

1.4 Duct Fittings and Accessories

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DUCT FITTINGS AND ACCESSORIES

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11. APPROVED MANUFACTURERS

1. GENERAL

1.1. SCOPE

1.1.1

This specification covers the minimum standards and requirements for the construction, properties, testing and packing of PVC ducts.

1.1.2

Tenderers shall provide with their bids their proposed material under this Specification, stating manufacturer, model number, technical specification, country of origin, and such other required information as noted herein. References to submissions by "supplier", "manufacturer" and the like shall mean the "Tenderers" (during tender stage) or the "Contractor" (during the contract period), the Tenderer/Contractor being required to provide same under actual submission from the respective supplier/manufacturer.

1.1.3

The purpose of the tender for OFT is for supply / install as set out in the Contract. References to "Supply-only" in this specification shall be disregarded, and shall only apply to special supply purchase orders as may be requested by MoT under the provision of Contract, if applicable.

1.1.4

Packing and marking sections of this Specification are generally intended for imported materials. The Contractor shall be responsible to provide all necessary requirements to suit his approved sourcing, in order to ensure that materials are delivered to site in the specified condition.

1.2. INTENDED USE

1.2.1

The fittings and accessories included in this specification shall be used with ducts compliant with MAT 2201 and MAT 2301.

1.3. TYPE APPROVAL

1.3.1

Contractors who have not previously supplied under this specification (or who have made changes to prior supplied products) shall submit a product sample for approval. An interim Type Approval may be granted on the basis of a compliance statement and other information from the manufacturer. Approval of a sample shall not be construed as waiving any requirements of this specification.

1.4. RESERVED RIGHTS

1.4.1

The MoT cannot guarantee that any of the requirements, standards, regulations and conditions of this specification are not covered or protected by copyright or patent of a third party.

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The MoT reserves the right to make changes to the specification without notice

2. ASSOCIATED SPECIFICATIONS

The following unattached international and/or national standards shall be applied, and deemed to be an integral part of this specification:

MAT 2201 Polyvinylchloride (PVC) ducts

MAT 2301 Sub-duct

ISO 9002 Quality systems - Model for quality assurance in production and installation

3. DEFINITIONS

Refer to the general definition of the Contract

4. DESIGN REQUIREMENTS

4.1. GENERAL

This section describes the design of the duct fittings and accessories

4.2. LONG TERM PERFORMANCE REQUIREMENTS

4.2.1. The PVC duct fittings and accessories supplied in compliance with this specification shall be capable of withstanding the typical service conditions of Lebanon for a period of thirty years without detriment to the operation and maintenance characteristics

4.2.2. PVC duct fittings and accessories shall be designed, manufactured and packaged so that exposure to the environmental conditions of Lebanon during storage, transport installation and operation and the environmental conditions to be expected during storage and transport outside Lebanon shall not degrade the physical or operation and maintenance characteristics of the PVC duct fittings and accessories

The environmental conditions of Lebanon may include ambient air temperature variations from -15° to +37°C. In addition direct solar radiation is known to increase the temperature of some outside plant to +52°C

4.3. DESIGN OF FITTINGS

4.3.1. The PVC duct fittings described in this specification are as follows:

Bend (90° - 2000 mm radius)
Bend (45° - 2000 mm radius)
Bend (90° - 1000 mm radius)
Bend (45° - 1000 mm radius)
Double Bell Coupling (0°)
Double Bell Coupling (5°)
Sleeve

4.3.2. The Bend (90° - 2000 mm radius) and (90° - 1000 mm radius) is used to provide a 90° directional change to the duct run

4.3.4. The Bend (45° - 2000 mm radius) and (45° - 1000 mm radius) is used to provide a 45° directional change to the duct run

4.3.5. The bends shall be provided with bell and spigot ends, and they shall have a 150 mm straight extension on the ends, the spigot end shall be chamfered to produce a 15° beveled edge along the outer circumference. The length of the straight part of the bell shall be at least 80 mm

4.3.6. The 90° bends shall bear a mark where they can be cut into two equivalent 45° bends

4.3.7. The Double Bell Coupling (0°) is used to connect two spigot ended ducts straight through

4.3.8. The Double Bell coupling (5°) is used to connect two spigot ended ducts and also to provide a 5° directional change to the duct run

4.3.9. The Double Bell Couplings shall be at least 200 mm total length with an inner ridge in the middle to act as a stopper for the duct

4.3.10. The joining of two ducts with these couplings shall provide a water tight joint

4.3.11. The Sleeve is used to provide a repair sleeve over a PVC duct. It can also be used to provide a strong straight coupling between two straight (spigot) ends of ducts

4.3.12. The Sleeve is a straight PVC tube at least 3000 mm in length with an inner diameter to fit over the outer diameter of the PVC duct

4.3.13. All PVC duct fittings shall be produced to fit the PVC duct described in MAT 2201

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4.4. DESIGN OF ACCESSORIES

4.4.1. DUCT PLUG

4.4.1.1. The duct plug shall be a mechanical device used to seal the duct from the entry of water. It shall be able to be installed and removed by simple hand tools.

