

Attachment 19

EXCEPTED AND LIMITED QUANTITIES

A19.1. Quantities. Excepted and limited quantities are authorized on military aircraft according to paragraph 2.7. These small quantities of hazardous materials are exempted from certain requirements of this manual as identified in this attachment. The provisions in this attachment do not apply to radioactive materials. See Attachment 11 for requirements applicable to radioactive material in accepted packaging or limited quantity of material. De minimis quantities in accordance with 49 CFR Section 173.4b or IATA 2.6.10 are authorized.

A19.2. Excepted Quantities. Small quantities of hazardous materials are exempt from the specification packaging, marking, labeling, certification and compatibility requirements of this manual if the provisions of this paragraph are met. Excepted quantities may be certified to this paragraph or to the most current ICAO or IATA.

A19.2.1. Do not ship the following material as an excepted quantity:

A19.2.1.1. Class 1 material.

A19.2.1.2. Class 2, division 2.1 and 2.3; division 2.2 material having a subsidiary hazard; or aerosols.

A19.2.1.3. Material having a primary or subsidiary hazard of Class 4 in PG I.

A19.2.1.4. Class 4.1 self-reactive material.

A19.2.1.5. Material having a primary or subsidiary hazard of Class 5 in PG I, except when contained in a chemical kit or first aid kit.

A19.2.1.6. Material having a primary or subsidiary hazard of Class 6.1, in PG I, by reason of inhalation toxicity.

A19.2.1.7. Class 6.2 Infectious substances.

A19.2.1.8. Class 7 Radioactive material other than when radioactive material is excepted packages with an associated risk of another class.

A19.2.1.9. Material having a primary or secondary risk of Class 8 in PG I, UN2803 and UN2809.

A19.2.1.10. Magnetized Material (Class 9), Carbon Dioxide Solid, and Lithium Batteries. Lithium battery exceptions are authorized in paragraph A3.3.9.2.3.

A19.2.1.11. Hazardous material contained within a device that is a component part of an otherwise nonhazardous item (except for temperature sensing devices) such as mercury switches in electrical equipment. Prepare the hazardous material according to the requirements for the hazard. If the material is not regulated as a hazardous material, ship the item as general cargo.

A19.2.1.12. Material identified as “Cargo Aircraft Only” in Table A4.1.

A19.2.2. Maximum Net Quantity for Excepted Quantities. The maximum net quantity of hazardous material that is allowed in each inner packaging and the total net quantity allowed in each outer packaging are given in Table A19.1. Refer to A19.2.1. to determine if the material qualifies for the excepted quantities provision and that Table A19.1. is applicable. If the quantity limitations of Table A19.1. are exceeded, the excepted quantity provision may not be used and prepare the material according to the requirements for the individual material.

Table A19.1. Excepted Quantity Limits for Inner and Outer Packaging.

Class of Primary or Subsidiary hazard	Packing Group	Quantity Limits	
		Inner Packagings	Outer Packagings
2.2	See (note 1) and (note 2)	See (note 1) and (note 2)	See (note 1) and (note 2)
3	Packing Group I, II and III	30 mL	PG I 300 mL PG II 500 mL PG III 1 L
4	Packing Group II and III	30 g or 30 mL	PG II 500 g or 500 mL PG III 1 kg or 1 L
5 (note 3)	Packing Group II and III	30 g or 30 mL	PG II 500 g or 500 mL PG III 1 kg or 1 L
6	Packing Group I, II and III	PG I 1g or 1 mL PG II 1g or 1 mL PG III 30g or 30 mL	PG I 300g or 300 mL PG II 500g or 500 mL PG III 1 kg or 1 L
8 (note 4)	Packing Group II and III	30 g or 30 mL	PG II 500 g or 500 mL PG III 1 kg or 1 L
9 (note 5)	Packing Group II and III	30 g or 30 mL	PG II 500 g or 500 mL PG III 1 kg or 1 L

Notes:

1. Packing groups are not used for this hazard class.
2. For inner packaging, the quantity contained in each receptacle may not exceed a water capacity of 30 ml. For outer packaging, the sum of the water capacities of all the inner packaging may not exceed 1 L.
3. Applies only to organic peroxides when contained in a chemical kit or a first aid kit.
4. Class 8, UN1774, UN2794, UN2795, UN2800, UN2803, UN2809, UN3028 and UN3477 are not permitted in excepted quantities.
5. For Class 9 material, if no PG is given in Table A4.1., use PG II quantities.

