

इंटरनेट

मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9763 (2000): Plastics Bib Taps, Pillar Taps, Angle Valves and Stop Valves for Hot and Cold Water Services - [CED 3: Sanitary Appliances and Water Fittings]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

गर्म तथा ठंडे पानी के लिए प्लास्टिक की बिब टोंटियाँ, एंगल
वाल्व, रोक वाल्व तथा फुहारक — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

PLASTICS BIB TAPS, PILLAR TAPS,
ANGLE VALVES AND STOP VALVES FOR HOT AND
COLD WATER SERVICES — SPECIFICATION

(*Second Revision*)

ICS 23.040.45

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

FOREWORD

This Indian Standard (Second 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.

Plastics bib taps and stop valves are being manufactured and used in the country, as they have been found suitable and economical for hot and cold water services. This standard was first published in 1981 and revised in 1988.

In this second revision following changes have been incorporated.

The scope of this standard has been widened to not only cover bib taps and valves but also plastic pillar taps, angle valves and stop valves.

The scope has again been widened for usage of plastic taps in both hot and cold water services.

New material options have been added taking into consideration the high performance engineering plastics.

New clause on identification has been introduced to differentiate between hot and coldwater services.

Cast copper alloy screw down bib taps and stop valves have been covered in IS 781 : 1984 'Specification for cast copper alloy screw down bib taps and stop valves for water services (*third revision*)' and cast copper alloy fancy bib taps and stop valves have been covered in IS 8931 : 1993 'Specification for copper alloy fancy single taps, combination top assembly and stop valves for water services (*first revision*)'.

The composition of the technical committee responsible for the formulation of this standard is given at Annex C.

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 same as that of the specified value in this standard.

Indian Standard

PLASTICS BIB TAPS, PILLAR TAPS, ANGLE VALVES AND STOP VALVES FOR HOT AND COLD WATER SERVICES — SPECIFICATION

(*Second Revision*)

1 SCOPE

This standard lays down the requirements regarding material, dimensions, construction finish, and testing of plastic bib taps, pillar taps, stop valves and angle valves for hot and cold water services.

2 REFERENCES

The Indian Standards given below contain provisions which through reference in this text constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and the parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	Title
2643 (Part 1) : 1975	Dimensions of pipe threads for fastening purposes: Part 1 Basic profile and dimension (<i>first revision</i>)
4905 : 1968	Method for random sampling
9766 : 1992	Flexible PVC compounds
10446 : 1983	Glossary of terms related to water supply and sanitation
10910 : 1984	Polypropylene and copolymers for its safe use in contact with

IS No.

Title

foodstuffs, pharmaceuticals and drinking water

13193 : 1992

Polyalkylene terephthalates (PET and PBT) for moulding and extrusion

13464 : 1992

Polyamide (Nylon 66) material for moulding and extrusion

3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 10446 shall apply, in addition to the following.

3.2 Obturator — It is the complete top assembly of the tap consisting of the bonnet, spindle, carriage, O'rings, seals, which controls the flow and stoppage of water.

4 MATERIALS

4.1 Materials used for the manufacture of various types of components of taps, valves, etc, shall be as per Table 1.

4.2 Chemical and Hygiene Requirements

All plastic materials given in **4.1** coming into contact with water intended for human consumption shall not present any health risk upto a temperature of 90°C.

Table 1 Materials
(Clause 4.1)

Component	Recommended Material	Reference to IS No.
Body of tap/valve	PP Copolymer, Nylon 66, PBT, Nylon 66 GF, Poly-Acetal, ABS, ABS-PC Alloy, PVC.	PP — IS 10910 : 1984 PET/PBT — IS 13193 : 1992
Bonnet of tap/valve	PP Copolymer, Nylon 66, PBT, Nylon 66 GF, Poly-Acetal, ABS, ABS-PC Alloy	Nylon 66 — IS 13464 : 1992 PVC — IS 9766 : 1992
Spindle of tap/valve	PP Copolymer, Nylon 66, PBT, Nylon 66 GF, Poly-Acetal, ABS, ABS-PC Alloy	
Handle of tap/valve	PP Copolymer, PBT, Poly-Acetal, ABS, ABS-PC Alloy	
Seal of tap/valve	Rubber, Nitrile PVC, Thermoplastic polyester based elastomer	

