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AEROSPACE
RECOMMENDED
PRACTICES

ARP 990

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Revised

MINIMUM REQUIREMENTS FOR AIR CARGO PALLET NETS

1. PURPOSE

It is the intent of this Aerospace Recommended Practices to specify minimum requirements for pallet nets used to secure cargo on pallets for transport aircraft properly equipped with cargo aircraft materials handling systems. Pallets are as described in ARP 830.

2. SCOPE

The scope of this ARP includes nets used with pallets where the entire cargo system integrity is an aircraft airworthiness requirement. Nets should consist of 2 basic types:

2.1 Basic Net Types

Type I: Pallet net integrity required to meet the emergency landing Loads of FAR 25.561. As supplemented by the aircraft manufacturers' design data.

Type II: Pallet net integrity required to meet the flight loads of a particular airplane. Flight loads appear in the manufacturers' approved design data.

3. GENERAL REQUIREMENTS

3.1 Materials - Materials should be those which experience and/or tests have demonstrated suitable and dependable for use on aircraft and the handling of cargo in the environment of the air cargo industry.

3.2 Workmanship - Workmanship should be consistent with good aircraft manufacturing practice.

3.3 Fireproofing - All materials and finishes should meet the requirements for flame resistant materials as defined by FAA standards.

3.4 Identification - The following information should be legibly and permanently marked on the net (or subassembly) in such a place where it is easily readable.

1. SAE ARP No.
2. Use with pallet P/N
3. Manufacturer's P/N and Type Serial No.
4. Manufacturer's name

Each piece of net hardware should be marked with the part number.

3.5 Environmental Requirements

3.5.1 Climatic Exposure - The net and its hardware should withstand the following environmental conditions

without detrimental effect to its components:

- a. Temperature ranges from -65 F to 160 F
- b. Humidity
- c. Salt Spray
- d. Sand and dust
- e. Fungus

3.5.2 Rough Handling - The net should be so designed that it will withstand rough handling common to air freight terminal operations.

4. DETAIL DESIGN REQUIREMENTS

4.1 Performance - The net assembly and components should be designed so that they can be operated in confined areas with a minimum of personnel. All parts should be capable of being installed or removed by personnel wearing artic gloves.

4.1.1 Operation - The net should be designed so that it may be installed or removed from the pallet load in a minimum amount of time. Design should minimize the possibility of improper installation.

4.1.2 Special Marking - The net should be clearly marked to facilitate rigging on the pallet. Top and bottom, inside and outside should be indicated. In lieu of letter marking, a color coding may be used to facilitate rapid attachment of net fittings to the pallet.

4.1.3 Stowage - The net should be constructed in such a manner that entanglement during operation and stowage is minimized.

4.1.4 Reefing Adjustment - The net should be constructed to provide adjustment at vertical intervals for stacked height from approximately 30 in. to the maximum allowable height.

4.2 Webbing or Rope Components - If webbing or rope components of nylon or dacron are used, they should be resin treated to provide some degree of stiffness and wear resistance. Specifications for webbing and rope are:

1. Nylon Webbing:: MIL-W-4088 and MIL-W-27265
2. Dacron Webbing: MIL-W-25361
3. Rope: MIL-R-17343

4.2.1 Fraying - All webbing should be treated to prevent fraying. Rope ends should be adequately treated to prevent fraying.

4.3 Construction

4.3.1 Hardware - The net hardware should be so

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designed and constructed that it can be easily operated in confined areas. All hardware should be securely sewn or otherwise attached to preclude loss. Webbing ends that pass through adjusting buckles should be equipped with stops. Tensioning mechanisms should be capable of applying tension loads of not less than 35 lb by manual application of a 50-lb force. To release a 225 lb tension load in any strap should require an operating force of 35-lb or less.

4.3.2 Color - Color of the material should be optional. However, contrasting colors may be used to distinguish net components for simplifying the installation of the net to the pallet.

4.3.3 Webbing Mesh - The maximum opening in the material should retain a box with an approximate 10 in. x 10 in. face.

4.3.4 Weight - Weight of the net assembly should be a minimum consistent with the design requirements and sound design practices.

4.3.5 Nets should be adequately treated to minimize shrinkage.

4.4 Design Loads

4.4.1 Maximum Load - The maximum load restrained by the net should be the same as the maximum cargo load for the pallet-net combination.

4.5 Testing

4.5.1 Environmental Testing - The manufacturer should submit proof that all materials and assemblies will comply with the environmental exposure requirements of paragraph 3.5.1 when tested in accordance with MIL-STD-810.

4.5.2 Simulated Load Build-Up - Specifications for the simulated load build-up for testing should be per the airplane manufacturer's applicable specification or as agreed with FAA.

4.5.3 Type I Net Strength Tests - Testing should be performed when applicable in conjunction with the intended pallet to ultimate emergency landing loads in the forward, aft, and side directions as specified in FAR 25.561 as supplemented by the aircraft manufacturer's design data.

4.5.4 Type II Net Strength Tests - Testing when applicable should be performed statically with a simulated pallet materials handling system to flight loads as specified in the aircraft manufacturer's design data.

5. QUALITY ASSURANCE PROVISIONS

5.1 Inspection - Nets should be examined to determine compliance with requirements specified herein with respect to materials, workmanship, applicable dimensions, and marking.

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