A19.2.3. Inner Packaging. Ensure each inner packaging is plastic (with a minimum thickness of 0.2 mm), glass, earthenware, or metal. The inner packaging may not react with, or be decomposed by, the material contained therein.

A19.2.4. Closures. Closures must be held securely, tightly, and effectively in place with tape, self-shrink plastic, wire, or other positive means. **(T-0)**.

A19.2.5. Liquids. Liquids must not completely fill inner packaging at a temperature of 55 degrees C (130 degrees F). **(T-0)**.

A19.2.6. Intermediate Packaging. Securely pack each inner packaging in an intermediate packaging with cushioning material. **(T-0)**. The intermediate packaging must completely contain the contents in case of breakage or leakage, regardless of packaging orientation. For liquid hazardous material, the intermediate packaging must contain sufficient absorbent material to absorb the entire contents of the inner packaging. **(T-0)**.

A19.2.7. Outer Packaging. Securely pack the intermediate packaging in a strong, rigid, outer packaging (e.g., fiberboard, wood).

A19.2.8. Overpacks. Overpacks may be used and may contain packages of nonhazardous material. Ensure all material in the same outer packaging and overpack are compatible.

A19.2.9. Dimensions of Outer Package. Ensure two of three outside dimensions of the outer package measure at least 100 mm (4 inches). If the outer package is in the shape of a cylinder, ensure it has a minimum height and diameter of 100 mm (4 inches) each.

A19.2.10. Other Hazardous Materials and Materials in Excepted Quantities. A package containing hazardous material in excepted quantities may not contain other hazardous material that are regulated by this manual (requires a Shipper's Declaration for Dangerous Goods).

A19.2.11. Different Materials in One Outer Packaging. When different hazardous materials are contained in one outer packaging, use the formula listed below to determine the quantities that can be included in one outer packaging. Ensure the quantities of different hazardous materials contained in each outer packaging are such that "Q" is less than or equal to 1.0, "Q" is calculated using the formula:

$$n_1/M_1 + n_2/M_2 + n_3/M_3 \dots = Q$$

(n_1 , n_2 , etc. is the actual net quantity of each different hazardous material. M_1 , M_2 , etc. is the maximum net quantity permitted for the material and packing group in the outer packaging according to Table A19.1.) For example:

A19.2.11.1. There are 15 inner packages at 20 ml each of Class 3, PG II, and 5 inner packages at 30 ml each of Class 8, PG II in one outer packaging: $300 \text{ ml}/500 \text{ ml} + 150 \text{ ml}/500 \text{ ml} = 0.6 + 0.3 = 0.9$. The result is less than 1.0, so the material can be shipped in one outer packaging.

A19.2.11.2. There are 5 inner packages at 30 ml each of Class 3, PG II, and 15 inner packages at 30 g each of Class 8, PG II in one outer packaging: $150 \text{ ml}/500 \text{ ml} + 450 \text{ g}/500 \text{ g} = 0.3 + 0.9 = 1.2$. The result is greater than 1.0, so the item cannot be shipped in one outer packaging.

A19.2.12. Package Performance Tests. Ensure the complete package (inner plus outer packaging), is capable of withstanding the test specified in A19.2.12.1. without breakage or

leakage of the inner packaging and without significant reduction in effectiveness. Carry out tests on the packaging prepared as for transport. Ensure inner receptacles contain at least 95 percent of their capacity for solids and 98 percent of their capacity for liquids. The material to be transported in the packaging may be replaced by another material, except where this would invalidate the results of the tests. When another material is substituted for a solid, use a material having the same physical characteristics (e.g., mass, grain size) as the material to be shipped. When another material is substituted in the drop test for liquids, use a material with a relative density (specific gravity) and viscosity similar to the material to be shipped.

A19.2.12.1. For packaging with six sides (e.g., fiberboard box), the following free drops onto a solid, unyielding, flat, and horizontal surface from 1.8 m (6 feet) is required. Each test may be performed on different but identical containers.

A19.2.12.1.1. One drop flat on the bottom.

A19.2.12.1.2. One drop flat on the top.

A19.2.12.1.3. One drop flat on the long side.

A19.2.12.1.4. One drop flat on the short side.

A19.2.12.1.5. One drop on a corner at the junction of three intersecting edges.