They shall not cause any change to the drinking water in terms of quality, appearance, smell or taste. Materials shall be resistant to corrosion. Within the recommended limit for current operation given in Table 2, the material shall not undergo any change that would impair the performance of the taps. Parts subjected to the pressure shall withstand the maximum operating pressures given in Table 2.

5 NOMINAL SIZES

5.1 Plastic taps and stop valves shall be of the nominal sizes:

15 mm (1/2" and 20 mm (3/4").

NOTE—The figures within brackets refer to the size and designation of the threaded end as per IS 2643 (Part 1). The nominal bore of the socket or pipe outlet to which the tap or valve is normally fitted shall designate nominal size of taps or valves.

Table 2 Recommended Limit for Correct Operation
(Clause 4.2)

Parameter	Maximum Limits of Use	Recommended Limits for Correct Operation
Pressure	Static : 1 MPa (10 bar)	Flow : not less than 0.01 MPa (0.1 bar)
Temperature	90°C	Max : 65°C Lower limit: as for installations

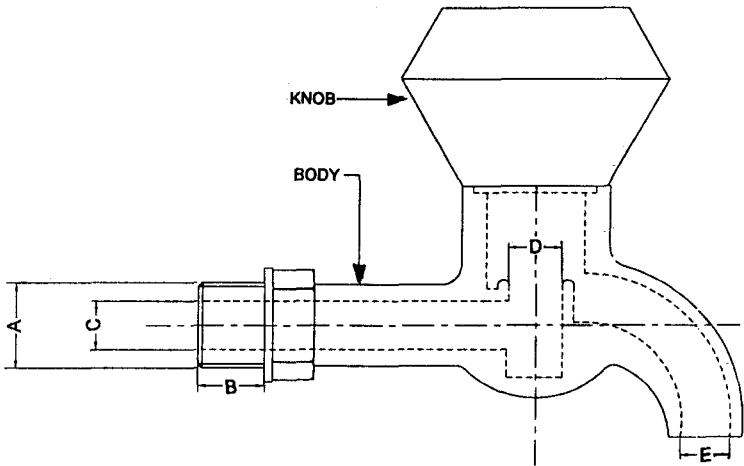
NOTE — The pressures given are flow pressures.

6 DIMENSIONS

6.1 Dimensions of bib taps shall be in accordance with those given in Table 3.

Table 3 Dimensions of Bib Tap
(Clause 6.1)

All dimensions in millimetres.

