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SPECIFICATION FOR JUTE SYNTHETIC UNION BAGS FOR PACKING CEMENT

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0. FOREWORD

0.1 This Indian Standard was adopted by the Bureau of Indian Standards on 29 September 1987, after the draft finalized by the Jute and Jute Products Sectional Committee had been approved by the Textile Division Council.

0.2 The work for development of alternative bags in place of conventional jute bags for packing cement with a view to reducing the wastage of cement as well as cost of packing was taken up by the National Council for Cement and Building Materials (NCB), New Delhi, at the instance of Ministry of Industrial Development, Government of India. NCB with the help of Indian Jute Mills Association and cement industry evaluated a number of bags, made out of different fabric constructions, in their laboratory and in actual field trials for performance. The Sectional Committee, acknowledging the work done by NCB in the development of these bags, decided to cover the requirements based on their work in this standard. The performance of these bags is comparable to the traditional jute bags for packing cement (*see* IS : 2580-1982*).

0.3 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†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard prescribes the constructional details and other particulars of jute synthetic union bags of dimensions 71 × 48 cm for packing 50 kg of cement.

*Jute sacking bags for packing cement (*second revision*).
†Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 5476-1966* shall apply.

3. GENERAL REQUIREMENTS

3.1 Fabric — The fabric used in the manufacture of bags shall be woven in plain weave with jute double warp ends and HDPE tapes in the ratio of 1 : 1 and jute yarn in the weft. The count of jute warp yarn should be 380 tex (11 grist) end weft yarn 895 tex (26 grist). The HDPE tape for warp yarn should have 3 mm width and 90 tex (800 denier) fineness. The mass per square metre of the fabric shall be 535 g $^{+10}_{-5}$ percent.

3.2 Bags — The bags shall be made from single pieces of fabric, uniform in construction and 71 cm width, with the weft running along the length of bags. The valve of the bag shall be made from same fabric as used in the bags.

3.3 Seam — The bottom of the bag shall be left open or stitched as agreed to between the buyer and the seller. The stitching of the top and bottom of the bag shall be on selvedge with overhead or herakle stitches through two layers of fabric using 2 strands of 3 ply jute twine of 380 tex × 3 for overhead stitching and 300 tex × 3 for herakle stitching. The stitching shall be of even tension throughout with all the loose ends securely fastened. The number of stitches per decimetre shall be between 9 to 11.

3.3.1 At the side of the bag the raw edges shall be turned to a depth of 38 mm and sewn with either overhead or herakle stitches through four layers of fabric (*see* Fig. 1) using 2 strands of 3 ply jute twine of 380 tex × 3 for overhead stitching and 300 tex × 3 for herakle stitching. The stitching shall be of even tension throughout with all the loose ends securely fastened. The number of stitches per decimetre at the sides shall be 9 to 11.

NOTE — It is recommended that the depth of stitching from the edge of the bag should be minimum 10 mm.

