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उत्पादमैनुअल

कृषिवस्त्रादि - कृषिऔरबागवानीअनुप्रयोगोंकेलिएलचीलीजलभंडारणटंकी

IS 17729:2021 केअनुसार

PRODUCT MANUAL FOR
Agro Textiles- Flexible Water Storage Tank for Agricultural and Horticultural Purposes- Specification as per IS 17729:2021

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम 2018 की स्कीम-I के तहत यह उत्पाद मैनुअलप्रमाणीकरणकी संचालनरीतिमेंसुसंगता और पारदर्शिता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्सधारियोंद्वारा संदर्भ सामग्री के रूप मे उपयोग किया जाएगा। बीआईएसलाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

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.	**उत्पाद** **Product**	:	IS 17729:2021
	शीर्षक **Title**	:	Agro Textiles- Flexible Water Storage Tank for Agricultural and Horticultural Purposes- Specification as per IS 17729:2021
	संशोधनसंख्या **No. of amendments**	:	0
2.	**नमुनाकरणदिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चामाल** **Raw material**	:	Polyethylene used for manufacture of inner layer of flexible tank shall conform to the requirements specified in IS 10146. Polypropylene (PP) used for manufacture of tapes used in outer layer of flexible tank shall conform to the requirements specified in IS 10910. The PP tapes used for the manufacture of outer fabric

			shall conform to the requirements of IS 11197.
b)	**समूहिकरणदिशानिर्देश** **Grouping Guidelines**	:	Sample of Flexible Water Storage Tank of Highest Type (Highest) Capacity may be drawn to cover tanks of lower capacities. For example:- If sample of Storage Tank of Type VI (Having minimum capacity of 100kL) is drawn and tested, Type V (50 kL) , IV, III, II and I (2 kL) shall also be covered in the scope of the licence. A declaration shall be obtained from the manufacturer that the materials used for the manufacture of all capacities of tanks shall remain the same.
c)	**नमूनेकापरिमाण** **Sample Size**	:	1 tank, 2 metre Outer Layer, 2 metre Inner Layer for complete testing In case of market samples. 1 whole tank is required to de drawn
3.	**परीक्षणउपकरणोकीसूची** **List of Test Equipment**	:	Please refer Annex – A
4.	**निरीक्षणवपरीक्षणस्कीम** **Scheme of Inspection and** **Testing**	:	Please refer Annex – B
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**	:	Puncture Strength (Table 4) Ultrasonic Leak Test (Table 4) Dimensions (cl.5.6) Dart Impact Strength, Requirements of Inner Layer (Table 2)
6.	**लाइसेन्स का कार्यक्षेत्र /Scope of the Licence:**		
	IS17729:2021 केअनुसारमानकमुहरकाउपयोगकरनेकेलिएलाइसेन्सनिम्नलिखितकार्यक्षेत्रकेलिएप्रदानकियाजाताहै **Licence is granted to use Standard Mark as per IS 17729:2021 with the following scope:**		
	Name of the product	Agro Textiles- Flexible Water Storage Tank for Agricultural and Horticultural Purposes- Specification as per IS 17729:2021	
	Type (Minimum Capacity of Tank)	Type I (2 kL), Type II (6 kL), Type III (12 kL) , Type IV (25 kL), Type V (50 kL) , Type VI (100 Kl)	

ANNEX A
TO PRODUCT MANUAL FOR
Agro Textiles- Flexible Water Storage Tank for Agricultural and Horticultural Purposes- Specification as per IS 17729:2021

LIST OF TESTS EQUIPMENTS

Major test equipment essentially required to test as per requirements of Indian Standard.