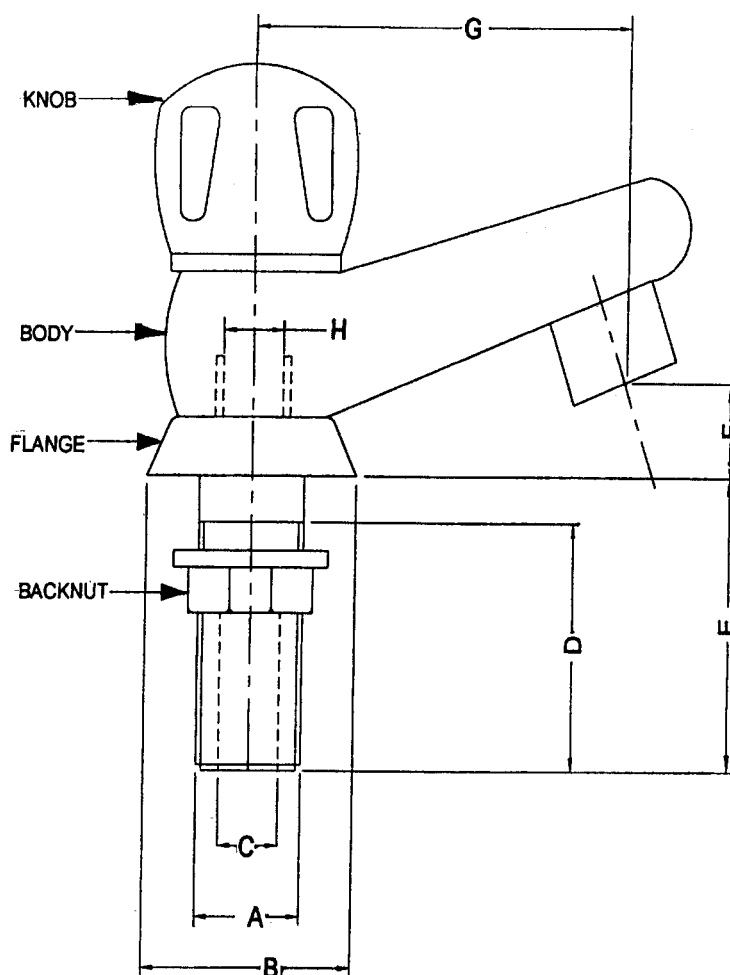


Dimensions	Nominal Sizes	
	15(1/2")	20(3/4")
A	G1/2	G3/4
B, Min	15	15
C	12.5 - 13.0	17.5 - 18.0
D, Min	12.6	18.9
E, Min	10	17.5

6.2 Dimensions of pillar taps shall be in accordance with those given in Table 4.

Table 4 Dimensions of Pillar Tap

All dimensions in millimetres.

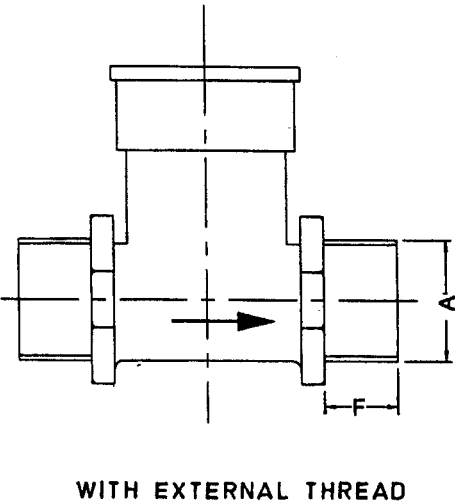
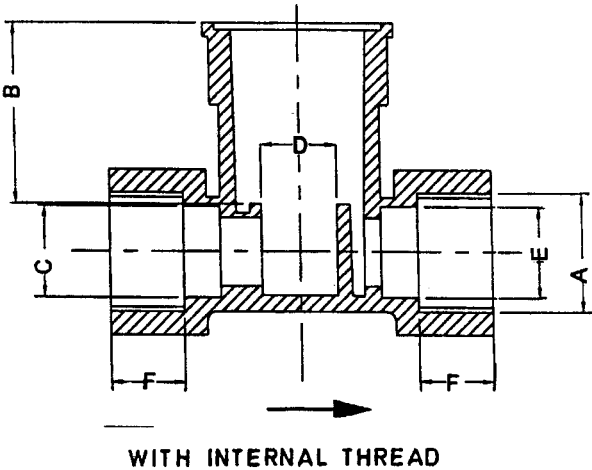


Dimensions	Nominal Size 15 mm($\frac{1}{2}$ ")
A	G $\frac{1}{2}$
B, Min	42
C	12.5 - 13.0
D, Min	42
E, Min	50
F, Min	25
G, Min	80
H, Min	12.6

6.3 Dimensions of stop valve shall be in accordance with those given in Table 5. Stop valve shall have internal or external threads as suitable for the end user.

Table 5 Dimensions of Stop Valve

All dimensions in millimetres.

