IS 12701 (1996): rotational moulded polyethylene water storage tanks [CED 3: Sanitary Appliances and Water Fittings]

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IS 12701 : 1996
Reaffirmed 2006

भारतीय मानक

पानी के भण्डार हेतु प्लास्टिक टंकियाँ — विशिष्टि

(पहला पुनरीक्षण)

Indian Standard

ROTATIONAL MOULDED POLYETHYLENE WATER STORAGE TANKS — SPECIFICATION

(First Revision)

First Reprint JUNE 1998

ICS 23.020.10

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

August 1996 Price Group 5

AMENDMENT NO. 1 JANUARY 2001
TO
IS 12701:19[illegible] [illegible]NAL MOULDED POLYETHYLENE WATER STORAGE TANKS — SPECIFICATION

(First Revision)

(*Page* 4, *clause* 5.5) — Insert the following new clause after 5.5:

'**5.6** Rotational moulded polyethylene water storage tanks may be manufactured in single layer or double layers, inner layer shall be white in colour. The outer layer shall be black in colour and its thickness shall be minimum 50 percent of the total thickness of the wall.'

(CED 3)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 JUNE 2004
TO
IS 12701 : 1996 ROTATIONAL MOULDED POLYETHYLENE WATER STORAGE TANKS — SPECIFICATION

(First Revision)

(*Page* 4, *clause* 7.6, *line* 4) — Substitute 'tested according to 6 of IS 9845' *for* 'tested according to 5 of IS 9845 : 1986'.

(CED 3)

Reprography Unit, BIS, New Delhi, India

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Sanitary Appliances and Water Fittings Sectional Committee had been approved by the Civil Engineering Division Council.

Looking to the widespread use of rotational moulded polyethylene tanks for the storage of potable water in India, the committee felt the need to bring out an Indian Standard in order to safeguard the user of such tanks against quality and performance requirements.

This Standard was first published in 1989. In this revision of the standard following major modifications have been made:

— Wall thickness and weight of the tanks have been modified based on the feedback from the manufacturers and users.

— Methods of installation and fittings have been made recommendatory and are separately given at Annex E.

— Method for carrying out flexural strength test has been modified.

The composition of the technical committee responsible for the preparation of this standard is given in Annex F.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the the same as that of the specified value in this standard.

Indian Standard

ROTATIONAL MOULDED POLYETHYLENE WATER STORAGE TANKS — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard covers the requirements of materials, dimensions construction, shape, workmanship, performance requirements and inspection and testing of rotational moulded polyethylene water storage tanks with a nominal service temperature from +1°C to +50°C

1.1.1 These tanks are not meant for undergroumd applications.

1.2 This standard is applicable only to water storage tanks subjected to the following two conditions:

a) Own hydrostatic head of water, and

b) Tank with uniform flat base support.

1.3 This standard does not cover mobile water tanks and horizontal cylinderical water tanks.

2 REFERENCES

2.1 The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

3.0 For the purpose of this standard the following definitions shall apply.

3.1 Rotational Moulded Water Storage Tank

A tank moulded from polyethylene powder by the process of rotational moulding.

3.2 Net Capacity

Net capacity shall be net volume of water contained between the lowest level of the inlet and lowest specified level.

3.3 Gross Capacity

The total enclosed volume of the tank including any space which may not be capable of being filled with water.

3.4 Mould Parting Line

A circumferential line visible only on external surface of the tank corresponding to a parting joint of the mould required for rotational moulding (*see* Fig. 1).

3.5 Overall Height

The height of the finished empty tank at its highest point including the top rim of the man-hole and lid of the tank (*see* Fig. 1).

3.6 Effective Height

The height of the finished empty tank from its base to the point where overflow connection is provided for the purpose of limiting water storage capacity (*see* Fig. 1).

3.7 Overall Diameter

The maximum diameter of finished empty tank measured at its base as the mean of two measurements of diameters including wall thickness of the tank and avoiding the mould parting line (*see* Fig. 1).

3.8 Rim Height

The perpendicular distance from the highest point of the top rim of the man-hole to the nearest point of the shoulder of the finished empty tank (*see* Fig. 1). Rim can be provided above the tank or within the tank.

