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*Indian Standard*

GLOSSARY OF TERMS  
RELATING TO PAPER SACKS

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# Indian Standard

## GLOSSARY OF TERMS RELATING TO PAPER SACKS

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# *Indian Standard*

## GLOSSARY OF TERMS RELATING TO PAPER SACKS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 28 December 1978, after the draft finalized by the Paper and Flexible Packaging Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

**0.2** Differences in the methods of describing and defining paper sacks and the materials from which they are manufactured occur both nationally and internationally. The object of this standard is to overcome these differences to the mutual benefit of customers, vendors in the national and international trade.

**0.3** The paper sacks are used mostly for the export packaging of cement, fertilizers, chemicals and other powder materials.

**0.4** This standard is based on ISO/DP 6590 Paper sacks — Vocabulary and types, issued by the International Organization for Standardization (ISO).

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### 1. SCOPE

**1.1** This standard defines the terms used in the manufacturing of paper sacks. It refers to single and multi-ply sacks made from paper and not to bags for the retail trade.

### 2. GENERAL TERMS

**2.1 Paper Sack** — A container made essentially from one or more flattened tubular plies of paper closed at least at one end, possible in combination with other flexible materials to provide the properties required for filling and the chain of distribution of goods.

**NOTE 1** — Hereafter where the word sack is used in the text of this standard, paper sack is to be understood. If no prefix is applied to a term under definition, paper sack is also to be understood.

**NOTE 2** — For some purposes it may be necessary to have limits for the size of paper sack. (Tube circumference not less than 550 mm may be found useful in practice.)

**2.2 Ply** — A sheet of paper or other flexible material, or combination of such materials, forming the walls of a sack.

**2.3 Gusset** — A fold inserted in the longitudinal edge of a tube or sack.

**2.4 Tube** — One or more plies in the form of a flattened cylinder cut into prescribed lengths.

**2.4.1 Flat Tube** — A tube comprised solely of flattened cylindrical plies with no inserted folds.

**2.4.2 Gusseted Tube** — A tube with folds inserted in the longitudinal edges.

**2.4.3 Flush Cut Tube** — A tube with plies cut collectively to a prescribed length ( see Fig. 1 ).

**2.4.4 Stepped End Tube** — A tube with plies severed in echelon to a prescribed length ( see Fig. 1 ).

**2.4.5 Notched End Tube** — A tube with plies cut collectively to a prescribed length, in a manner which provides a notch at one end ( see Fig. 1 ).

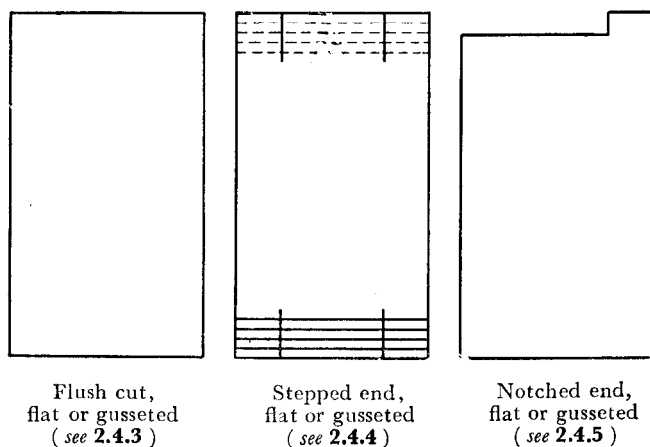


FIG. 1 TYPES OF TUBES

**2.5 Sewing ( Stitching )** — Joining together by means of thread.

NOTE — In sack manufacture usually bottom sewing by which the tube is closed on one or both ends.

**2.6 Pasting ( Adhesive Bonding )** — Joining together by means of an adhesive.



**2.6.1 Longitudinal Seam** — Pasting by which the longitudinal overlap ( 2.8.1 ) of a ply is joined together by means of an adhesive.

NOTE — The seam may be continuous or interrupted.

**2.6.2 Transverse Pasting** — Application of adhesive between the plies at one or both ends of a tube.

NOTE — Application of transverse pasting facilitates separation of the front and back sides of the tube during manufacture or end use and can enhance the strength of certain types of sack.

**2.6.3 Bottom Pasting** — Pasting by which the tube is closed at one or both ends by means of an adhesive.

NOTE — Before closure of the tube ends are folded and/or formed into a suitable shape.