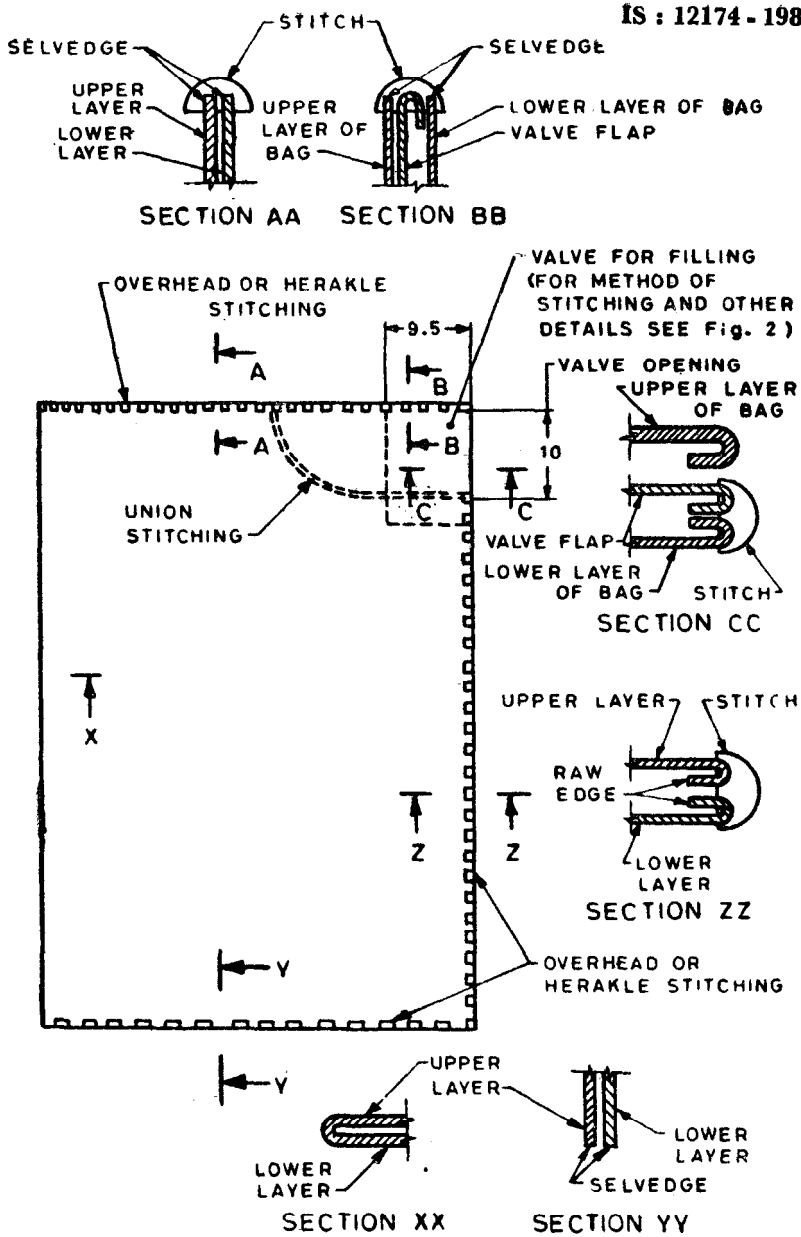
4. SPECIFIC REQUIREMENTS

4.1 The fabric and the bags made out of it shall conform to the requirements laid down in Table 1.

4.2 The bales containing the bags shall conform to the requirements laid down in Table 2.

4.3 Contract Regain—The contract moisture regain shall be 20 percent.

*Glossary of terms relating to jute (*first revision*).



The valve opening shall be at side corner or at top corner as agreed to between the buyer and the seller.

All dimensions in centimetres.

FIG. 1 JUTE SYNTHETIC UNION BAG FOR PACKING CEMENT (WITH VALVE OPENING AT SIDE CORNER)

TABLE 1 PARTICULARS OF JUTE SYNTHETIC UNION BAGS FOR PACKING CEMENT

(*Clauses* 4.1 *and* 7.1)

Sl No.	Characteristic	Requirement	Tolerance		Method of Test, Ref to	
			Individual	Average	Clause No. of IS : 9113-1979‡	Appendix of this standard
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Jute-synthetic union fabric					
	a) Ends/dm*	52	±4	—	14.4	—
	b) Picks/dm†	39	±2	$^{+2}_{-1}$	14.4	—
ii)	Dimensions (*see* Note 1):					
	a) Outside length of bag, cm	71·0	$^{+4}_{-0}$	—	14.3.2	—
	b) Outside width of bag, cm	48·0	$^{+4}_{-0}$	—	14.3.2	—
	c) Valve (*see* Note 2): (*see* Fig. 2)					
	1) Effective size, cm	10×9·5	$^{+3}_{-1}$	—	—	A-1
	2) Size of valve flap, cm	16·5×12	$^{+3}_{-1}$	—	—	A-1
iii)	Mass per bag, g (*see* Note 3)	420	$^{+40}_{-20}$	—	14.5.2	—
iv)	Breaking strength of sacking (ravelled strip method 10 × 20 cm), N(kgf)§, *Min*					
		Average				
	a) Warpway	1 175(120)	—	—	14.6.2	—
	b) Weftway	1 615(165)	—	—	14.6.2	—
v)	Breaking strength of seam (strip size : 5 × 20 cm), N(kgf)‡, *Min*					
	a) Side	440(45)	—	—	—	A-2
	b) Top (or top and bottom)	610(62)	—	—	—	A-2

*Jute yarn and HDPE tape as warp shall be in the ratio 2 : 1.
†Only jute yarn shall be as weft.
‡Specification for jute sacking : General requirements.
§1 kgf = 9·8 N approx.