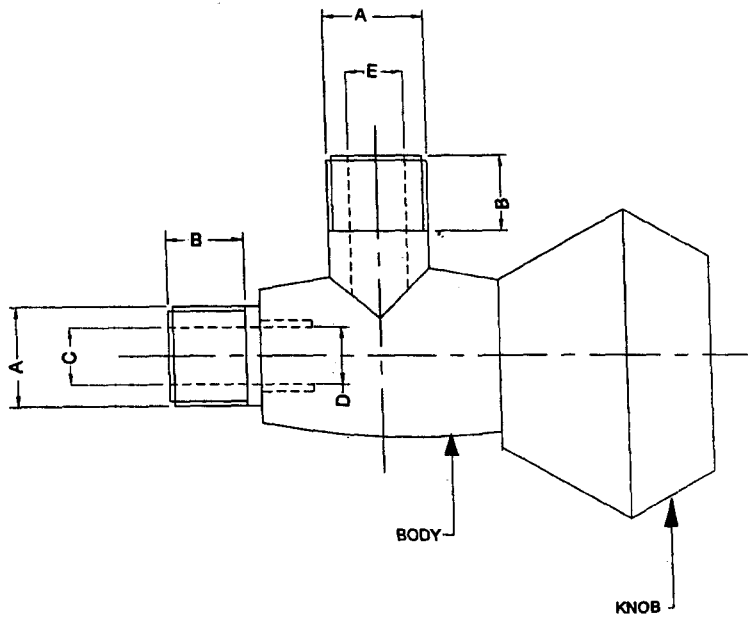


Dimensions	Nominal Sizes	
	15(½")	20(¾")
A	G½	G¾
B, Min	21	28
C	12.5 - 13.0	17.5 - 18.0
D, Min	12.6	18.9
E, Min	12.5 - 13.0	17.5
F, Min	12.0	15.0

6.4 Dimensions of angle valve shall be in accordance with those given in Table 6.

Table 6 Dimensions of Angle Valve

All dimensions in millimetres.



Dimensions	Nominal Sizes	
	15(½")	20(¾")
A	G½	G¾
B, Min	12.5	15
C	12.5 - 13.0	17.5 - 18.0
D, Min	12.6	18.9
E, Min	10	17.5

7 IDENTIFICATION

7.1 The control devices for taps shall be identified by:

- a) The colour blue, preferably, or the letter C for cold water:
- b) The colour red, preferably, or the letter H for hot water.

7.2 The cold water control device shall be on the right and hot water control device on the left, when viewed from the front.

8 CONSTRUCTION, WORKMANSHIP AND FINISH

8.1 Taps and valves shall be supplied in the following conditions:

- a) As coloured moulded plastic

b) Moulded plastic with chromium plating or gold plating or silver plating or vapour curing or powder coating, etc. All moulded parts shall be sound and free from cracks, spots and blowholes.

8.2 However shrinkage marks appearing on certain position of the surface due to moulding process is permissible. The internal surface shall be clean and smooth.

8.3 The bodies, bonnets, spindles and other parts shall be moulded in such a way that when assembled the parts shall be axial, parallel and cylindrical with surfaces smoothly finished within the limits of dimensions specified for various components.

8.4 Minimum Thickness

The thickness in any portion of the body and bonnet shall not be less than 2.5 mm for all sizes.

8.5 Finish

The taps and valves may be in any colour/coating as per 8.1 (b) as agreed to between the manufacturer and purchaser. Only plastic materials impervious to plating solutions shall be allowed to come in to contact with solution during plating.

9 TEST

9.1 Resistance to Residual Chlorine in Water

Plastic taps and valves shall remain unaffected after being immersed in a 10 percent solution of hydrochloric acid for 24 h.

9.2 Drip Proofness Test

This test shall be carried out by applying a hydraulic pressure of 0.1 MPa maintained for 15 min. There shall be no leakage of water during the test. Alternatively, the test can be performed using 0.04 MPa of pneumatic pressure.

9.3 Thermal Shock Test

This test shall be carried out by dipping the tap, valve in water maintained at a temperature not more than $65 \pm 2^\circ\text{C}$ for 1h and then suddenly quenching in water with temperature not more than 15°C and repeating the operation for 10 times. There shall be no defect in the tap or valve at the end of the test.

