmental Quality

Riiklik registreerimistunnus	Õhusõiduki valmistaja ja tüüp	Õhusõiduki seeria nr
<i>Nationality and Registration Marks</i>	<i>Manufacturer and Type of Aircraft</i>	<i>Aircraft Serial No.</i>
1. Sertifitseerimise nõuded:		
<i>Certification requirements</i>		
2. Sertifikaadi number õhusõiduki tüübi järgi:		

<i>Certification number by aircraft type</i>
3. Sertifikaat tõendab, et õhusõiduki:
<i>This is to certify that aircraft</i>
mootorid:
<i>with power plants</i>
propellerid:
<i>and with propellers</i>
suurim stardimass:
<i>at maximum take off weight</i>
suurim maandumismass:
<i>and maximum landing weight</i>
suurim müratase:
<i>has maximum noise level at</i>
ja heitgaaside saasteainete heitkogused on:
<i>and its exhaust gas contaminated emissions are</i>
<u>Märkused:</u>
<i>Remarks</i>
<u>Lisatingimused:</u>
<i>Additional requirements</i>
Väljaandmise kuupäev:
<i>Date of issue</i>
Kehtivusaeg:

Valid until

Väljaandja, ametiisik, allkiri:

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