Sr.No.	Test Equipment	Test Used in With Clause Reference
1	Dial Micrometer, Flat Anvil, Steel Tape	Dimensions, cl.5.6
1	Tensile Testing Machine capable of maintaining test speeds chosen within the tolerances specified in Table 1, Grips, Force Indicator, Extensometer, Strain Gauges, Conditioning Chamber, Sample Preparation Equipment	Tensile Strength at break, Elongation at break, Requirements for Inner Layer, Table 2, cl.4.2 and cl.6.1
2	Air Oven, Provision of suspending the sample vertically in the oven so that they are not within 10 mm of each other or the sides of the oven, Thermometer	Ageing Test, Requirements for Inner Layer, Table 2,cl.4.2 and cl.6.1
3	**As per Method B of IS 13360 (Part 5/Sec 6)** Dart with a 50 mm ± 1 mm diameter hemispherical head dropped from a height of 1,50 m ± 0.01 m. Its range of applicability is from about 0,3 kg to about 2 kg, Specimen Clamp, Electromagnet, Positioning Device, Micrometer, Cushioning and shielding device, Collar, Darts, Incremental Weights, Conditioning Chamber	Dart Impact Strength, Requirements for Inner Layer, Table 2, cl.4.2 and cl.6.1
4	Test Dish, Conditioning Chamber (27 ± 2 °C at 65 ± 2 percent relative humidity), Burette, Adhesive, Turntable, Analytical Balance	Moisture vapour transmission rate for single inner layer, Table 2, cl.4.2 and cl.6.1

	Conditioning Chamber, Gas-transmission cell, Coulometric Sensor, Gas conditioning devices, Flowmeters, Dry nitrogen with 0,5 % to 3 % by volume of hydrogen, Dry Oxygen containing at least 99.5% by volume of O_2.	Oxygen Transmission Rate, Requirements for inner layer, cl.4.2 and cl.6.1
	Constant-rate-of-extension (CRE)Tensile Testing Machine, Equipment for cutting test specimens and for fraying them to obtain the required width, Equipment, in which test specimens can be immersed in water preparatory to wet testing, Grade 3 water, Nonionic Wetting Agent, Conditioning Chamber	Tensile Strength at break, Elongation at Break, Requirements for Outer Layer made from PP Woven Fabric, Table 3, cl.6.2
	Flourescent UV lamp Type B, Constant-rate-of-extension (CRE)Tensile Testing Machine, Equipment for cutting test specimens and for fraying them to obtain the required width, Equipment, in which test specimens can be immersed in water preparatory to wet testing, Grade 3 water, Nonionic Wetting Agent, Conditioning Chamber, Condensation Chamber	Retention of Tensile Strength after UV exposure of 192 h (Warp and weft direction), Requirements for Outer Layer made from PP Woven Fabric, Table 3, cl.6.2

	Constant-rate-of-extension (CRE)Tensile Testing Machine, Equipment for cutting test specimens and for fraying them to obtain the required width, Equipment for sewing defined seams, Conditioning Chamber, Flourescent UV lamp Type B, Condensation Chamber	Seam Strength, Requirements for Outer Layer made from PP Woven Fabric, Seam Strength after UV Exposure of 192 h (Warp direction), Requirements for Outer Layer made from PP Woven Fabric, Table 3, cl.6.2
	Air Circulating Oven, 0.5 percent aqueous solution of polyoxyethylated nonylphenol,	Environmental Stress Cracking resistance, Requirements for Outer Layer made from PP Woven Fabric, Table 3, cl.6.2
	Cooling Chamber, Mass of 500 g, Impact Device consisting of Specimen Holder, Rigid Anvil, Impact Mass, Guide Tube, Holding Device, Cooling Chamber, Thermometer, Conditioning Chamber	Cold Crack Resistance, Requirements for Outer Layer made from PP Woven Fabric, Table 3, cl.6.2

	Constant Rate of Extension (CRE)Tensile/Compression testing machine, Ring Clamp Attachment, Solid Steel Rod, Conditioning Chamber (65 ± 5 percent relative humidity and 27 ± 2 ^{o}C temperature)	Puncture Strength, Requirements for Flexible Water Storage Tank, Table 4, cl.6.3
	Ultrasonic Leak Tester, Air Pump	Ultrasonic Leak Test Requirements for Flexible Water Storage Tank, Table 4, cl.6.3

Note: The above is an indicative list for the purpose of guidance only.

ANNEX B
To Product Manual for
Agro Textiles- Flexible Water Storage Tank for Agricultural and Horticultural Purposes- Specification as per IS 17729:2021

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 and implement calibration plan for the test equipment.