3.9 Man-Hole/Hand-Hole

A hole of suitable internal diameter provided at the top of the tank, for the purpose of inspection of internal surface and entry into the tank.

3.10 Internal Diameter of Man-Hole/Hand-Hole

The internal diameter of the rim of the man-hole measured as the mean of two perpendicular diameters (*see* Fig. 1).

4 MATERIALS

4.1 The material of construction of tank, lid and fittings which come in contact with water shall be such that it does not impart any taste, colour or odour to water, nor have any toxic effect, and it shall not contaminate water thereby making it unpotable.

4.2 Polyethylene resin to be used for the manufacture of water tanks should be of rotational moulded grade and duly stabilized with anti-oxidants. The anti-oxidants used, not exceeding 0.3% by mass of finished resin, should be physiologically harmless and should be selected from the list given in IS 10141 : 1982. In addition, the material shall also meet the requirements given in **4.2.1** to **4.2.4**.

4.2.1 The density of resin (base material) at 23°C when tested in accordance with IS 7328 : 1992 shall be within 932 to 943 kg/m^3.

4.2.2 The melt flow rate (MFR) of the resin when tested under the test condition D (temperature 190°C and nominal load of 2.16 kg) and in accordance with IS 2530 : 1963 shall be within 2.0 to 6.0 g/10 minutes.

4.2.3 The water tanks meant for out door use shall be manufactured from carbon black compounded polyethylene. The carbon black content and carbon dispersion test shall be carried out in accordance with the procedure described in IS 2530 : 1963 and shall meet the following requirements:

a) The percentage of carbon black content in the material shall be within 2.0 and 3.0, and

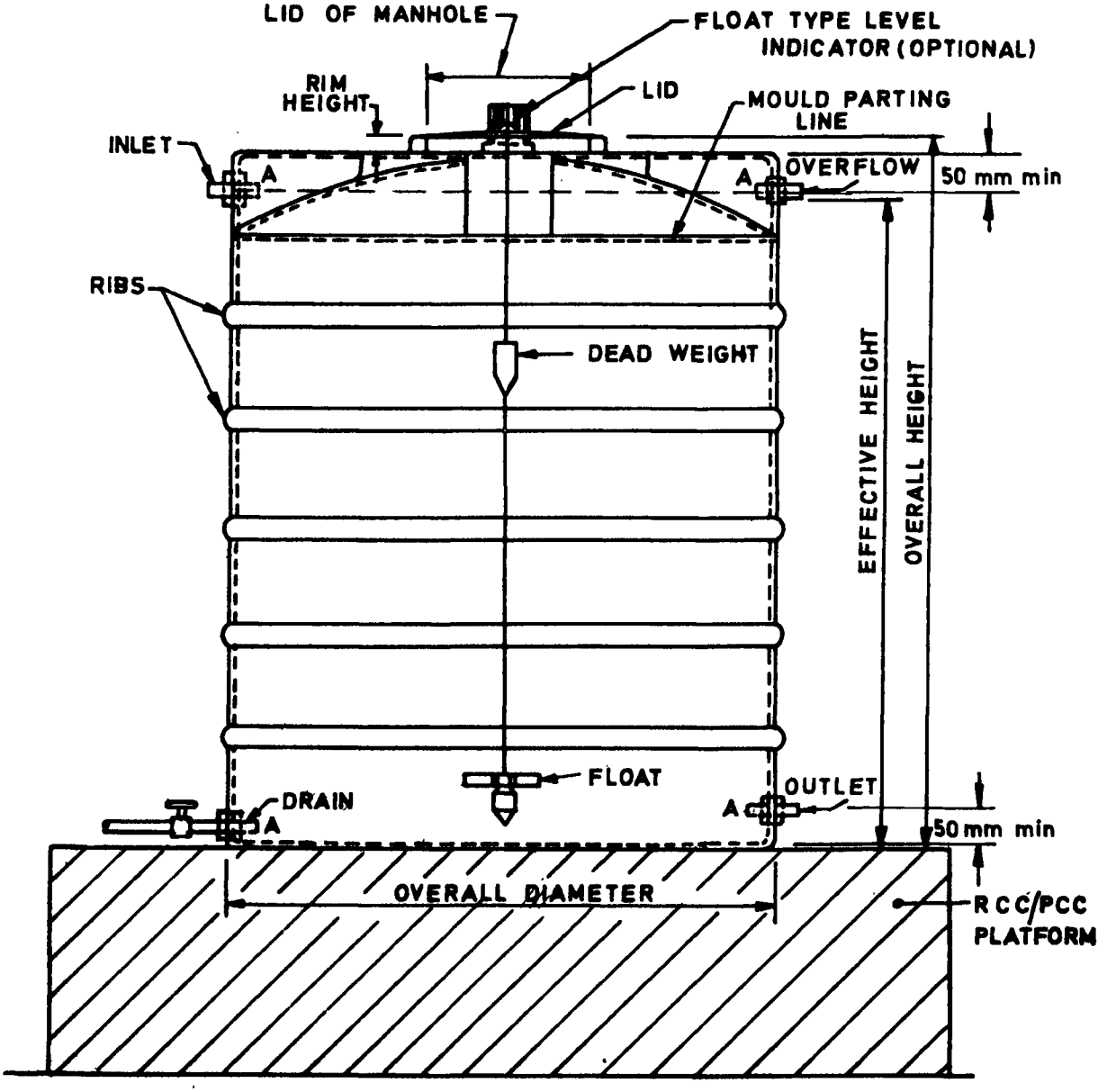
b) The dispersion of carbon black shall be satisfactory.

