ORTHOPAEDIC CASTING MATERIALS

Plaster of Paris Bandage

P.O.P. Bandage

Plaster of Paris Bandage consists of a leno-weave bleached cotton gauze impregnated evenly with calcium sulphate which has been dehydrated so that it consists substantially of the hemihydrate, $CaSO_4,\frac{1}{2}H_2O$, to which adhesives and setting-time modifiers may have been added. It is reasonably free from loose powder.

Bandages less than 5 metres long have no joins; joins in longer bandages are made using a suitable adhesive and not by sewing.

Fibre identification After freeing the fabric from the calcium sulphate by the method described under Weight per unit area, complies with the tests for *cotton*, Appendix XX A.

Threads per 10 cm After freeing the fabric from the Plaster of Paris by shaking, warp: 143 to 157, Appendix XX C1, Method II; weft: 71 to 79, Appendix XX C1, Method I.

Weight per unit area *Fabric* Not less than 24 g m^{-2} when determined by the following method. Measure the area of a sample weighing about 25 g. Wash the sample thoroughly with cold *water*, wringing the material by hand after each washing, pass the washings through a sieve with a nominal mesh aperture of 106 μm and return any loose threads or fibres retained by the sieve to the bulk material. Add 400 ml of *water* to the residual material, heat slowly and boil for 1 minute. Cool by the addition of about 400 ml of *water*, decant the liquid through a sieve with a nominal mesh aperture of 106 μm and wring by hand as much water from the material as possible. Repeat this boiling wash with a further five 400-ml quantities of *water*. Place the washed material, together with any loose threads or fibres, in a beaker and cover the material with a 0.5% solution of diastase, maintaining at 70° until free from starch. Repeat the boiling wash and dry to constant weight at 105°.

Bandage Not less than 340 g m^{-2}, Appendix XX D1, Method III.

Calcium sulphate hemihydrate Not less than 88% of the calcium sulphate content, calculated as $CaSO_4,\frac{1}{2}H_2O$, when determined by the following method.

Dry an area of about 75 cm^2 of the bandage to constant weight at 105°, weigh, transfer the bandage to a graduated flask containing 200 ml of *water* and 10 ml of *hydrochloric acid*, shake until the calcium sulphate is dissolved, neutralise with 5M *ammonia*, add 10 ml of *ammonia buffer pH 10.0*, dilute to 500 ml with *water* and filter, retaining the residual fabric. Neutralise 50 ml of the filtrate with 2M *hydrochloric acid* and add 5.ml of a solution containing 6.75% w/v of *ammonium chloride*, 65.0% v/v of 13.5M *ammonia*, 0.0616 per cent w/v of *magnesium sulphate* and 0.093% w/v of *disodium edetate*. Add 1 ml of a 0.1% w/v solution of *sodium diethyldithiocarbamate* and titrate with 0.1M *disodium edetate VS* using as indicator 0.25 to 0.30 ml of a solution containing 0.5% w/v of *mordant black 11* and 4.5% w/v of *hydroxylamine hydrochloride* in *methanol*. Each ml of 0.1M *disodium edetate VS* is equivalent to 0.01452 g of $CaSO_4,\frac{1}{2}H_2O$.

Wash the residual fabric with cold *water*, passing the washings through a sieve with a nominal mesh aperture of 106 μm, return any loose threads or fibres retained by the sieve to the bulk material and dry to constant weight at 105°. The difference between the weights represents the weight of the calcium sulphate. Calculate the percentage of $CaSO_4,\frac{1}{2}H_2O$ in the calcium sulphate.

Setting time The plaster mass remains workable for not less than 1 minute after removal of the bandage from water and it should be set after 8 minutes. When removed from the mandrel the cast should not crumble under the pressure of the fingers. Perform the test on a complete bandage; if supplied in slabs or continuous strips, take a piece 2.7 m × 7.5 cm, wind the bandage loosely on a suitable plastic core and immerse at an angle of 45° in *water* at 30°, allowing to soak until thoroughly wetted but for not longer than 15 seconds. Remove from the water, squeeze to express surplus water but avoiding the loss of significant amounts of plaster and wind the bandage concentrically on to a smooth non-absorbent cylindrical mandrel with a diameter of 5 cm, working the plaster on each successive layer to ensure adequate coalescence.

SURGICAL TAPES

Adhesive Tapes

Self-adhesive Plasters

Adhesive Tapes comply with the appropriate requirements of the European Pharmacopœia for Self-adhesive Plasters. These requirements, which are reproduced in edited form below, apply unless otherwise justified and authorised to all adhesive tapes of the types defined, whether or not an individual monograph is included in the British Pharmacopœia. The provisions of this monograph do not apply to elastic bandages or adhesive dressings.

Adhesive Tapes are unmedicated articles intended to be used to secure dressing material to the skin. They consist of an adhesive mass spread uniformly as a continuous layer or with interstices on a suitable base. They may be perforated.