**2.7 Heat Sealing ( Welding )** — Joining together by the application of heat.

**2.8 Overlap** — Areas of a tube or ply which are superposed.

**2.8.1 Longitudinal Overlap** — Areas of the longitudinal edge of a ply which are superposed.

**2.8.2 Bottom Overlap** — Areas of the transverse edges of a tube which are superposed when formed into a bottom.

**2.9 Valve** — An aperture, normally situated in one corner of a sack, through which the sack is filled, and which, after filling, does not readily allow of egress of the contents.

### 3. TYPES OF SACKS

**3.1 Flat Sack** — A sack manufactured from a flat tube.

**3.2 Gusseted Sack** — A sack manufactured from a gusseted tube.

**3.3 Sewn Sack** — A sack closed at one or both ends by means of a continuous transverse line of stitches.

**3.4 Pasted Sack** — A sack closed at one or both ends by pasting.

**3.5 Open Mouth Sack** — Tube closed at one end only during manufacture.

**3.5.1 Open Mouth-Sewn-Flat Sack** — Flat tube closed at one end by means of a continuous transverse line of stitches ( see Fig. 2 ).

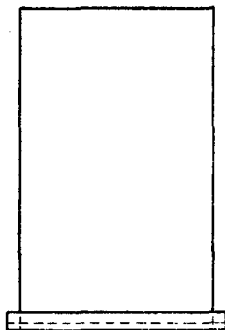


FIG. 2 OPEN MOUTH-SEWN-FLAT SACK

**3.5.2** *Open Mouth-Sewn-Gusseted Sack* — Gusseted tube closed at one end by means of a continuous transverse line of stitches ( see Fig. 3 ).

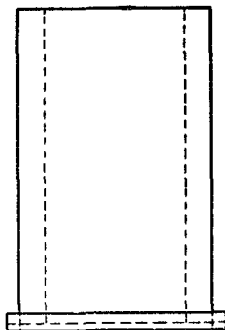


FIG. 3 OPEN MOUTH-SEWN-GUSSETED SACK

**3.5.3** *Open Mouth-Pasted-Flat-Hexagonal Bottom Sack* — Flat tube closed at one end by folding, forming and pasting the bottom in a hexagonal shape ( see Fig. 4 ).

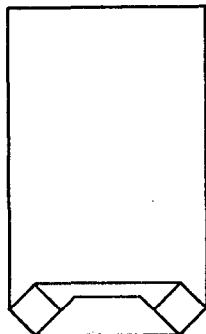


FIG. 4 OPEN MOUTH-PASTED-FLAT-HEXAGONAL BOTTOM SACK

**3.5.4** *Open Mouth-Pasted-Flat-Turn Over Bottom Sack* — Flat tube closed at one end by turning over the end and bonding. ( Commonly known as pinch type ) ( see Fig. 5 ).

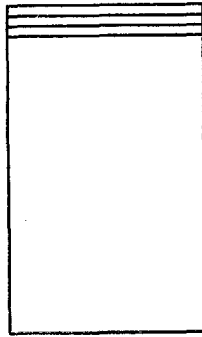


FIG. 5 OPEN MOUTH-PASTED-FLAT-TURN OVER BOTTOM SACK

**3.5.5** *Open Mouth-Pasted-Gusseted-Rectangular Bottom Sack* — Gusseted tube closed at one end by folding, forming and pasting the bottom in a rectangular shape. ( Commonly known as self opening satchel ) ( see Fig. 6 ).

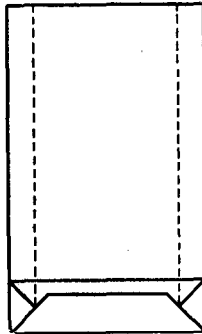


FIG. 6 OPEN MOUTH-PASTED-GUSSETED-RECTANGULAR BOTTOM SACK

**3.5.6** *Open Mouth-Pasted-Gusseted-Turn Over Bottom Sack* — Gusseted tube closed at one end by turning over the end and bonding. ( Commonly known as pinch type ) ( see Fig. 7 ).

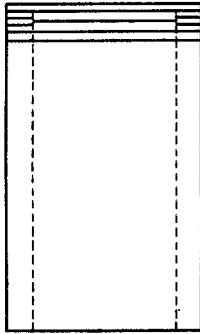


FIG. 7 OPEN MOUTH-PASTED-GUSSETED-TURN OVER BOTTOM SACK

**3.6 Valved Sack** — Tube closed at both ends but provided with a valve:

**3.6.1 Valved-Sewn-Flat Sack** — Flat tube closed at both ends by means of a continuous transverse line of stitches ( see Fig. 8 ).

