



**PRODUCT MANUAL FOR  
SUCTION APPARATUS - SPECIFICATION  
ACCORDING TO IS 4533:1995**

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

1.	<b>Product</b>	:	IS 4533:1995
	<b>Title</b>	:	Suction Apparatus
	<b>No. of Amendments</b>	:	1
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	As per Cl 4 & 5 of IS 4533
b)	<b>Grouping guidelines</b>	:	Not Applicable
c)	<b>Sample Size</b>	:	One suction apparatus
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX –A
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX –B
5.	<b>Possible tests in a day :</b>		i. Construction ii. General requirements iii. Safety requirements
6.	<b>Scope of the Licence :</b>		
	“Licence is granted to use Standard Mark as per IS 4533:1995 with the following scope:		
	Name of the product	Suction Apparatus	
	Type	Type 1/ Type 2	
	Tubing Type	Rubber/ Plastic	

**ANNEX A****List of Test Equipment***Major test equipment required to test as per the Indian Standard*

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1.	Rubber components – Cl 4.2	Electric oven with hour meter
23	Vacuum Unit – Cl 5.1	Manometer mercurial , Stop watch, Air flow meter
5.	Suction Bottle & lid – Cl 5.4 Suction system filters & traps – Cl 5.5	Autoclave
4.	For dimension of tubing – Cl 5.6.1	Digital Vernier calliper, Measuring tape
5.	Castors – Cl 5.7	Castor resistance tester
6.	General requirements – Cl 6	Sound level meter using frequency weighting characteristics A
7.	General requirements – 6.3	Stability test apparatus inclined platform of 10 deg.
8.	Protection Against Electric Shock- Cl. 8 of IS 302-1	Test probe B, 13 and 41 of IS 1401, pin, Voltmeter, mill-ammeter, force gauges,
9.	Leakage current and electric strength at operating Temperature – Cl 13 of IS 302-1	Leakage current meter, isolation transformer, HV test supply
10	Stability and mechanical hazards – Cl 20 of IS 302-1	Inclined plane, masses, force gauges
11.	Mechanical Strength – Cl 21	Impact Hammer
12.	Supply connection and external flexible cords – Cl 25 of IS 302-1	Flexing test apparatus, Cord anchorage force & torque tester
13.	Terminals for external conductors – Cl 26 of IS 302-1	Torque screwdriver
14.	Provision for earthing – Cl 27 of IS 302-1	Earth continuity tester
15.	Screws and connections – Cl 28 of IS 302-1	Torque guage
16.	Creepage distances and clearances – Cl 29 of IS 302-1	Mechanical measurement tools, Rod and ball gauges
17.	Resistance to heat, fire, tracking – Cl 30 of IS 302-1	Heating Oven with Temp controller, Ball pressure Apparatus, Glow wire test apparatus
18.	Resistance to rusting – Cl 31	Humidity Chamber with Temp and Humidity

Sl. No.	Tests used in with Clause Reference	Test Equipment
	of IS 302-1	Controller Measuring Cylinder 500 ml Ammonium Chloride, Carbon Tetrachloride, Distilled Water
19.	Adhesion test – Cl 9.1	Cellulose tape, Bevel angle protractor

*The above list is indicative only and may not be treated as exhaustive.*

**ANNEX B**

**Scheme of Inspection and Testing**

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1**The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** –The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per the requirements of IS 4533.

**4. CONTROL UNIT** – For the purpose of this scheme all the apparatus produced in one week shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

**Table 1**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
4.	<b><u>Material</u></b>						
	Metal Parts	4.1	IS 4533	S	One	Each consignment	#
	Rubber component	4.2	-do-	S	-do-		
	Glass	4.3	-do-	S	-do-		
	Plastic	4.4	-do-	S	-do-		
5.	<b><u>Construction</u></b>						
	Vacuum unit (Type 1&2)	5.1		R	Each unit	For type 1 apparatus, the flameproof enclosure shall either be ISI marked or be accompanied with TC showing conformity to IS/IEC 60079-1 from TPTL	
	Base	5.2	-do-	R	Each unit		
	Vacuum Gauge	5.3	-do-	R	Each unit		#
	Suction bottles and lid with connection	5.4	-do-	R			

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
	Suction filter, Traps and connection	5.5	IS 4533	R			
	Tubing and Couplings	5.6	IS 4533	R			
	Rubber Tubing	5.6.1	IS 637	S	Each consignment	#	
	Coupling	5.6.2	IS 4533	R	Each unit		
	Castors	5.7	IS 4034	S	One	Each consignment of a size #	
	Electric Motor	5.8	IS 996	S	-do-	#	
	Switches and wiring	5.9	IS 4533	S	-do-	-do- #	
6	General Requirement	6	IS 4533	R	One	Each control unit	
7	<b>Safety Requirement</b>						
a	Protection against electric shock	8	IS 302-1	R	Each unit		

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
b	Electric insulation & leakage current at operating temperature	13	-do-	R	-do-		
c	Stability & Mechanical hazards	20	-do-	R	One	Each control unit	
d	Mechanical strength	21	-do-	S	One	Once in 3 months	
e	Supply connection & external flexible cable and cords	25	-do-	S	One	Once in 3 months	
f	Terminal for external conductor	26	-do-	S	One	Once a month	
g	Provision for Earthing	27	-do-	S	One	Once a month	
h	Screws and connection	28	-do-	S	One	Once in 3 months	
i	Creepage distance & clearance	29	-do-	S	One	Once in 3 months	

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
J	Resistance to heat Fire and cracking	30	-do-	S	One	Once in 3 months	
k	Resistance to rusting	31	-do-	S	One	Once a month	
8	Workmanship and finish	8.1	IS 4533	R	Every unit		
		8.2 & 8.3		R	One	Each control unit	#
9	Adhesion test	9.1	IS 4533	R	One	-do-	

# No further testing required if material is accompanied with Test Certificate or ISI marked.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.