4.3 The addition of not more than 10 percent of the manufacturers own reworked material resulting from the manufacture of tanks only according to this standard is permissible. No other reworked or recycled waste material from any other source or filler shall be used in the manufacture of tanks.

5 TYPES AND FEATURES

5.1 Cylinderical Vertical Tank (Fig. 1)

The dimensions, net and gross capacities and weight of the tank shall be as given in Table 1.



NOTE — A 25 mm wide band shall be painted around the tank at the inlet/overflow level and outlet level. Centre line of the band shall be 50 mm minimum from top/inner bottom of the tank.

A — Male threaded G.I. brass or PVC connections.

FIG. 1 TYPICAL DETAILS OF CYLINDERICAL VERTICAL TANK

Table 1 Dimensions of Cylinderical Vertical Tank

(*Clause* 5.1)

Sl No.	Minimum Net Capacity Up to Effective Height (l)	Overall Dimeter Range (mm)	Overall Height Range (mm)	Minimum Internal Dia of Man-Hole/ Hand-Hole (mm)	Minimum Wall and Bottom Thickness (mm)	Minimum Weight of tank (Without Lid) (kg)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	200	650 - 850	490 - 690	265	3.0	7.8
ii)	300	650 - 850	700 900	265	3.0	9.0
iii)	400	700 - 980	700 - 950	265	3.5	15.0
iv)	500	800 - 1 140	625 - 1 025	370	4.0	18.0
v)	700	900 - 1 140	800 - 1 100	370	4.4	23.0
vi)	1 000	1 000 - 1 200	1 050 - 1 350	370	4.5	33.0
vii)	1 500	1 080 - 1 450	1 150 - 1 590	370	4.5	47.0
viii)	1 700	1 300 - 1 500	1 260 - 1 650	370	4.5	54.0
ix)	2 000	1 365 - 1 500	1 400 - 1 700	450	5.4	64.0
x)	2 500	1 380 - 1 610	1 400 - 1 810	450	7.7	81.0
xi)	3 000	1 410 - 1 800	1 640 - 2 150	450	8.1	96.0
xii)	4 000	1 450 - 1 920	1 750 - 2 400	450	10.4	147.0
xiii)	5 000	1 800 - 2 110	1 800 - 2 100	450	10.7	180.0
xiv)	6 000	1 800 - 2 200	2 065 - 2 800	450	10.7	205.0
xv)	7 500	1 890 - 2 250	2 100 - 2 930	450	10.7	239.0
xvi)	10 000	1 900 - 2 680	2 400 - 3 740	450	11.5	319.0
xvii)	15 000	2 100 - 2 680	3 100 - 4 000	450	11.5	408.0
xviii)	20 000	2 100 - 3 150	3 190 - 5 000	450	13.2	566.0

NOTE — The gross capacity of the tanks shall be at least 5 percent in excess of the minimum net capacity.