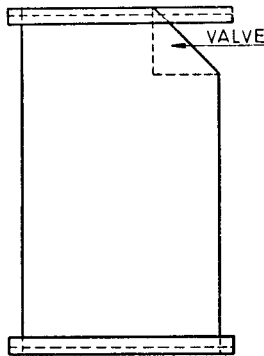


FIG. 8 VALVED-SEWN-FLAT SACK

**3.5.2 Valved-Sewn-Gusseted Sack** — Gusseted tube closed at both ends by means of a continuous transverse line of stitches ( see Fig. 9 ),

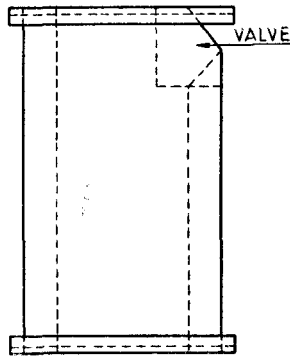


FIG. 9 VALVED-SEWN-GUSSETED SACK

**3.6.3 Valved-Pasted-Flat-Hexagonal Ends Sack\*** — Flat tube closed at both ends by folding, forming and pasting the ends in a hexagonal shape ( see Fig. 10 ).

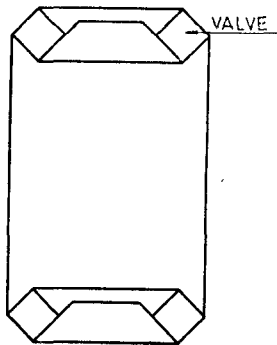


FIG. 10 VALVED-PASTED-FLAT-HEXAGONAL ENDS SACK

\*Various combinations of pasted and sewn ends can be produced, for example, valved-pasted-sewn-flat sack with one hexagonal end ( flat tube closed at one end by means of a continuous transverse line of sewing and at the other end, which includes the valve, by folding, forming and pasting in a hexagonal shape ).

**3.6.4 Valved-Pasted-Gusseted-Rectangular Ends Sack** — Gusseted tube closed at both ends by folding, forming and pasting the ends in a rectangular shape, commonly known a self opening satchel ( see Fig. 11 ).

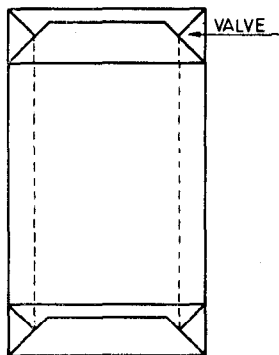


FIG. 11 VALVED-PASTED-GUSSETED-RECTANGULAR ENDS SACK

#### 4. CONSTRUCTIONAL DETAILS

##### 4.1 Principal Sewing Types

**4.1.1 Chain Stitch-Single Thread Sewing** — Type of sewing with one thread in which the needle forms loops through the tube, with each loop being locked by the preceding one ( see Fig. 12 ).

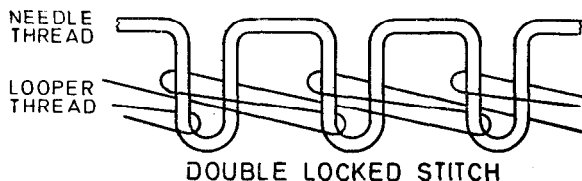
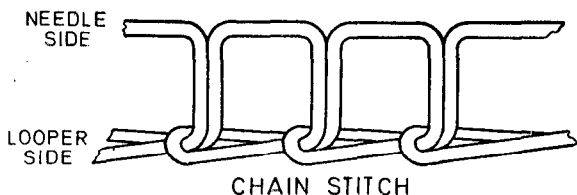


FIG. 12 PRINCIPAL SEWING TYPES

**4.1.2 Double Locked Stitch** — *Double Thread Sewing* — Type of sewing with two threads, in which the needle forms loops through the tube, each loop being locked by a transverse loop of the second thread ( see Fig. 12 ).

## 4.2 Sewn Closures and Accessory Materials for Them

**4.2.1 Filter ( Filler ) Cord** — Length of suitable materials, such as jute string, incorporated in a sewing line to seal and cushion the stitch holes.

