GUIDANCE TO SHIPPERS AND STATES ON NORMAL AND EMERGENCY FLIGHT CONDITIONS WITH RESPECT TO DIFFERENTIAL PRESSURE

1. The normal conditions of flight and the emergency flight conditions are defined in ISO Standard 11242 as follows:

   a) **Normal flight conditions:** Flight conditions with cabin/cargo compartment pressure decreasing from standard sea level 100 kPa to minimum cruise flight cabin altitude pressure 75 kPa (8000 ft) during climb at minimum rate of 150 Pa/s (2500 ft/min), and increasing back to standard sea level during descent, at minimum rate of 90 Pa/s (1500 ft/min). Some cargo-only aircraft are designed and operated such that the cargo compartment is not pressurized during flight. For these type of aircraft the normal rate of pressure change experienced by the cargo is the actual rate of aircraft climb and descent which is expected to be greater than the "normal" pressure change provided in the ISO standard 11242.

   b) **Emergency (rapid decompression) flight conditions:** Cabin/cargo compartment atmosphere dropping linearly from a minimum normal equivalent altitude of 6000 ft, i.e. a maximum normal pressure of 81 kPa in cruise flight, to the standard ambient pressure of 15 kPa at 45000 ft altitude in a duration of 1 s.

2. The maximum normal operating pressure (MNOP) is at least the gauge pressure developed in the containment system of the package at 55°C (primary receptacle, or intermediate packaging or outer packaging), i.e. the absolute pressure developed in the package at 55°C less 100 kPa.

3. The differential pressure of MNOP + 95 kPa results from a consideration of aircraft depressurization at a maximum civil aviation flight altitude together with any pressure already inside the package, plus a safety margin.

4. In order to comply with Part 6, 7.2.3, means of demonstration other than pressure resistance may be used by the designer of a package design in the particular case of solid material.

5. If "no loss or dispersal" can be justified when the package is exposed to pressure differential the package design is considered to meet the requirement even if the internal pressure is not maintained.

6. *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material* (2018 edition), Safety Standard Series No. SSG-26 (Rev.1), paragraph 621.3 states:

> If, within the definition of MNOP, the phrase "conditions of temperature and solar radiation corresponding to environmental conditions" is interpreted to include consideration of conditions specific to air transport (para. 620), then the MNOP does provide a suitable basis for specifying this requirement. If the temperature range given in para. 620 (–40°C to 55°C) is used, self-heating of the package contents is taken into account and the solar radiation input is considered to be zero, as the package is inside an aircraft, and hence the MNOP is consistent with the ICAO approach.

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