5.2 Rectangular Loft Tank (Fig. 2)

The dimensions, net and gross capacities and weight of the tank shall be as given in Table 2.

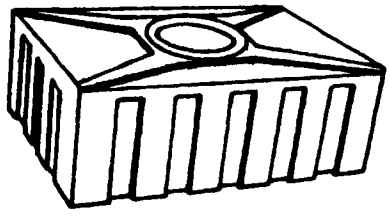


FIG. 2 RECTANGULAR LOFT TANK

5.3 A flat area may be provided on the top of the cylinderical vertical tanks for workers to stand before entering the tank.

5.4 Wall Thickness

Owing to limitations of rotational moulding process, the wall thickness of the water storage tank at bottom, top and cylinderical sides at the bottom and top edges where the shape of tank changes is usually found to be much greater than the wall thickness at other surfaces.For cylinderical vertical tanks the wall thickness upto the effective height of the tank shall not be less than the values given in Table 1 and the wall thickness above the effective height of the tank shall be not less than 75 per cent of the values given

Table 2 Dimensions of Rectangular Loft Tanks

(*Clause* 5.2)

Sl No.	Minimum Net Capacity	Overall Length	Overall Width	Overall Height	Minmum Internal Dia of Hand Hole	Minimum Wall Thickness (Measured on) Rectangular Vertical Port and Bottom Thickness	Minmum Weight Weight of Tank (Without Lid)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	150	620 - 820	620 - 820	285 - 485	300	2.75	6.6
ii)	200	930 - 1 130	620 - 820	285 - 485	300	2.75	7.7
iii)	300	995 - 1 200	620 - 820	285 - 485	300	2.75	11.0
iv)	400	1 150 - 1 350	855 - 1150	335 - 535	300	2.75	13.0
v)	500	1 150 - 1 500	900 - 1250	335 - 535	300	2.75	17.5

NOTE — The gross capacity of the tanks shall be at least 5 percent in excess of the minimun net capacity.

in Table 1. For rectangular loft tanks the wall thickness shall be in accordance with the values given in Table 2. The wall thickness shall be measured at least at 20 points well distributed on the sides, top and bottom. Thickness measurement on lid shall be made at least in four well distributed locations.

5.5 The dimensions as given in **5.1 and 5.2** refer to finished empty tanks. Measurement shall be made after 48 hours of moulding. The wall thickness may be measured with a dial gauge micrometer fitted with spherical anvils. The overall diameter, height and other dimensions may be measured with steel rule or steel tape of desired accuracy by placing the empty tank on a flat surface.

6 FINISH

6.1 The internal and external surface of the water storage tank shall be smooth, clean and free from other hidden internal defects, such as air bubbles, pits and metallic or other foreign material inclusions. The mould parting line and excess material near the top rim of the tank shall be cut and finished to the required level. Defects like air bubbles and pits at mould parting line and at top rim of the main-man-hole shall be repaired by hot-air filler rod welding method.

7 PERFORMANCE REQUIREMENTS

7.1 Resistance to Deformation

7.1.1 When cylindrical vertical water storage tanks is tested in accordance with the Method 1 described at Annex B, the difference between the circumferrential measurement shall not be greater than 2 percent of the original measurements.

7.1.2 When rectangular loft tank is tested in accordance with the Method 2 described at Annex B the difference between the longitudinal measurements shall not be greater than 3 percent of the original measurements.

NOTE — The tank shall not crack at the observed deflection.

7.2 Resistance to Impact

When polyethylene water tank is tested in accordance with the method as described in Annex C the impact shall neither result into cracking nor puncture of the tank.