**4.2.2 Capping Tape ( in Sewn Sacks )** — A tape of paper or other flexible material applied to the transverse edge of a tube, through which or beneath which sewing is effected.

**4.2.3 Simple Sewn Closure** — A tube closed only with a line of stitches ( see Fig. 13 ).

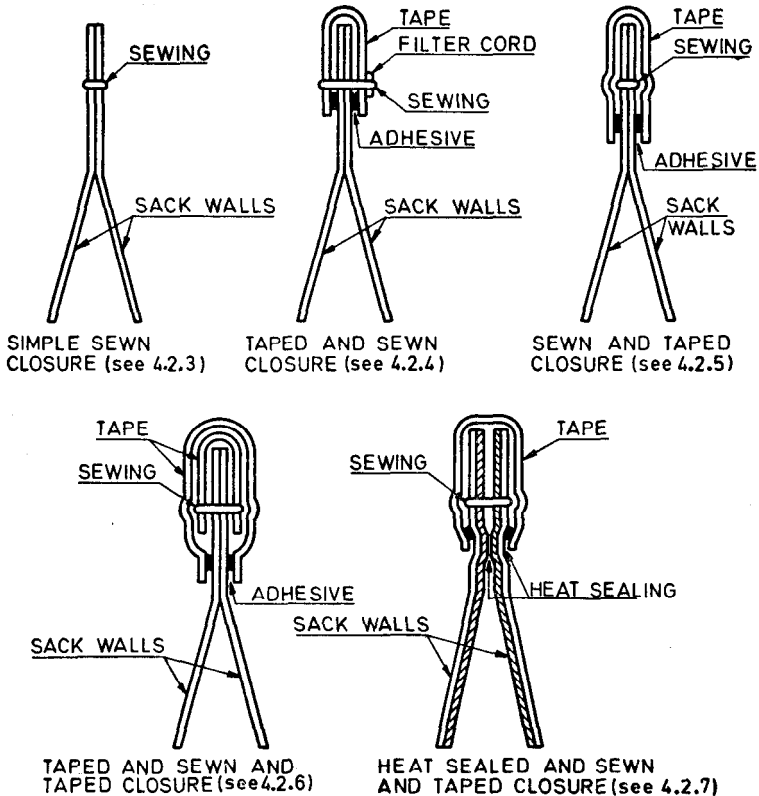


FIG. 13 SEWN CLOSURES

**4.2.4 Taped and Sewn Closure ( Tape Under Sewing )** — Capping tape and filter cord applied to the end of a tube with or without adhesive, and sewing effected through the tape ( see Fig. 13 ).

**4.2.5 Sewn and Taped Closure (Tape over sewing)** — Sewing line covered by a capping tape secured with an adhesive or by heat sealing ( see Fig. 13 ).

**4.2.6 Taped and Sewn and Taped Closure (Reinforced)** — Capping tape applied to the end of a tube, and sewing effected through the tape. A further capping tape is applied over the sewing and secured with an adhesive or by heat sealing ( see Fig. 13 ).

**4.2.7 Heat Sealed and Sewn and Taped Closure** — Heat is applied through the tube to seal an inner plastics film ply. Sewing is effected which bisects or is external to the heat seal. The sewing line is covered by a capping tape secured with an adhesive or by heat sealing ( see Fig. 13 ).