A19.2.12.2. For cylindrical packaging, the following free drops onto a solid, unyielding flat and horizontal surface from 1.8 m (6 feet) is required:

A19.2.12.2.1. One drop diagonally on the top chime with the center of gravity directly above the point of impact.

A19.2.12.2.2. One drop diagonally on the base chime.

A19.2.12.2.3. One drop flat on the side.

A19.2.12.3. A force applied to the top surface for a duration of 24 hours, equivalent to the weight of identical packages if stacked to a height of 3 m (10 feet), including the test sample.

A19.2.13. Package Marking. Mark excepted quantities of hazardous materials packaged, marked, and otherwise offered and transported in accordance with this paragraph durably and legibly with the following marking:

Figure A19.1. Excepted Quantity Package Marking



A19.2.13.1. Replace the “*” with the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. Replace the “***” with the name of the shipper or consignee if not shown elsewhere on the package.

A19.2.13.2. The marking may not be less than 100 mm (3.9 inches) by 100 mm (3.9 inches), and be durable and clearly visible. Ensure the hatchings and symbol are of the same color red or black, and on a white background or contrasting color.

A19.2.13.3. Markings, labels, and documentation required by attachments 14, 15, and 17 do not apply to these shipments.

A19.3. Dangerous Goods in Limited Quantities. Limited quantities may be certified to this paragraph or to the most current ICAO or IATA. Comply with all requirements of the document used including the inner packaging and outer packaging quantity limits. Pack limited quantities in good quality combination packagings using only the inner and outer packaging combinations authorized. Ensure the packagings also meet the general packaging requirements of Attachment 3. Single packagings, including composite packagings, are not permitted. The gross weight of a "limited quantity" package may not exceed 30 Kg (66 pounds). Quantity limits may not exceed the amounts authorized by Table A19.2. If all the requirements of this paragraph and the quantity limits of Table A19.2. are met, the combination packaging need not meet (or be marked) with the UN packaging specification requirements.

A19.3.1. Dangerous Goods not Permitted in Limited Quantities:

A19.3.1.1. Materials forbidden in Table A4.1.

A19.3.1.2. All materials in PG I.

A19.3.1.3. Class 1 and 7 materials except as provided in 49 CFR Section 173.63.

A19.3.1.4. Class 2.3 and 6.2.

A19.3.1.5. Class 2.1 and 2.2 materials (other than UN1950, UN2037, UN3478, and UN3479).

A19.3.1.6. Refrigerated liquefied gases.

A19.3.1.7. Class 4.1 self-reactive substances.

A19.3.1.8. Class 4.2 or any material with a subsidiary hazard of 4.2.

A19.3.1.9. Class 8 materials with UN numbers of 2794, 2795, 2803, 2809 or 3028.

A19.3.1.10. Class 9 materials except those specifically authorized in A19.3.2.

A19.3.1.11. Materials identified as “Cargo Aircraft Only” in Table A4.1.

A19.3.2. Dangerous Goods Permitted in Limited Quantities:

A19.3.2.1. Cartridges, small arms, and Cartridges power device (used to project fastening devices) Division 1.4S as provided in 49 CFR Section 173.63.

A19.3.2.2. Aerosols UN1950 and UN2037 of Class 2.1 and 2.2 without a subsidiary hazard or fuel cell cartridge UN3478 and UN3479.