7.3 Test for Top Load Resistance

7.3.1 The tank shall be filled to 98 percent of its net capacity and shall be subjected for not less than 4 hours at outdoor temperature to compression by means of 100 kg load applied on the horizontal surface provided for a man to stand before entering the tank. After removal of the load the test specimen shall be inspected for deformation or crack on the surface and after 4 hours of the removal of the load the flat surface shall return to normal position.

This test shall be applied to tanks with capacity 1 500 litres and more.

7.4 Tensile Strength

7.4.1 Tensile strength at yield shall be determined in accordance with IS 8543(Part 4/Sec 1) : 1984. The tensile strength of the wall of water tanks shall not be less than 12 N/mm^2.

7.4.2 The test specimens shall be cut from the flat portion of the top of the water tank at a temperature not exceeding 50°C and then machined.

7.5 Flexural Modulus

7.5.1 The flexural modulus shall be determined in accordance with IS 13360 (Part 5/Sec 7) : 1995. The flexural modulus of the wall of the water tank shall not be less than 300 N/mm^2. The sample shall be taken as given in **7.4.2.**

7.6 Overall Migration

The material of construction (compounded resin) shall meet the specified limits of overall migration of constitutents as specified in IS 10146 : 1982 when tested according to 5 of IS 9845 : 1986.

8 SAMPLING AND TESTING

8.1 Routine Tests

The scale of sampling and criteria for conformity of a lot for routine tests specified in Table 3 shall be as given in Annex D.

Table 3 Routine Tests

Sl No.	Test	Ref to Clause and Annex
(1)	(2)	(3)
i)	Band width/location	Fig. 1
ii)	Outer dimensions and Weight	Table 1 and Table 2
iii)	Net capacity	Table 1 and Table 2
iv)	Gross capacity	Table 1 and Table 2
v)	Thicknesses	Table 1 and Table 2
vi)	Resistance to deformation	7.1 and Annex B
vii)	Resistance to impact	7.2 and Annex C
viii)	Test for top load resistance	7.3
ix)	Tensile strength	7.4
x)	Flexural modulus	7.5

8.2 Type Tests

Type tests are intended to prove the suitability and performance of water tank of a new composition, a new technique, new shape or modified wall thickness. Such tests need necessarily be done, before undertaking mass production when a change is made in polymer composition or method of manufacture or when a

new size and shape of water tank is introduced. However, if no change is envisaged, at least one sample of any size shall be put to 'Type Tests' once in a year. Tests for suitability of tank material as specified in **4** and overall migration as specified in **7.6** shall be taken as type tests.

9 MAN-HOLE HAND-HOLE LIDS

9.1 Materials

Man-hole hand-hole lids shall be moulded from polyolefins of minimum thickness 3mm and shall have sufficient ribs to provide adequate stiffness. It shall be stabilized with 2 to 3 percent of carbon black having satisfactory dispersions. The carbon black content and carbon disperion test shall be carried out in accordance with IS 2530:1963

9.2 The lid shall fit securely over the top rim of the tank and it shall rest evenly on it in order to prevent the ingress of foreign matter such as insects, mosquitoes or dust through the top of the tank. The lid shall also be provided with suitable locking arrangement.

9.2.1 To test the lid being fit securily to the manhole, no clearance in it should permit a 1.6 mm diameter wire to pass through.

10 MARKING

10.1 All the water storage tanks shall be marked with the following information:

a) Manufacturer's name, initials or recognised trade mark;

b) Net capacity in litres;

c) Lot or Batch number, and year of manufacture; and

d) 'For indoor use only', for tanks meant for indoor use.

10.2 In additions to the marking by painting, the manufacturers name or trade mark and net capacity of the tank shall be moulded on the external surface of the tank during manufacture.

10.3 BIS Certifications Marking

The tanks may also be marked with Standard Mark.