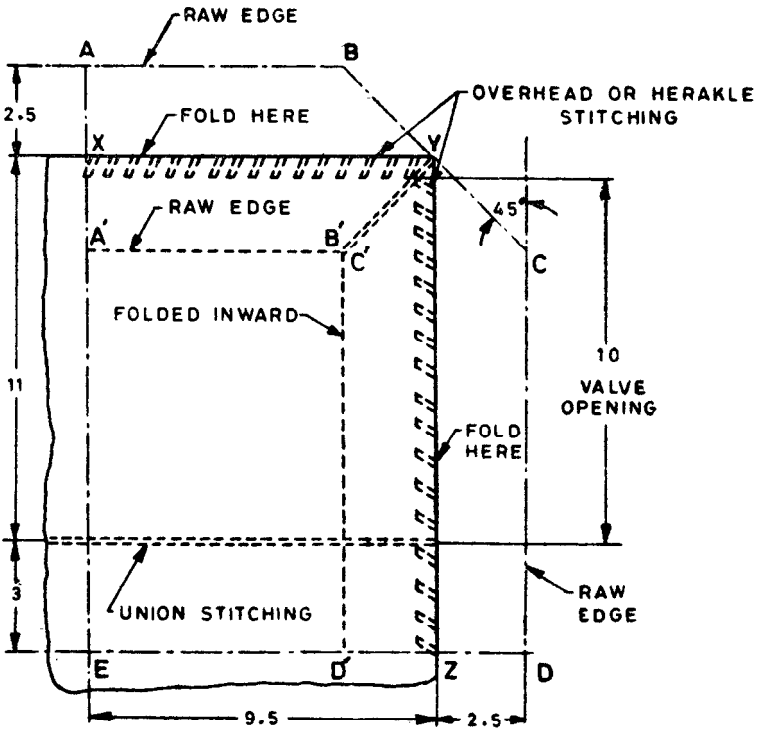
(*Continued*)

TABLE 1 PARTICULARS OF JUTE SYNTHETIC UNION BAGS FOR PACKING CEMENT — *Contd*

NOTE 1 — The length and width of bags may be as agreed to between the buyer and the seller, subject to a tolerance of $^{+4}_{-0}$ cm.

NOTE 2 — The position of valve opening shall be at the side corner or top corner as agreed to between the buyer and the seller.

NOTE 3 — Mass of bags of other dimensions shall be proportional to the standard bag 420 g, 71 × 48 cm and calculated on the basis of the area of the fabric including the seam, valve and flap with a tolerance of $^{+10}_{-5}$ percent of bag mass.



NOTE :

a) The size and shape of the flap before folding and stitching is shown by *ABCDE*.
b) The size and shape of the valve as in the bag is shown by *XYZE*.
c) *A' B'* shows the side *AB* of the flap after folding.
d) *C' D'* shows the side *CD* of the flap after folding.

All dimensions in centimetres.

FIG. 2 METHOD OF MAKING THE VALVE

TABLE 2 REQUIREMENTS OF PACKED BALES

(*Clauses* 4.2 *and* 7.1)

Sl No.	Characteristics	Requirement	Method of Test (Ref to Clause No. of IS : 9113-1979*)
i)	Total number of bags per bale	800	14.8
ii)	Contract mass of a bale, kg (*see* Note 2)	336	—
iii)	Corrected net mass of a bale	Not less than contract mass	14.1
iv)	Moisture regain, *Max*	22 percent	14.2
v)	Oil content on dry deoiled material basis, *Max* (*see* Note 3)	8 percent	14.7

*Specification for jute sacking : General requirements.

NOTE 1 — The number of bags per bale shall be 800 or as specified in an agreement between the buyer and the seller. The number of bags per bundle shall be 25 or 50 as agreed to between the buyer and the seller. There shall be no joint bag in any bale.

NOTE 2 — Contract mass of a bale is calculated as follows:

Contract mass of a bale = nominal mass of a bag × specified number of bags per bale

(Contracted mass of a bale specified in the table is on the basis of 420 g per bag and 800 bags per bale)

NOTE 3 — The specified oil content value of 8 percent corresponds to about 7 percent when determined on dry deoiled material plus 20 percent regain basis.

5. PACKING AND MARKING

5.1 Packing — The bags shall be packed in bales as laid down in IS : 2873-1979* or as specified in an agreement between the buyer and the seller.

5.2 Marking — The bales shall be marked as laid down in IS : 2873-1969*. Additional markings shall be made as stipulated by the buyer or as required by the regulations law in force.

5.2.1 The bales may also be marked with the Standard Mark.

NOTE — 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 thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

*Specification for packaging of jute products in bales (*first revision*).

6. SAMPLING AND INSPECTION

6.1 Unless otherwise agreed to between the buyer and the seller, the procedure for sampling shall be as given in Appendix B of IS : 9113-1979* and the procedure for measurement of valve as given in Appendix A.