**4.3 Pasted Closures and Accessory Materials for Them**

**4.3.1 Bottom Cap** — Paper strip bonded to a sack end.

**4.3.2 Bottom Patch** — Paper strip bonded to the inner side of the sack bottom.

**4.3.3 Simple Pasted Closure** — A tube closed only with an adhesive ( see Fig. 14 ).

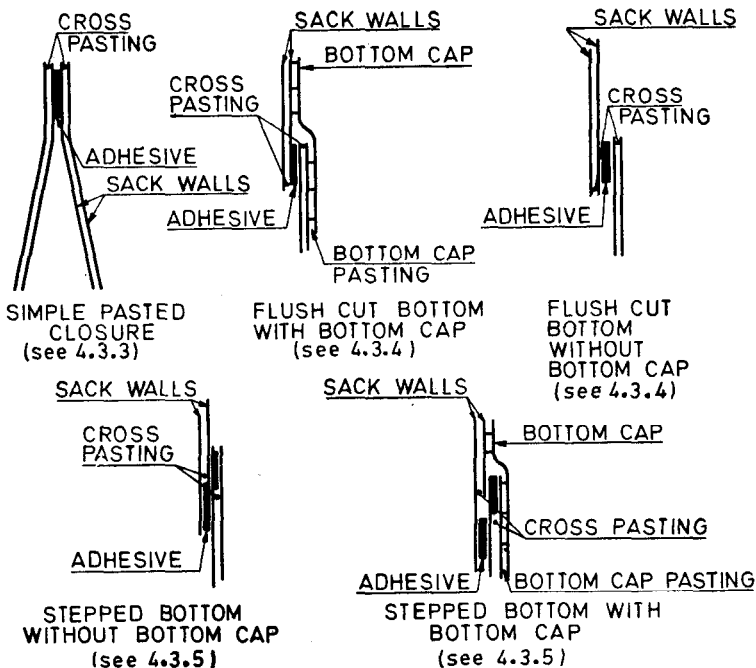


FIG. 14 PASTED CLOSURES



**4.3.4 Flush Cut Bottom With or Without Bottom Cap** — One or both ends of a flush cut tube, folded and with the plies pasted down collectively, with or without a bottom cap ( *see* Fig. 14 ).

**4.3.5 Stepped Bottom With or Without Bottom Cap** — One or both ends of a stepped end tube, folded and with the plies pasted down in steps, covered or not covered with a bottom cap ( *see* Fig. 14 ).

## 4.4 Valve Types

**4.4.1 Valve Sleeve** — An insert of paper or other flexible material, or combination of such materials, incorporated in the valve to improve its performance.

### 4.4.2 Valves in Sewn Sacks

**4.4.2.1 Simple valve** — One corner of a tube is folded in, thus creating a valve after sewing ( *see* Fig. 15 ).

**4.4.2.2 Internal Sleeve Valve** — Valve with sleeve extending within the sack ( *see* Fig. 15 ).

**4.4.2.3 External Sleeve Valve** — Valve with protruding sleeve ( *see* Fig. 15 ).

### 4.4.3 Valves in Pasted Sacks

NOTE — In certain cases, the valve sleeve width may be less than the bottom width.

**4.4.3.1 Simple valve** — Valve formed without sleeve or reinforcement.

**4.4.3.2 Reinforced valve** — Valve strengthened by the adhesion of a sheet of suitable material to the inside of its upper surface ( *see* Fig. 16 ).

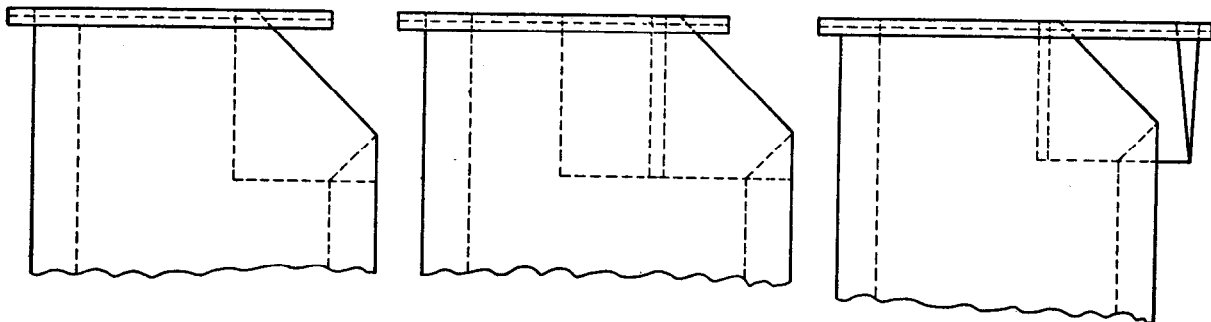
**4.4.3.3 Internal sleeve valve** — Valve with sleeve extending within the sack ( *see* Fig. 16 ).

**4.4.3.4 External sleeve valve** — Valve with protruding sleeve, normally provided with a pocket ( *see* Fig. 16 ).

## 4.5 Other Constructional Details

**4.5.1 Thumb Cut** — A cut through all plies at one side of the top end of open-mouth sacks, or in external valve sleeves, to facilitate opening prior to filling.