10.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made there under. Details of conditions under which a licence for the use of the standard mark may be granted to the manufactures or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Clause 2.1)

IS No.	*Title*	*IS No.*	*Title*
554 : 1985	Dimensions for pipe threads where pressure-tight joints are required on threads (*third revision*)	9845 : 1986	Methods of analysis for the determination of specific and/ or overall migration of constituents of plastic materials and articles intended to come into contact with foodstuffs (*first revision*)
1879 : 1987	Malleable cast iron pipe fittings (*second revision*)		
2530 : 1963	Methods of test for polyethylene moulding materials and poly-ethylene compounds	10141 : 1982	Positive list of constituents of polyethylene in contact with foodstuffs, pharmaceuticals and drinking water
4905 : 1968	Methods for random sampling		
7328 : 1992	High density polyethylene materials for moulding and extrusion	10146 : 1982	Polyethylene for its safe use in contact with foodstuffs, pharmaceuticals and drinking water
8543 (Part 4/Sec 1) : 1984	Methods of testing plastics : Part 4 Short term mechanical properties, Section 1 Determination of tensile properties	13360 (Part 5/Sec 7) : 1995	Plastics — Methods of testing : Part 5 Mechanical properties, Section 7 Detemination of flexural properties

ANNEX B

(*Clauses* 7.1.1 *and* 7.1.2)

METHOD OF DEFORMATION TEST

B-1 METHOD 1, FOR CYLINDERICAL VERTICAL TANKS

B-1.1 The water tank shall be placed on a flat level base. A circumferential measurement shall be made parallel to the base at a distance of one third the effective height. The tank shall be filled upto the effective height at a minimum rate of 23 l/min with water at temperature of not less than 15°C.

B-1.2 A continuous film of polythyelene shall be floated over the whole of the surface of the water in the tank to prevent evaporation.

B-1.3 The tank and water shall be maintained at temperature not less than 15°C and after 3 days a circumferential measurement shall be made at the previously determined level.

The difference between the two circumferential measurement shall be expressed as a percentage of the original circumferential measurements.

B-2 METHOD 2, FOR RECTANGULAR LOFT TANK

B-2.1 The rectangular tanks shall be placed on a flat level base. The internal length and width of the tank shall be measured on the centre lines, as shown in Fig. 3 at the centre of effective height.

B-2.2 The tank shall be filled upto the effective height at a minimum rate of 23 litres/min with water at a temperature not less than 15°C. The lid shall be closed after filling the loft tank.

B-2.3 The tank and water shall be maintained at a temperature of not less than 15°C and after 7 days measurements of length and width shall be made at a previously determined centre lines.

B-2.4 The deformation in each direction shall be calculated as follows:

$$D_L = \frac{W_2 - W_1}{2L_1} \times 100$$

$$D_W = \frac{L_2 - L_1}{2W_1} \times 100$$

Where

D_L = deformation of the longer side,

D_W = deformation of the shorter side,

W_1 = width at the start of test,

W_2 = width at the end of the test,

L_1 = length at the start of test, and

L_2 = length at the end of test.

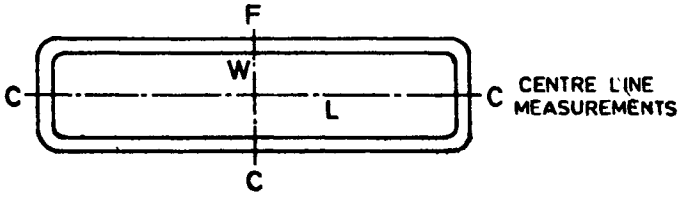


FIG. 3

ANNEX C

(*Clause* 7.2)

C-1 METHOD FOR IMPACT RESISTANCE TEST FOR WATER TANK

C-1.1 The water tank shall be inverted and the base of tank shall be struck with a 25 mm diameter hemispherically ended striker of mass 2.5 kg falling freely from a height of 3.0 metre.

C-1.2 The striker shall be so arranged as to hit the base at its mid-point. Three other impacts shall be made, which shall be as close to the edge or corners of the base as is practical. The shape of the striker shall be such that only the surface of the specified hemisphere comes into contact with the tank under the initial blow.

ANNEX D

(*Clause* 8.1)

SCALE OF SAMPLING AND CRITERIA FOR CONFORMITY FOR ROUTINE TESTS

D-1 SCALE OF SAMPLING

D-1.1 Lot

In any consignment, all the tanks of same size and type made from same raw materials and manufactured under similar conditions shall be grouped together to constitute a lot.