- A19.3.2.3. Gases of Class 2.2 without a subsidiary hazard (excluding refrigerated liquefied gases).
 - A19.3.2.4. Class 3 (excluding PG I).
 - A19.3.2.5. Class 4.1 (excluding PG I and Class 4.1 self-reactive substances).
 - A19.3.2.6. Class 4.3 solids only (excluding PG I).
 - A19.3.2.7. Class 5.1 (excluding PG I).
 - A19.3.2.8. Class 5.2 only when contained in a "Polyester Resin Kit (UN3269)," "Chemical Kit (NA 1760)" or "First Aid Kit" (excluding PG I).
 - A19.3.2.9. Class 6.1 (excluding PG I).
 - A19.3.2.10. Class 8 (excluding PG I, UN2794, UN2795, UN2803, UN2809, UN3028, and UN 3506).
 - A19.3.2.11. Only the following items of Class 9: Ammonium Nitrate Fertilizers (UN2071), Benzaldehyde (UN1990), Environmentally Hazardous Substance Solid N.O.S. (UN3077), Environmentally Hazardous Substance Liquid N.O.S. (UN3082), Chemical Kit or First Aid Kit (UN3316), Dibromodifluoromethane (UN1941), Aviation regulated liquid, N.O.S. (UN3334), and Aviation regulated solid, N.O.S. (UN3335).
- A19.3.3. Different Dangerous Goods in Limited Quantities in one Package. When different dangerous goods in limited quantities are packed together in one outer packaging, the maximum quantities are as follows:
- A19.3.3.1. Class 3 and 8, and Class 4.1, 4.3 (solid), 5.1, 5.2, and 6.1 may not exceed the lowest net quantity per package (of the most restrictive single material in the package) as listed in Table A19.2. For calculation purposes, when a package contains both liquid and solids, convert the quantities for the liquids into kilograms in order to determine that the permitted maximum net quantity per package has not been exceeded. The "Q" value formula is not applicable for limited quantities.
 - A19.3.3.2. Class 2 and 9, when packed without any other dangerous goods, the gross weight of the package may not exceed 30 Kg (66 pounds).
 - A19.3.3.3. Class 2 and 9, when packed with other dangerous goods, may not exceed 30 Kg (66 pounds). In addition, the maximum net quantity of all the other dangerous goods (other than class 2 and 9) may not exceed the requirements of A19.3.3.1.
- A19.3.4. Package Performance Tests. Test requirements for limited quantity packages are as follows:
- A19.3.4.1. Ensure the package, as prepared for transport, is capable of withstanding a 1.2 m (4 foot) drop test onto a rigid, nonresilient, flat, horizontal surface, in a position most likely to cause the most damage. After the test, the package may not show any damage that is likely to affect safety during transport and there may be no leakage from the inner packagings.
 - A19.3.4.2. Ensure each package offered for transport is capable of withstanding a force applied to the top surface of the package (for a duration of 24 hours) equivalent to the total weight of identical packages if stacked to a height of 3 m (10 feet). The stack height

includes the test sample. There cannot be any significant reduction in the package's effectiveness and there cannot be any breakage or leakage of any inner packaging.

A19.3.4.3. Ensure packaging for liquids meet air-eligible requirements of A3.1.7.

Table A19.2. Limited Quantity Limits - Classes 2 Through 9.

Class or Division	Packing Group	Physical State	Inner Packaging	Per Package
1.4S	See 49 CFR Section 173.63			
2	--	Gas (note 2)	120 mL (notes 3 and 4)	30 kg G (note 4)
3	II	Liquid	500 mL	1 L
	III	Liquid	5 L	10 L
4.1	II	Solid	500 g	5 kg
	III	Solid	1 kg	10 kg
4.3	II	Solid	500 g	5 kg
	III	Solid	1 kg	10 kg
5.1	II	Liquid	100 mL	500 mL
	II	Solid	500 g	2.5 kg
	III	Liquid	500 mL	1 L
	III	Solid	1 kg	10 kg
5.2	--	Liquid	30 mL	1 kg
	--	Solid	100 g	1 kg
6.1	II	Liquid	100 mL	1 L
	II	Solid	500 g	1 kg
	III	Liquid	500 mL	2 L
	III	Solid	1 kg	10 kg
8 (note 1)	II	Liquid	100 mL	500 mL
	II	Solid	500 g	5 kg
	III	Liquid	500 mL	1 L
	III	Solid	1 kg	5 kg
9 (note 1)	III	Liquid/Solid	5 L	30 kg G

Notes:

1. Chemical or First Aid Kits: In inner receptacles of no more than 30 ml for liquids or 100g for solids. The total quantity of hazardous materials in any one kit may not exceed 1 kg.
2. For gases, the quantity is the water capacity of the inner packaging.
3. Aerosols containing only a nontoxic substance or substances in inner nonrefillable metal or plastic receptacles, the capacity of the inner packaging may not exceed 1000 mL (34 fluid ounces).
4. Non-flammable, non-toxic heat sensitive aerosols in inner nonrefillable metal or plastic receptacles, the capacity of the inner packaging may not exceed 575 mL (19 fluid ounces) with a gross of 25 kg.

A19.3.5. Marking, Labeling and Certification. Mark, label, and certify limited quantity packages as required by Attachments 14, 15, and 17 of this manual.