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### **General Packing Specification for Spare Parts**

1. **PURPOSE:** This specification presents the requirements and procedures for protecting spare parts during shipment and multiple handling. It applies whenever spare parts are to be packed and shipped as containerize-able, air shipment, or overland transport cargo, or in wooden boxes as break-bulk cargo.
2. **USE:** This specification provides vendors with a statement of Saudi Aramco's minimum requirements. The vendor's own experience and practice should be used to determine whether certain items require more than these minimum standards to ensure safe delivery to their final destination. The specification may also be used by Saudi Aramco personnel at loading ports/marshaling yards to determine if spare parts are adequately packed for shipment.
3. **PRE-PACKING REQUIREMENTS:** It is Saudi Aramco's intent to accept spare parts processed and packaged to the manufacturer's specifications, provided such specifications meet the following minimum requirements:
  - 3.1 Freshness: All parts must be new stock, or, for rotatable parts, good as new.
  - 3.2 Degree of preservation required: Length of storage up to one year in severe conditions of fine dust and sand, temperatures up to 55 degrees Celsius (130 degrees Fahrenheit), and humidity up to 100 percent.
  - 3.3 **Preservation and packaging:**
    - 3.3.1 Parts subject to corrosion must be cleaned and preserved with an anticorrosive compound compatible with the material to be protected. The preservative must be a brand name product recommended for the purpose intended.
    - 3.3.2 Openings must be provided with blinds, caps, or plugs.
    - 3.3.3 Preserved parts and parts which are not suitable for the use of a preservative compound (electric parts, instruments, etc.) must be placed within a sealable, water-vapor-proof carrier envelope with adequate desiccant or water-vapor phase inhibitor material and a minimum of trapped air.

- 3.3.4 Where delicate parts inside the sealed envelope are to be protected by shock-absorbing material, only non-hygroscopic cushioning material may be used.
- 3.3.5 Large bulky parts (axle shafts, transmissions, etc.), which are preserved but cannot be placed inside a sealed envelope, must be provided with cushioned bracing and blocking prior to packing.
- 3.3.6 Articles or intermediate-size packages must be nested or packed to reduce volume as much as possible.

#### **3.4 Article identification:**

- 3.4.1 The vendor must identify each article by using a tag marked with the following (mark on packages when a package contains one part or a multiple of the same part):
  - a. Saudi Aramco material master number (as indicated in the purchase order)
  - b. MANUFACTURER'S PART NUMBER (and superseded part number[s] if shown in the purchase order)
  - c. QUANTITY (only on packages containing a multiple of the same part)
- 3.4.2 For identical parts packed in the same shipping container, one or more packages must be completely identified. The remainder must at least show manufacturer's part number. The fully identified part or package must be packed in a location in each shipping container for first removal.
- 3.4.3 In no case must part numbers be engraved on machined surfaces by means of a rotation tool or similar device which cuts into the metal.

On completion of the pre-packing requirements, the vendor's own experience and industry practice should be used to decide the most suitable packing method applicable to his materials. The following paragraphs 4 and 5 provide Saudi Aramco's guidelines for containerize-able, air shipment, or overland transport cargo and wooden boxes for break bulk cargo.

4. Containerize-able/Air Shipment/Overland Transport Cargo Packing Requirements:

4.1 Dimension, weight, and density limitations for containerize-able cargo:

- 4.1.1 Individual articles and unitized loads must not exceed 220 cm (approximately 87 in) in any dimension.
- 4.1.2 Maximum weight for individual articles or unitized loads is 1,860 kg (4,100 lb).
- 4.1.3 The highest permissible cargo density for containerize-able cargo is 660 kg/m<sup>3</sup> (41 lb/ft<sup>3</sup>).

4.2 **Packing:**

- 4.2.1 A heavy standard domestic pack is required. The pack must adequately protect the spare parts during handling, stacking and shipping in a container, aircraft, or on a truck or trailer. If cartons are used, they must be of adequate bursting strength and construction to retain their original configuration and ability to protect their contents during handling, stacking, shipment, and storage. Unnecessary free space within the pack should be avoided to reduce shipping costs.
- 4.2.2 Finished and coated surfaces must be protected from abrasion.
- 4.2.3 Items in the same pack must be prevented from damaging each other.
- 4.2.4 In general, containers will be stuffed and stripped using forklift trucks. Items over 35 kg (80 lb) should be skidded or placed securely on container pallets (4-way entry, 100 by 120 cm [40 by 48 in]), or any other pallet whose configuration has been previously approved by the Buyer.
- 4.2.5 Materials for different purchase order numbers are not to be packed together unless authorized by the Buyer. Purchase order item numbers should preferably be packed separately where possible, without increasing the packing cost.
- 4.2.6 All packaging (for example, protectors and moisture inhibitors), including that specified in this specification, the Saudi Aramco Materials System Specification, or the material description, must be sound and undamaged after packing.