D-1.2 For ascertaining the conformity of the tanks to the requirements of the specification, samples shall be tested from each lot separately.

D-1.3 The number of water storage tanks to be selected from a lot shall depend on the size of the lot and shall be according to Table 4 for tanks with capacity up to 1 000 litres and Table 5 for tanks with capacity above 1 000 litres.

D-1.4 The tanks shall be selected at random from the lot. In order to ensure the randomness of selection procedures given in IS 4905:1968 may be followed.

D-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

D-2.1 Visual, Dimensional Requirements and Capacity

D-2.1.1 *Tanks of Capacity up to* 1 000 *litres*

Each of the tanks selected according to col 1 and 2 of the Table 4 shall be examined for the tests at Sl No. 1, 2, 3 and 4 of Table 3. A tank failing to satisfy one or more of these requirements shall be considered as defective. The lot shall be deemed to have satisfied these requirements if the number of defectives found in the sample is less than or equal to the corresponding acceptance number given in col 3 of Table 4.

D-2.1.2 *Tanks of capacity above* 1 000 *litres*

Each of the tanks selected according to col 1 and 2 of Table 5 shall be examined for the tests given at Sl No. 1, 2, 3 and 4 of the Table 3. A tank failing to satisfy one or more of these requirements shall be considered as defective. The lot shall be deemed to have satisfied these requirements if there is no defective in the sample.

D-2.2 The lot having been found satisfactory according to **D-2.1** shall be further tested for tests at Sl No. 5, 6, 7, 8, 9 and 10 of Table 3. For this purpose a sub-sample of the size given in col 4 of Table 4 or col 3 of Table 5, as the case may be, shall be selected from those already examined and found satisfactory according to **D-2.1** and shall be tested for requirements, as specified. The lot shall be declared to have satisfied the requirements if no defective is found in the sub-sample.

Table 4 Scale of Sampling and Criteria for Conformity
(For Tanks with Capacity up to 1 000 l)

(*Clause* D-1.3)

Sl No.	Lot Size	Sample Size	Acceptance Number	Sub-sample Size for Tests at Sl No. (v), (vi), (vii), (viii), (ix) and (x) of Table 3
(1)	(2)	(3)	(4)	(5)
i)	Up to 50	2	0	1
ii)	51 to 100	3	0	1
iii)	101 to 300	5	0	2
iv)	301 to 500	8	0	3
v)	501 and above	13	1	5

Table 5 Scale of Sampling
(For Tanks with Capacity Above 1 000 l)

(*Clause* D-1.3)

Sl No.	Lot Size	Sample Size	Sub-sample Size for Tests at Sl No. (v), (vi), (vii), (viii), (ix) and (x) of Table 3
(1)	(2)	(3)	(4)
i)	Up to 25	2	1
ii)	26 to 50	3	1
iii)	51 to 100	4	1
iv)	101 and above	5	2

ANNEX E

(Foreword)

RECOMMENDATIONS FOR INSTALLATION AND FITTING OF TANKS

E-1 Vent pipe/overflow pipe is provided near the top with mosquito and insect proof cap.

E-2 The flat base of cylindrical vertical or rectangular water storage tanks should be fully supported over its whole bottom area by a durable, rigid, flat and level platform sufficiently strong to withstand without deflection the weight of the tank when filled fully with the water. In case, the tank is placed on a suitable M. S. platform then it is essential that the latter is free from sharp edges, corners or surface projections and shall be corrosion resistant.

E-3 Where required the tanks shall be suitably anchored. The tanks may also be provided with clamping devices.

E-4 The pipelines, valves and other fittings should be supported in such a manner that it is aligned properly so as not to produce any distortion in the water tank where the fitting is fixed.

E-5 The checknuts of the threaded connection should be placed after placing rubber gaskets and should not be overtightened. Under no circumstances should jointing compounds or putty be employed in contact with the polyethylene water tanks. PTFE (poly-tetra-fluroethylene) unsintered tape may be wrapped around the threaded portion of the valves and connections to act as a sealant.