4.4.1.2. The plugs shall be designed so as to accommodate the tolerances of manufacture of the PVC duct types into which they will be installed, the dimensions are described in MAT-2201 (PVC duct) and MAT-2301 (Subduct and Mini-duct).

4.4.1.3. The method of installation shall not be hazardous to either personnel or adjacent cables

4.4.1.4. It shall be possible to remove any plug without damage to either duct or cable.

4.4.1.5. An 'eye' shall be provided on the inner side of the plug, to which a draw cord can be attached.

4.4.2. DUCT SEALANT

4.4.2.1. The duct sealant is used to seal ducts which have cables installed. The duct sealant shall be capable of sealing more than one cable per duct.

4.4.2.2. The installation shall require the minimum of preparation of duct and cable to produce the sealing requirement.

4.4.2.3. The sealant shall be a suitable putty or foam and be easily removable to allow the installation of additional cables.

4.4.2.4. The installed sealant shall effectively seal the duct from the entry of water.

5. MATERIAL PROPERTIES AND TEST REQUIREMENTS

5.1. GENERAL

5.1.1. This section specifies the PVC duct fitting material, physical, chemical, environmental and mechanical requirements and the tests to be applied for the determination of these requirements.

5.1.2. The requirements of this section refer to completed PVC duct fitting, or material removed from completed PVC duct fitting unless identified otherwise.

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5.1.3. All materials used in the PVC duct fitting shall be non-toxic and dermatologically safe.

5.2. TEST AND REPORT REQUIREMENTS

5.2.1. In order to assure the quality of purchased PVC duct fitting, tenderers are required to supply Type Approval and routine quality control test results and reports.

5.2.2. TYPE APPROVAL TESTING

5.2.2.1. Type Approval test results, samples and reports are required for acceptance of new designs and materials and following modifications to existing designs and materials. These test results are intended to assure the Ministry that products have been designed to provide fault free service for the required life of the PVC duct fitting.

5.2.2.2. Type Approval shall not be granted until a Type Approval sample has been evaluated by the MoT at the factory. In the event that appropriate samples are not available from the manufacturer an interim Type Approval may be granted on the basis of a compliance statement and other information from the manufacturer. However a sample must be approved by the MoT for Type Approval prior to delivery.

5.2.2.3. Further to the contract requirements in respect of material approvals by the Engineer, Contractors are advised not to proceed with manufacture until written Type Approval or interim Type Approval has been given by the Engineer for all Type Approval requirements of this specification.

5.2.2.4. Tenderers are required to ensure that supplied PVC duct fitting complies fully with the Type Approval requirements. Although the MoT may designate tests as Type Approval the tenderer may find it necessary to perform some of the tests on a regular Quality Control basis.

5.2.2.5. Type Approval tests and measurements are identified by (TA)

5.2.2.6. Type Approval Samples

Type Approval samples shall include, unless agreed otherwise:

- One sample of each fitting and accessory
- 1 kg raw material sample of PVC

5.2.3. ROUTINE QUALITY CONTROL

Routine Quality Control tests are the tests used on a regular basis to assure the MOT that manufactured items conform to specification and that the

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8.2. TYPE APPROVAL TESTS, SAMPLES AND REPORT REQUIREMENTS

8.2.1. Type Approval test results and samples shall be submitted as follows:

1. At the time of tender for each type and size of fittings and accessories which has not been given Type Approval or
2. Prior to delivery of any fitting and accessory which does not have Type Approval.

8.2.2. COMPLIANCE STATEMENT

8.2.2.1 Tenderers shall supply a clause by clause compliance statement, with the complete specification.

8.2.3. Complete installation instructions and description of the accessories.

8.3. ROUTINE QUALITY CONTROL TEST REPORTS

Unless stated otherwise there is no requirement for Quality Control test reports for accessories.

9. PACKING AND MARKING

9.1. PACKING

The fittings and accessories shall be sufficiently packaged to prevent damage during normal handling and storage.

All fittings and accessories packaged for manual handling may be multipacked to a maximum weight of 25 kg.

Each package shall be marked as below with the following information in Arabic and English:

Ministry of Telecommunications Lebanon
Duct fittings or Duct accessories (whichever applies)
Manufacturer's Name or trademark
Month and year of manufacture

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10. COMPLIANCE STATEMENT

The Contractor must indicate his compliance or non-compliance with all clauses of this specification in a side by side format. There are three statements to describe compliance or non-compliance with each clause, as detailed in clauses 10.1, 10.2 and 10.3.

10.1. COMPLIANCE

The Contractor agrees to the stated requirements without any reservation.

10.2. NON-COMPLIANCE

The Contractor does not meet the respective item or clause. The reason for the non-compliance shall be stated.

10.3. NON-COMPLIANCE WITH ALTERNATIVE PROPOSAL

The Contractor does not meet the provisions of the clause but offers an equivalent alternative which shall be fully documented with supporting evidence.

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