RECOMMENDED REQUIREMENTS FOR WATER-CLOSET FLUSHING CISTERNs FOR CONSERVATION OF WATER IN DOMESTIC AND PUBLIC BUILDINGS

0. FOREWORD

0.1 This Omani Standard OSxxxx : 2005 was adopted on……..after finalization of the draft standard by the concerned Technical Committee of Directorate General for Specifications and Measurements (DGSM) and approval by………….

0.2 There is worldwide growing and serious concern for conservation, preservation and protection of water resources and drinking water supply.

0.2.1 Standards can greatly assist is not only preserving and generating effective and sustainable water resources but can also assist and guide in judicious use of drinking water supply and avoidance of wastage through excessive and uncontrolled flow and leakage. Preventing wasteful use of water and undetected and unattended leakage through faucets and toilet flushing systems is a very important and critical aspect of water conservation and quality of service operations of public utility services.

0.3 This Standard provides recommendations and guidelines essentially for flushing water volume and related performance and environmental-friendly aspects of water-closet flushing cisterns, the implementation of which will definitely assist in conservation of water in domestic and other buildings, environmental protection and the resultant economy of cost and savings in energy, without adversely affecting the overall performance and service quality.

0.3.1 In addition to the requirements stated in this standard, the equipment, fittings and fixtures shall also meet the technical specifications and criteria stipulated in the applicable standard specifications and regulations (see 1.2, 2.7 and 3.1).
0.3.2 It is expected that while reducing the flushing water volumes by the use of dual-flush cisterns as recommended in this standard, the performance and service requirements are not compromised with respect to sanitation and clearing of solid and liquid waste, convenience and quality of life. To realise this, compatible professional maintenance of the system and responsible user practices and behaviour have to be ensured so that the savings in water are not obviated or nullified in the long run by overall unsatisfactory operations or breakdown resulting from poor quality of equipment and fittings and fixtures, improper and inferior design, improper installation, inadequate and unprofessional maintenance, and irresponsible or unethical attitude and lack of necessary care and caution by the user.

The above aspects are reflected in the recommendations made out in this standard.

0.4 In preparing this standard, reference has been made and guidance obtained from the experience, practices and standards available and technology being practiced and tried in some other countries. The information has been suitably adapted to meet Omani local conditions and requirements in consultation with all stakeholders, such as government agencies and local bodies, building industry, users/consumers, Omani manufacturers, dealers and importers.

0.4.1 Particular assistance has been obtained in this respect from the valuable information and guidance provided by Water Supplies Department of Hong Kong. This is gratefully acknowledged.

0.4.2 Reference has also been made to the national standards and regulations brought out and the work being undertaken on these aspects by Australia, Singapore and United Kingdom; and this is acknowledged.
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1. SCOPE

1.1 This Draft Omani Standard recommends essential requirements for the flushing water volume and related performance and environmental friendly aspects of water-closet flushing cisterns from point of view of conservation of water and environmental protection (without adversely affecting the cleaning performance), for use in residential, commercial, institutional and public buildings.

1.2 These requirements apply to ‘Close-coupled cistern and water-closet pan installations’, as-well-as to ‘stand-alone cistern and compatible water-closet pan installations’, to be operative and functional with the normal municipal water supply, without the assistance of pressure boosting or vacuum creating devices fitted at the flushing cistern or at the water-closet pan, capable of giving the performance (cleaning) requirements for the water-closet pans, to meet the relevant stipulations and tests prescribed in the applicable Omani/GCC/approved International/National Standards and/or the regulations/by-laws of the local authorities (see 2.1 and 2.2).

1.3 The requirements of this Draft Standard are essential adjunct to the requirements and stipulations in other applicable Omani/GCC/approved/International/National/Standards and specifications, and public regulations and by-laws relating to flushing cisterns and water-closet pans.

2. FLUSHING WATER VOLUME AND RELATED ESSENTIAL REQUIREMENTS FOR FLUSHING CISTERNs

2.1 The water-closet flushing cisterns for new installations and replacements shall be essentially dual-flush cisterns fitted with valve type flushing device (or any other equally effective and proved mechanism), capable of being operated at dual flushing water settings (that is the higher-volume flushing volume setting and the lower-volume flushing volume setting) specified in 2.1.1.

The design shall allow for change in the settings for the ‘higher-flushing’ and ‘lower-flushing’ water volumes, within the limits stated in 2.1.1.
2.1.1 The maximum flushing water volume for the flushing cistern for dual setting shall not exceed 6 litre per flushing operation for higher flushing (for flush cleaning of solid human excreta), and shall not exceed 3 litre per flushing operation for the reduced (lower) flushing (for flush cleaning of liquid human excreta).