**4.5.2 Closing Device** — A special device with which the sack is provided for closing when filled.

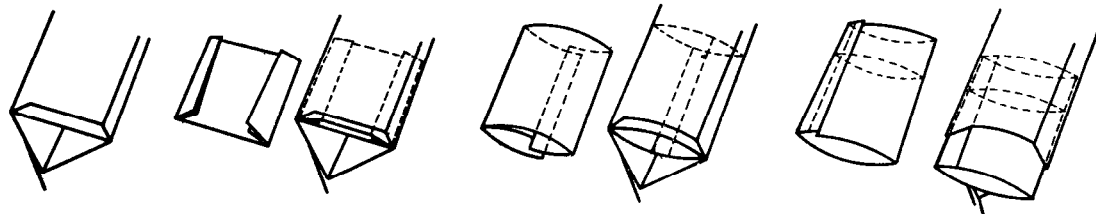


Simple Valve  
( see 4.4.2.1 )

Internal Sleeve Valve  
( see 4.4.2.2 )

External Sleeve Valve  
( see 4.4.2.3 )

FIG. 15 VALVES IN SEWN SACKS



Simple Valve  
( see 4.4.3.1 )

Reinforced Valve  
( see 4.4.3.2 )

Internal Sleeve Valve  
( see 4.4.3.3 )

External Sleeve Valve  
( see 4.4.3.4 )

FIG. 16 VALVES IN PASTED SACKS

**4.5.3 Opening Device** — A special device with which the sack is provided to facilitate opening of the filled and closed sack.

**4.5.4 Carrying Device** — A special device with which the sack is provided to facilitate transport.

**4.5.5 Perforation** — A line of perforation applied at the valve edge to facilitate the passage of air when filled.

## 5. MATERIALS

**5.1 Sack Paper** — A paper of high mechanical strength designed for use as a basic raw material in sack manufacture.

NOTE — According to current technology, the paper normally used is kraft paper. Sack paper may be produced in several variations in regard to raw materials, and elongation properties ( 5.2.1 and 5.2.2 ), shades ( 5.3 ), and wet strength properties ( 5.4 ).

### 5.2 Types of Sack Paper

**5.2.1 Normal ( Flat ) Sack Paper** — Sack paper, basically produced without any additional treatment for improvement of the elongation properties.

**5.2.2 Extensible Sack Paper** — Sack paper modified for the improvement of its elongation properties.

**5.2.2.1 Microcreped sack paper** — Sack paper that has been subjected to compacting in the machine direction, without visible creping.

**5.2.2.2 Low stretch creped sack paper ( light creped )** — Sack paper that has been subjected to light wet creping, usually on the paper machine.

**5.2.2.3 Creped sack paper** — Sack paper that has been subjected to wet creping, usually off the paper machine.

**5.3 Shades of Sack Paper** — Shades of sack paper vary in accordance with the brightness of the pulp used, and the dyestuffs added, as follows:

Unbleached

Semi-bleached

Fully bleached

Coloured

**5.4 Wet Strength Sack Paper** — Sack paper so treated as to decrease its loss in strength upon wetting.

### 5.5 Other Flexible Materials

**5.5.1 Plastics Films** — Plastics materials in the form of flat or tubular webs.

**5.5.2 Other Materials** — Woven or non-woven fabrics, films, foils or any other web-forming material usable as a ply in a paper sack.

**5.6 Converted Materials** — Paper or other flexible material modified, for example by coating or laminating to provide specific properties.

**5.6.1 Barrier Coated Papers** — Paper with a barrier material for, example, polyethylene, applied to one or both surfaces.

**5.6.2 Release Coated Papers** — Paper with a coating, for example silicone applied to one or both surfaces.

**5.6.3 Impregnated Papers** — Paper saturated with a material, for example wax, which is absorbed into the fibres, and/or fills the space between the fibres.

**5.6.4 Laminated Materials** — Two or more layers of paper and/or other materials bonded together with an essentially continuous layer, for example, of plastics.

**5.6.5 Reinforced Materials** — Paper reinforced, for example, with threads or cloth to improve its mechanical strength.

## **5.7 Accessory Materials**

**5.7.1 Sewing Thread** — The thread used to form the closure of sewn sacks. This may be made of natural or synthetic fibres or a combination of these.

**5.7.2 Adhesive** — The bonding material(s) used in sack manufacture. This may be based on natural or synthetic raw materials or mixtures of these. For example, starch glue, polyvinyl acetate dispersion for cold application and polyethylene based hot melt for hot application.