The base may consist of a textile fabric or a non-woven support or a plastic film. The base may be coloured. The tapes may be inextensible or extensible or elastic. They may be waterproof or waterproof but permeable to water vapour or permeable to water, water vapour and air.

When applied to the dry skin, the adhesive mass should be such that the tape adheres firmly but can be removed without causing appreciable injury. The adhesive mass should not be irritant to the skin.

Adhesive Tapes may be supplied in the form of a tape wound on spools or cores of metal or other suitable material or in the form of sheets of various sizes, the adhesive surface being covered with a readily removable protective sheet. The adhesive surface of an Adhesive Tape in the form of a tape may also have a similar protective covering.

Adhesive Tapes are enclosed in a suitable protective package.

Adhesiveness Comply with the tests, Appendix XX H.

Waterproofness Adhesive Tapes declared to be waterproof comply with the test, Appendix XX K.

Water-vapour permeability For Adhesive Tapes declared to be permeable to water vapour, the permeability is not less than 500 g m^{-2} per 24 hours, Appendix XX J1.

Storage Adhesive Tapes should be kept in a well-closed container, protected from light and stored at a temperature not exceeding 25°.

Labelling The label on the package states (1) the characteristics of the tape; (2) the type of base; (3) the length; (4) the width.

Adhesive Tapes wound on spools or cores comply with the following additional requirements.

Joins Lengths of less than 3 m have no joins; lengths of 3 m or more contain not more than one join.

Width Adhesive Tapes of declared width not more than 5 cm do not vary by more than ±1.5 mm from the declared width. Adhesive Tapes of declared width more than 5 cm do not vary by more than ±2.5 mm from the declared width.

ADHESIVE TAPES, TEXTILE FABRIC

Adhesive Tapes, Textile Fabric consist of a woven fabric of natural or synthetic material or any combination thereof, that has been spread with an adhesive mass. They comply with the tests prescribed under Adhesive Tapes and with one of the following requirements as appropriate.

Elasticity For tapes declared to be elastic, the regain length is not more than 80% of the fully-stretched length, Appendix XX F.

Minimum breaking load For tapes not declared to be elastic.

Unperforated fabric Not less than 40 N (about 4.0 kgf) per cm, Appendix XX E, Method I.

Perforated fabric Not less than 20 N (about 2.0 kgf) per cm, Appendix XX E, Method I.

The requirements for Adhesive Tapes, Textile Fabric apply to the following monographs of the British Pharmacopœia:

Elastic Surgical Adhesive Tape
Permeable Woven Surgical Synthetic Adhesive Tape
Zinc Oxide Surgical Adhesive Tape.

ADHESIVE TAPES, NON-WOVEN SUPPORT

Adhesive Tapes, Non-woven Support consist of a bonded non-woven fibrous material, including paper of a suitable quality, that has been spread with an adhesive mass. They comply with the tests prescribed under Adhesive Tapes and with the following requirement.

Minimum breaking load Not less than 8 N (about 0.8 kgf) per cm of the declared or nominal cut width, Appendix XX E, Method I.

The requirements for Adhesive Tapes, Non-woven Support apply to the following monograph of the British Pharmacopœia:

Permeable Non-woven Surgical Synthetic Adhesive Tape.

ADHESIVE TAPES, PLASTIC FILM

Adhesive Tapes, Plastic Film consist of a plastic film that has been spread with an adhesive mass. They comply with the tests prescribed under Adhesive Tapes and if appropriate with the following requirement.

Extensibility Adhesive Tapes, Plastic Film declared to be extensible comply with the test, Appendix XX G, Method I.

The requirements for Adhesive Tapes, Plastic Film apply to the following monographs of the British Pharmacopœia:

Impermeable Plastic Surgical Adhesive Tape
Impermeable Plastic Surgical Synthetic Adhesive Tape
Permeable Plastic Surgical Adhesive Tape
Permeable Plastic Surgical Synthetic Adhesive Tape
Semipermeable Waterproof Plastic Surgical Adhesive Tape.

Elastic Surgical Adhesive Tape

Elastic Adhesive Plaster; Zinc Oxide Elastic Adhesive Plaster; Zinc Oxide Elastic Self-adhesive Plaster

Elastic Surgical Adhesive Tape consists of woven fabric, elastic in the warp, which has been spread evenly with an adhesive mass containing Zinc Oxide which does not offset when the tape is unrolled. The warp threads consist of twofold cotton threads with a count, after crêpe-twisting, not finer than 28 tex, each containing not less than 19 folding turns per cm, arranged two threads S-twist, two threads Z-twist, repeated. The weft threads consist of (a) cotton or (b) viscose or (c) combined cotton and viscose yarn, with a count not finer than 59 tex. The fabric is clean and reasonably free from weaving defects and contains not more than traces of leaf residue, seed coat and other impurities. The tape is supplied wound on spools or cores.

Elastic Surgical Adhesive Tape may be dyed.

The tape complies with the requirements stated under Adhesive Tapes and with the following requirements.