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

3. **LABELLING & MARKING** – The Standard Mark as given in the Schedule of the license and Licence Number (i.e., CM/L…….) shall be incorporated on the product , and the marking shall be done as per the provisions of the Indian Standard, provided always that the product thus marked conforms to all the requirement of the specification.

3.1 Each flexible water tank shall be legibly market with the following information by printing on it:-

i) Name of the manufacturer or trade mark;
ii) Type and capacity (kL) of flexible water storage tank;
iii) Tubular length and width in mm;
iv) Batch number or lot number; and
v) Any other information as required by the buyer or the law in force

4. CONTROL UNIT – All flexible water storage tanks of same type (capacity) and manufactured under similar conditions of production from the same raw material, in a day, 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 to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1: LEVELS OF CONTROL

(1)				(2)	(3)		(4)
TEST DETAILS					**LEVELS OF CONTROL**		
Clause	**Requirements**	**Test Method**		**Test equipment requirement** R: required (or) S: Sub-contracting permitted	**No. of Samples**	**Frequency**	**REMARKS**
		Clause	**Reference**				
4, 5	Material	4.1, 4.2, 5.1.2	IS 10146 IS 10910	S	One	Each Consign ment	Polyethylene used for the manufacture of inner layer, Polypropylene (PP) used for the manufacture of tapes used in outer layer and PP Tapes shall conform to the requirements of IS 10146, IS 10910 and IS 11197 respectively. The material procured from outside shall be received with test certificate indicating conformity to the relevant Indian Standard. No further testing is required if the material procured is ISI marked.
5	Manufacture	5.1, 5.1.1, 5.1.2, 5.1.2.1, 5.2, 5.3, 5.3.1, 5.4, 5.5	IS 11197	R	Adequate inspection to ensure that each tank conforms to the requirements of the specification		
5.6	Dimensions	Table 1	IS 17729	R	Adequate inspection to ensure that each tank conforms to the requirements of the specification		

6.1 , Table 2	Requirements for Inner Layer						
i)	Tensile strength at break	-	IS 13360 (Part 5/Sec 1) and IS 13360 (Part 5/Sec 3)	R	One	Once in a week	----
ii)	Elongation at break	-	IS 13360 (Part 5/Sec 1) and IS 13360 (Part 5/Sec 3)	R	One	Once in a week	----
iii)	Ageing test at (70 ± 1) °C for 7 days	cl.4	IS 7016 (Part 8)	R	One	Once in 3 months	----
iv)	Dart impact strength	Method B	IS 13360 (Part 5/Sec 6)	R	One	Each Control Unit	----
v)	Moisture vapour transmission rate for single inner layer	Annex C	IS 17729	S	One	Once in 3 months	----
vi)	Oxygen transmission rate	--	ISO 15105-2	S	One	Once in 3 months	----
6.2 Table 3	Requirements of Outer Layer made from PP Woven Fabric						
i)	Tensile strength at break,	-	IS 1969 (Part 1)	R	One	Once in a week	----
ii)	Elongation at break	-	IS 1969 (Part 1)	R	One	Once in a week	----
iii)	Retention of tensile strength after UV exposure of 192 h (Warp and weft direction)	Annex D	IS 17729 IS 1969 (Part 1)	S	One	Once in a month	---

iv)	Seam strength	--	IS/ISO 13935 (Part 1)	R	One	Once in a week	---
v)	Seam strength after UV exposure of 192 h (Warp direction)	Annex D	IS 17729 IS/ISO 13935 (Part 1)	S	One	Once in a month	---
vi)	Environmental stress cracking resistance	Annex E	IS 17729	R	One	Once in a month	---
vii)	Cold crack resistance at (–) 20 °C	Annex F	IS 17729	R	One	Once in a month	---
6.3, Table 4	Requirements for Flexible Water Storage Tank						
i)	Puncture strength	Annex G	IS 17729	R	One	Once in a week	---
ii)	Ultrasonic leak test	Annex H	IS 17729	R	One	Each Control Unit	---
15	Dispatch and Packaging	15.1, 15.2	IS/ISO 11951: 2016	R	Adequate measurement to ensure that coils conform to the specified requirements		

Note-1: Whether test equipment is required, or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are recommendatory and the licensee can submit his own levels of control which can be followed consequent to approval of Head BO.