9.4 Hydraulic Pressure Test

Every bib tap, pillar tap, angle valve, stop valve complete with component parts shall be tested under an internal pressure of 1.6 MPa for a minimum period of 60 s. During this period there shall not be any leak, sweat, bulge or pressure drop. Alternatively, the components may also be tested at 0.6 MPa of air pressure for a minimum period of 20 s. Test procedure is given in Annex A.

9.5 Mechanical Strength Characteristics

The bib tap, pillar tap, angle valve, stop valve shall be held in vertical position. A torque of not less than 6 Nm shall be applied to the operating mechanism using a torque wrench in closing direction for a period of 5 min. Throughout the duration of the test and the end of the test, there shall be no deformation or loosening of any part of the tap or valve.

10 SAMPLING

The tests specified in this standard shall be classified

as type tests, production routine tests and acceptance tests.

10.1 Type Tests

The type tests shall consist of resistance to residual chlorine in water, thermal shock test and endurance test.

10.1.1 In the beginning of production and subsequently whenever a substantial change is made in respect of materials, design or method of manufacture, two pieces from the first batch of manufacture of taps or valves of each nominal size shall be subjected to these tests. The production shall be continued only when both test results in each of these requirements are found satisfactory.

10.2 Production Routine Tests

The following tests shall be considered as production routine tests and they shall be conducted by the manufacturer according to the sampling plan given in Annex B.

- a) Drip proofness test,
- b) Hydraulic pressure test, and
- c) Mechanical strength characteristics.

10.3 Acceptance Tests

These shall consist of all the tests and requirements specified in this standard. For the purpose of acceptance tests, the sampling and criteria for conformity shall be as given Annex B.

11 MARKING

11.1 Each tap or valve shall be permanently marked with the manufacturer's name or brand name, nominal size, batch No./ date of manufacture on the body, and an arrow for direction of flow for stop valve.

11.1.1 The taps and valves may also be marked with the BIS Standard Mark.

11.1.2 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standard Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which a license for the use of the Standard Mark may be granted to the manufacturer or producers may be obtained from the Bureau of Indian Standards.

ANNEX A*(Clause 9.4)***HYDRAULIC PRESSURE TEST****A-1 WATER TIGHTNESS TEST**

A-1.1 The test consists of testing either under cold water pressure or under air pressure.

- a) Water tightness of the obturator.
- b) Water tightness of the taps.

Hydraulic test circuit capable of producing the static pressure required and for maintaining them for the duration of the test shall be used. Pneumatic circuit capable of producing the required pressure and maintaining it for the duration of the test may be used for testing the taps/valves using air pressure.

A-1.2 Checking the water tightness of the obturator on the seat and the water tightness of the tap upstream of the obturator.

A-2 WATER TEST

The tap is connected to the test circuit with the outlet orifice turned downwards, obturator is closed using the torque of 1.5 N-m for nominal size 1/2 inch and 2.5 Nm for nominal size 3/4 inch. A water pressure of 1.6 ± 0.15 MPa (16 ± 1.5 bar) for 60 ± 5 s is applied.

A-2.1 Air Test under Water

The tap is connected to the test circuit with outlet orifice open and turned upwards, obturator is closed using the torque of 1.5 N-m for nominal size 1/2 inch

and 2.5 N-m for nominal size 3/4 inch.

The tap is completely immersed in the water contained in the tank. An air pressure of 0.6 ± 0.05 MPa (6 ± 0.5 bar) to the tap for 20 ± 2 s is applied.

A-2.2 Checking the water tightness of the taps downstream of the obturator.

A-2.2.1 Water Test

The tap is connected to the test circuit with outlet orifice artificially closed and turned downwards, obturator is kept open.