- 4.2.7 Parts subject to damage by vibration and/or shock must be further protected by placing shock-absorbing cushioning between the packaging and the outer packing.
- 4.2.8 Fragile or sensitive parts which require additional protection, or parts having a high density-to-volume ratio, may be packed in appropriate wooden boxes and, subject to size, weight, and density limitations in paragraph 4.1, shipped as container or air cargo.

## 5. **Break Bulk Cargo Packing Requirements:**

If the vendor determines that spare parts are not suitable for packing in accordance with paragraph 4 for reasons of order quantity, nature of the material, dimension, weight, density, or any other reason, the following minimum specifications and attached designs for wooden boxes fulfill Saudi Aramco's break bulk cargo requirements.

With the Buyer's written approval, other box designs which offer equivalent or better protection may be used if the designs comply with international standards (for example, BS; DIN; JIS) or other standards.

### 5.1 **Box construction:**

- 5.1.1 Lumber should be new, sound, and well-seasoned with a moisture content between 12 and 20 percent. Knots must be sound and must not be in excess of one-third of the width of the board nor cause any nailing interference. Where possible, nails should be driven into side grain of lumber. Exterior grade plywood of equivalent strength, minimum 12-mm (1/2-in) thickness, may also be used as sheathing in box design. Lumber sizes indicated are nominal and should be considered as minimum.
- 5.1.2 Where a range is indicated, the lumber dimensions will depend on the weight and type of materials to be packed. Vendor is to ensure that the lumber dimensions selected are adequate for the weight and type of materials.
- 5.1.3 Fasteners must be of adequate length and quantity and of the coated (i.e., cement, resin, galvanized, or chemical-etched) type. Staples are not permitted except for the securing of plywood sheathing.
- 5.1.4 Metal strapping should be unannealed steel applied with a stretching tool and secured with joints as strong as the strapping. No sharp edges should be left exposed.
- 5.1.5 The tops and sides of lumber boxes should be internally lined with waterproof paper or plastic film.

5.1.6 Additional members may be required to distribute concentrated loads over the area of the box base.

**5.2 Packing:**

5.2.1 Consolidation of suitable materials into a single unit is preferred, up to a gross weight limit of 5 tons. Materials for different purchase order numbers are not to be packed together unless authorized by the Buyer. Purchase order item numbers should preferably be packed separately where possible, without increasing the packing cost.

5.2.2 Articles should be nested or packed firmly in minimum space. Unnecessary free space within the box should be avoided to reduce shipping costs.

5.2.3 Finished and coated surfaces must be protected from abrasion. Securing devices applied to packed articles must not abrade or otherwise damage the materials.

5.2.4 Within each pack, weight should be evenly distributed, with lighter articles on top.

5.2.5 Articles in the same pack must be prevented from damaging each other.

5.2.6 Loose and moving parts within an article may require temporary securing while in transit. Clear warning must be indicated to remove securing devices before start-up.

5.2.7 All packaging (for example, protectors and moisture inhibitors), including that specified in this specification, the Saudi Aramco Materials System Specification, or the material description, must be sound and undamaged after packing.

5.2.8 If the net weight of the material for one package exceeds 5,000 kg (11,000 lb), or if the dimensions exceed 12-m (40-ft) length, 2.5-m (8-ft) width, or 3.45-m (11-ft) height, the Buyer must be provided with full details of the vendor's proposed packaging/packing method for the Buyer's approval.

6. **HAZARDOUS MATERIALS:** Articles which are subject to International Maritime Organization (IMO), International Air Transport Association (IATA), Saudi Arabian Standards Organization (SASO), United States Department of Transportation (DOT), or International Civil Aviation Organization (ICAO) directives or regulations must be:

6.1 Packed separately from other nonhazardous articles unless specifically authorized in writing by the Buyer.

- 6.2 Packed and labeled in accordance with the applicable directives or regulations.
7. **MARKING:** Individual items, packages, packs, and unitized loads must be marked in accordance with instructions provided with the Saudi Aramco purchase order.
  8. **EXCEPTIONS:** Any deviation from the above minimum requirements must be approved in writing by the Buyer.

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