



AEROSPACE RECOMMENDED PRACTICE

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

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ARP 830

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MINIMUM REQUIREMENTS FOR AIR CARGO PALLETS

1. PURPOSE - It is the intent of this recommended practice to specify minimum requirements for pallets used to carry cargo on aircraft equipped with roller systems.
2. SCOPE - The scope of this ARP covers cargo pallets used on aircraft where the pallet integrity is an aircraft-airworthiness requirement. Such a requirement consists of three basic types:

- Type I - Pallet integrity required to meet all loads of Subpart C of FAR 25.
- Type II - Pallet integrity required to meet all loads of Subpart C of FAR 25, except the emergency landing conditions of FAR 25.561.
- Type III - Pallet integrity required to position the load in the aircraft and to support only downward operating loads. Pallet deformation or failure under other flight or crash loads shall not adversely affect the cargo retention.

3. GENERAL REQUIREMENTS

- 3.1 Materials - Materials shall be those which experience and/or tests have demonstrated to be suitable and dependable for use on aircraft and in the handling of cargo.
- 3.2 Workmanship - Workmanship shall be consistent with high grade aircraft manufacturing practice.
- 3.3 Fireproofing - All materials and finishes when suitably cured shall meet or exceed the requirements for flame resistant materials, as defined in the CAR.
- 3.4 Identification - The following information shall be legibly and permanently marked on the pallet and located, if practical, in such a position that the identification plate will be visible when the pallet is loaded with cargo:
 - a. SAE ARP No.
 - b. Type
 - c. Maximum allowable load (lb)
 - d. Load factor - horizontal and vertical
 - e. Maximum C. G. height of loaded pallet (in.)
 - f. Manufacturer's part number and serial number
 - g. Date of manufacture
 - h. Manufacturer's name and/or trademark
- 3.5 Special Placarding - If in meeting the structural or loading requirements, special precautions are required, appropriate instructions and/or marking shall be legibly and permanently marked on the pallet in letters at least one inch high. Such marking shall be located in a position where the marking will be visible when required. The following conditions are cited as examples:
 - a. If the pallet is not reversible, the word "TOP" should be clearly marked on the load surface. If the pallet is reversible, the word "TOP" should be marked on both surfaces.
 - b. If the pallet is not omni-directional, the words "FORWARD, AFT and SIDE" should be stamped on the pallet margin in such a location that they will be clearly visible.

3.6 Environmental Conditions - The following design requirements shall be considered:

3.6.1 Rough Handling - The pallet will be subjected to extremely rough handling and abuse; however, as the pallet is a structural link in the cargo tie-down system, damage to the pallet basic structure from such handling should be minimized.

3.6.2 Climatic Exposure - It shall be allowed that the pallet will be exposed to the inclement weather conditions found at all latitudes. Exposure to the following climatic conditions should not affect either the usability or the service life of the pallet:

- a. Salt (see paragraph 4.4.1)
- b. Temperature range of -65 to +160 F
- c. Exposure to rain, snow, and freezing rain

3.7 Damage - Special design consideration shall be given to the possibilities of damage to the pallet occurring during handling and the subsequent effect of such damage on the pallet's tie-down capabilities.

3.7.1 Tie-down Fittings - Fittings installed on the pallet for tie-down of cargo to the pallet should have minimum profile to decrease the likelihood of damage.

3.7.2 Pallet Edging - Since the edge and corners of the pallet will be most susceptible to impact damage during the loading and unloading operation, the edging shall be of an impact-resistant type that will protect the pallet basic structure, or the pallet basic structure must be capable of sustaining minor impact damage without having its strength reduced below its stated capability.

4. DETAILED REQUIREMENTS

4.1 Dimensions - The following dimensional tolerances expressed in inches shall apply:

Width	+ .0, - .125 in. (-.3175 cm)
Length	+ .0, - .125 in. (-.3175 cm)
Thickness	+ .0, - .0625 in. (-.1588 cm)

4.2 Flexure Strength - It shall be possible to move a pallet, loaded to its design load over abrupt changes in incline of the roller support system without damage to the pallet. The change in incline shall be minimum of 5 degrees. The design load on the pallet shall be non-rigid and uniformly distributed over the loadable surface of the pallet.

4.3 Environmental Protection

4.3.1 Atmosphere Corrosion - All metallic parts shall be suitably protected against corrosion. This protection shall be equivalent to or better than that provided by cadmium plate on steel per AMS 2400-2.

4.3.2 Bimetallic Corrosion - Joints between dissimilar metals shall be adequately insulated to prevent electrolytic corrosion.

4.3.3 Other - All non-metallic materials either shall be of a type not affected by fungus or rot or subject to changes in physical properties from exposure to strong sunlight, high humidity, or high or low temperatures, or shall be suitably protected against such deterioration.

5. QUALIFICATION TESTS AND CONDITIONS

5.1 Qualification Tests

5.1.1 Type I, Type II and Type III Pallets - Tests shall be conducted as necessary to demonstrate that the pallet is capable of supporting the design load at the load factors stated on the identification plate. All loads may be considered to act separately.