7. CRITERIA FOR CONFORMITY

7.1 The lot shall be considered as conforming to the requirements of the standard, if the following conditions are satisfied:

a) The total of the corrected net mass of the bales under test is not less than the total contract mass of the bales (*see* Table 2).

b) The number of bags in each bale under test is not less than the specified number (*see* Table 2).

c) The average moisture regain percent of the bags under test is not more than the specified percentage (*see* Table 2).

d) The average oil content of the bags under test is not more than the specified percentage (*see* Table 2)

e) The dimensions of at least 90 percent of the bags under test are in accordance with the requirements specified (*see* Table 1). In the remaining bags, no bag shall have dimensions less than 1·5 cm below the specified values.

f) All the values of length and width of valve and flap are in accordance with the specified requirements (*see* Table 1).

g) The mass of at least 90 percent of the bags under test is in accordance with the requirements specified (*see* Table 1). In the remaining bags, no bag shall have mass less than 7·5 percent below the specified value.

h) The individual ends per decimetre of the bags under test and the ratio of jute yarn and HDPE tape are in accordance with the requirement specified (*see* Table 1).

j) The average and individual picks per decimetre of the bags under test are in accordance with the requirement specified (*see* Table 1).

k) The average breaking strength values of the bags under test for both warp and weft directions are not less than the requirements specified (*see* Table 1).

m) The average breaking strength values of seam for side and top (or top and bottom) of the bags under test are not less than the requirements specified (*see* Table 1).

*Specification for jute saking: General requirements.

APPENDIX A

(*Table* 1 and *Clause* 6.1)

TESTING AND INSPECTION

A-0. ATMOSPHERIC CONDITION OF TESTING

A-0.1 All tests may be carried out in the prevailing atmospheric conditions with relative humidity between 40 and 90 percent.

A-1. SIZE OF VALVE AND FLAP

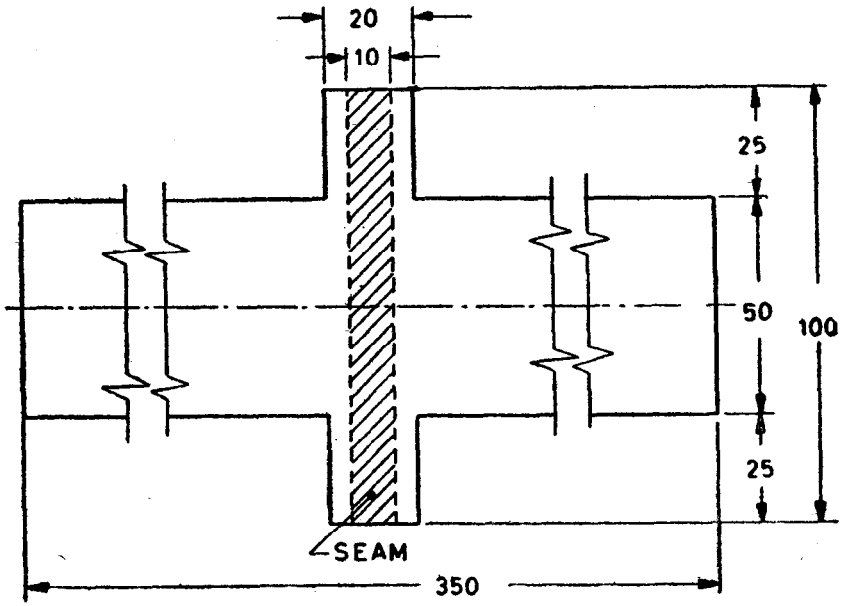
A-1.1 From each sample bag, remove the stitches at the top of the bag near the valve. Lay the bag flat on the table, turn the upper layer of the bag, render the bag free from creases and wrinkles and measure the size of the valve to the nearest 0·2 cm.

A-1.2 Remove the stitches and separate from each bag the flap used for manufacturing the valve. Measure the size of the flap to the nearest 0·2 cm.

A-2. BREAKING STRENGTH OF SEAM

A-2.1 Test two specimens each from the side and top (or top and bottom) of each of the sample bags taking 200 mm between grips with the seam near about the centre, using a constant rate-of-traverse machine operating at 460 mm per minute in accordance with IS : 9030-1979*. Prepare the test specimens in the form of a double 'T' with 100 mm of seam and 50 mm width of fabric as shown in Fig. 3.

*Method for determination of seam strength of jute fabrics including their laminates.



All dimensions in millimetrs.

FIG. 3 SIZE AND SHAPE OF TEST SPECIMEN FOR SEAM STRENGTH

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbo*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2