No limit is prescribed for the minimum volume of flushing water, provided the cleaning requirements are fully met with (see 1.2, 2.2 and 4.1)

2.2 The designed flushing volume of the flushing device shall be compatible with the water-closet pan to ensure that effective cleaning can be achieved by a single flush of water at the higher setting or at lower setting, in conformance with the applicable Omani/GCC/ approved International/National Standards and/or local regulations and by-laws.

2.3 The dual flushing cistern shall have a readily discernible, durable and maintenance free, consumer friendly method of actuating the different volumes of flushing water.

2.4 The valve seat of the flushing device shall be easily replaceable, without necessitating the change/replacement of the complete flushing device or the entire flushing cistern.

2.5 The components of flushing device and the entire flushing cistern assembly shall be corrosion resistant and resistant to salt-water corrosion.

2.6 The flushing device shall pass 200,000 cycles endurance test (type test), for operation without leakage and breakdown while delivering the specified quantity of flushing water.

2.6.1 The manufacturer/supplier shall provide Manufacturer’s/Supplier’s Declaration of Conformity along with test certificates from approved/accredited testing agency(ies) and other supporting documents, for approval of the purchaser and/or the approving authority.

Note- The above details shall also be indicated in the manufacturer’s/supplier’s catalogue and other related literature, quotations and supply documents.

2.7 In addition to the 2.1 to 2.6, the flushing cistern and the water-closet pan shall conform to all the requirements of applicable Oman/GCC/approved International/National Standards and/or local regulations and by-laws for flushing cisterns and water-closet pans.
2.8 ASSEMBLY, INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

2.8.1 With every cistern, the manufacturer/supplier shall provide formal printed instructions in Arabic (and may be in addition, in English) for the assembly, installation, operation and maintenance of the flushing cistern and the flushing cistern connection with water-closet pan, in simple and clear language along with necessary diagrams and sketches, including the details of the operating pressure, size of the inlet water supply line, inlet connection and any other essential related details.

2.9 When so required by the purchaser and/or by the approving authority, the manufacturer/supplier shall submit for approval, the Manufacturer’s/Supplier’s Declaration of Conformity (for conformance to all the requirements of this standard) along with the test certificates from approved/accredited testing agency(ies) and other supporting documents.

2.10 Manufacturer’s/Supplier’s Warranty

2.10.1 With every purchase, the manufacturer/supplier shall provide, a formal printed, signed and stamped warranty for Water-closet flushing cistern, for the guaranteed leak-proof and trouble free performance, which shall be not less than five years from the date of purchase (see 3.2).

3. PROPER AND ADEQUATE INSTALLATION AND MAINTENANCE REQUIREMENTS

3.1 The flushing cistern and the water-closet pan as-well-as all the fittings and fixtures related there to, and their installations, shall conform in all respects to the applicable Omani/GCC/approved International/National Standards, and/or local regulations and bye-laws.

3.2 Reliable and regular technical attendance for maintenance of flushing device and flushing cistern shall be made available by the manufacturer/supplier to the purchaser/consumer at the premises of installation, as part of the ‘free’ or 'paid' service at reasonable charges within and after the warranty period, as per the conditions to be declared by the manufacturer/supplier at the time of intended sale of the equipment (see 2.10).
3.3 All installation work and the additions and alteration work shall be carried out only by the approved/certified/authorized plumbers licensed by the local authorities. Defective and leaking plumbing work shall be verified by the local authorities within two days of complaint by the consumer and necessary rectification measures taken along with necessary advisory/administrative measures.

3.4 Public and community building toilets and plumbings shall be periodically verified by the local authorities, for conformance to quality performance and non-leakage, and the required compliance measures readily initiated by the local authorities.

3.5 Administrative regulatory measures may be prescribed by law under the local authority for any unchecked persistent leakage from the water-closet flushing cisterns and water-closet pans for all buildings and dwellings.

4. WATER-EFFICIENT LABELLING FOR WATER-CLOSET FLUSHING CISTERNs

4.1 Close coupled water-closet flushing cistern capable of operation with the normal municipal water supply (without the help of any pressure boosting or vacuum creating device fitted at the flushing cistern or at the water-closet pan), and providing effective cleaning performance with single flush of maximum 4.5 litre flushing water for higher flushing and with single flush of maximum two litre flushing water (dual setting) for lower flushing, with the compatible water-closet pan, may be labelled as ‘Water-Efficient Flushing Cistern’, after due verification and approval from the Directorate General for Specifications and Measurements (DGSM), Ministry of Commerce and Industry.