E-6 Circular holes drilled for fixing threaded connections should have a clean edge free from notches. Holes can be drilled with a high speed steel hole saw cutter. Scratching or scoring the wall should not be done for setting out holes.

E-7 Where the section of water tank has a change in profile which is accomplished with a radius, it is essential that the outer extremities of the threaded connections are clear of this radius.

E-8 The water storage tank should not be installed in close proximity to heaters or other direct sources of heat.

E-9 FITTINGS

E-9.1 For providing inlet, outlet and other connections, usually full threaded G.I. brass connections are used which shall not produce any kind of harmful effect on potable water. A typical threaded connections is illustrated in Fig 4. Flat surface may preferably be provided to fix outlet pipes at appropriate locations. The design of threaded connections fixed with the water storage tank may be similar to that shown in Fig 4. The different sizes of threaded connections required to be fixed for different capacities of water storage tanks may be according to Table 6.

E-9.1.1 The overflow pipes should be provided with non-corrodible mosquito-proof device of maximum clearance not more than 1.6 mm.

Table 6 Sizes of Threaded Connections
(*Clause* E-9.1)

Sl No.	Capacity of Water Storage Tank	Nominal Bore Size of Threaded Connection (mm)
i)	Up to 750	12.5
ii)	Above 750 and up to 2 000	25
iii)	Above 2 000 and up to 4 000	40
iv)	Above 4 000 and up to 10 000	50
v)	Above 10 000	75

E-9.2 The dimensions of male and female threads of G.I. PVC/brass full threaded connections and other fittings like elbow, tee, bend, coupling, nipple, etc, shall be conforming to IS 554 : 1985. The sizes and other dimensions of the fittings, such as centre-to-face, face-to-face and centre-to-centre shall conform to IS 1879 : 1987. Manufacturers shall provide instructions for fittings.

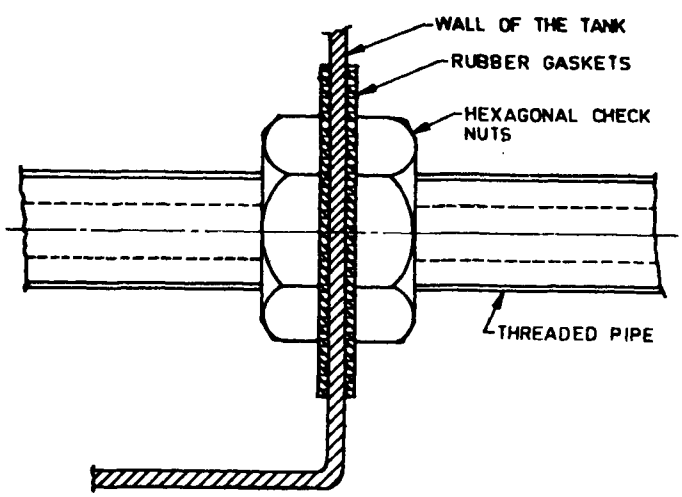


FIG. 4 THREADED CONNECTION

ANNEX F
(Foreword)

COMMITTEE COMPOSITION

Sanitary Appliances and Water Fittings Sectional Committee, CED 3

Chairman	*Representating*
SHRI S. PRAKASH	Delhi Water Supply and Sewage Disposal Undertaking (MCD), Delhi
Members	
SHRI P. K. JAIN (*Alternate* to Shri S. Prakash)	
ADVISOR (PHE) DEPUTY ADVISOR (PHE) (*Alternate*)	Central Public Health and Environment Engineering, New Delhi
SHRI J. R. AGGARWAL SHRI SANJAY AGGARWAL (*Alternate*)	Goverdhan Das P. A. (Calcutta)
CHIEF ENGINEER (RURAL)	Maharashtra Water Supply and Sewage Board, New Mumbai
SHRI VIDHUR BHASKAR	Bhaskar Stoneware Pipes Pvt Ltd, Faridabad
SHRI ARUN KANTI BISWAS	National Environmental Engineering Research Institute (CSIR), Nagpur
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