Water pressure of 0.4 ± 0.05 MPa (4 ± 0.5 bar) is applied for a period of 60 ± 5 s to the tap and is then gradually reduced to 0.02 ± 0.002 MPa (0.2 ± 0.02 bar) and maintained for 20 ± 2 s.

A-2.2.2 Air Test Under Water

The tap is connected to the test circuit with outlet orifice artificially closed and turned upwards, obturator is kept open, with the tap completely immersed in water contained in the tank.

Air pressure of 0.2 ± 0.05 MPa (2 ± 0.5 bar) is applied to the tap for 20 ± 5 s then gradually reduced to 0.02 ± 0.002 MPa (0.2 ± 0.02 bar) and maintained for 20 ± 2 s.

ANNEX B

(Clauses 10.2 and 10.3)

SAMPLING AND CRITERIA FOR CONFORMITY**B-1 SAMPLING****B-1.1 Lot**

All bib taps or stop valves of the same nominal size, manufactured under similar conditions of production (as from material of the same batch, components from the same source, etc), shall be grouped together to constitute a lot.

B-1.2 The sample items from a lot shall be selected at random. For random selection of the items, the procedures for simple random sampling or systematic sampling as given in IS 4905 may be adopted.

B-1.3 Scale of Sampling

The number of sample items to be selected from a lot shall depend upon the size of the lot and shall be in accordance with one of the scales of sampling given in Table 7 for various tests given in Annex A and requirements of this standard.

B-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-2.1 Scale 1 of sampling given in Table 7 shall apply in respect of visual requirements. The sample items shall be selected at random from the lot and subjected to visual inspection for all visual requirements as specified in 8.2 and 8.3.

B-2.1.1 The lot shall be considered as conforming to each visual requirement if the number of sample items failing to meet the visual requirement does not exceed the acceptance number of defectives 'a' corresponding to scale 1 given in col 3 of Table 7.

B-2.2 Scale 2 of sampling given in Table 7 shall apply in case of each of the requirements specified for dimensions (see 6), construction (see 8.1, 8.2, 8.3 and 8.5), minimum thickness (see 8.4), and hydraulic pressure test (see 9.4). The sample items may be selected at random either from those already selected in scale 1 or directly from the lot if the former is not sufficient.

B-2.2.1 The lot shall be considered as conforming to each of these requirements if the number of defective items in the sample for the requirement be less than or equal to the acceptance number 'a' corresponding to scale 2 given in col 5 of Table 7.

B-2.3 Scale 3 shall be applicable in respect of resistance to residual chlorine in water test (see 9.1), drip proofness test (see 9.2) and mechanical strength characteristics test. The sample items may be selected at random from those already selected in scale 1 or directly from the lot if necessary.

B-2.3.1 The lot shall be considered as conforming to each of these requirements if the number of defective items in the sample for the requirement be less than or equal to the acceptance number 'a' corresponding to scale 3 given in col 6 of Table 7.

B-2.4 In respect of thermal shock test (see 9.3) the manufacturer shall supply a certificate of conformity with every lot.

B-2.5 However, for lots of over 10 000 items in addition to the test certificate, one more sample selected at random from the lot shall be subjected for each of these tests and the lot may be accepted if no failure is encountered.

Table 7 Scale for Sampling and Criteria for Conformity

(Clauses B-1.3, B- 2.1, B- 2.2, 2.2.1 and B-2.3.1)

Lot Size (1)	Scale 1		Scale 2		Scale 3
	<i>n</i> (2)	<i>a</i> (3)	<i>n</i> (4)	<i>a</i> (5)	<i>a</i> (6)
Up to 25	5	0	3	0	2
26 to 100	13	1	5	0	2
101 to 300	32	2	8	0	2
301 to 1 000	80	5	13	1	3
1 001 to 3 000	125	7	20	1	3
3 001 to 10 000	200	10	32	2	3
10 001 and above	315	14	50	3	5

NOTE—'n' denotes the number of samples to be selected at random.

'a' denotes the number of defectives acceptable in the sample.

ANNEX C

(Foreword)

COMMITTEE COMPOSITION

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