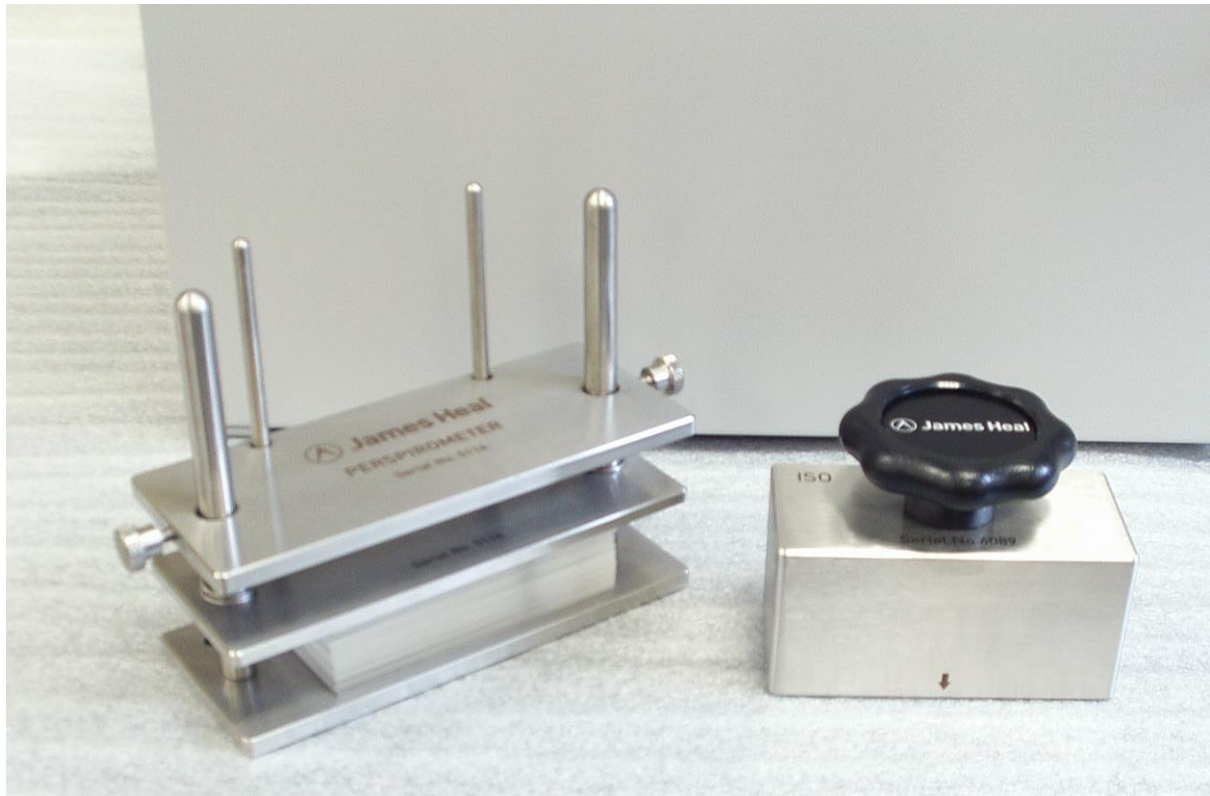




## OPERATOR'S GUIDE

PERSPIROMETER  
MODEL 290



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Setting the Standard

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## SCOPE AND PURPOSE OF TEST

The Perspirometer is used to determine colour fastness of textiles to water, seawater and perspiration. It meets the requirements of EN ISO 105. With an alternative weight, it also complies with AATCC Test Method 15.

The device consists of a stainless steel frame which accepts twenty one acrylic separator plates measuring 115 x 60 mm. Specimens are placed between the plates under a load of approximately 5 kg. Springs under the top plate compensate for any shrinkage as the specimens dry out.

## PRINCIPLE OF TEST

Specimens of the textile in contact with specified adjacent fabrics are treated in two different solutions containing histidine, drained, and placed between two plates under a specific pressure in a testing device. The specimens and the adjacent fabrics are dried separately. The change in colour of each specimen and the staining of the adjacent fabrics are assessed with the grey scales. Specimens may be of fabric, yarn or fibre.

## APPARATUS AND REAGENTS

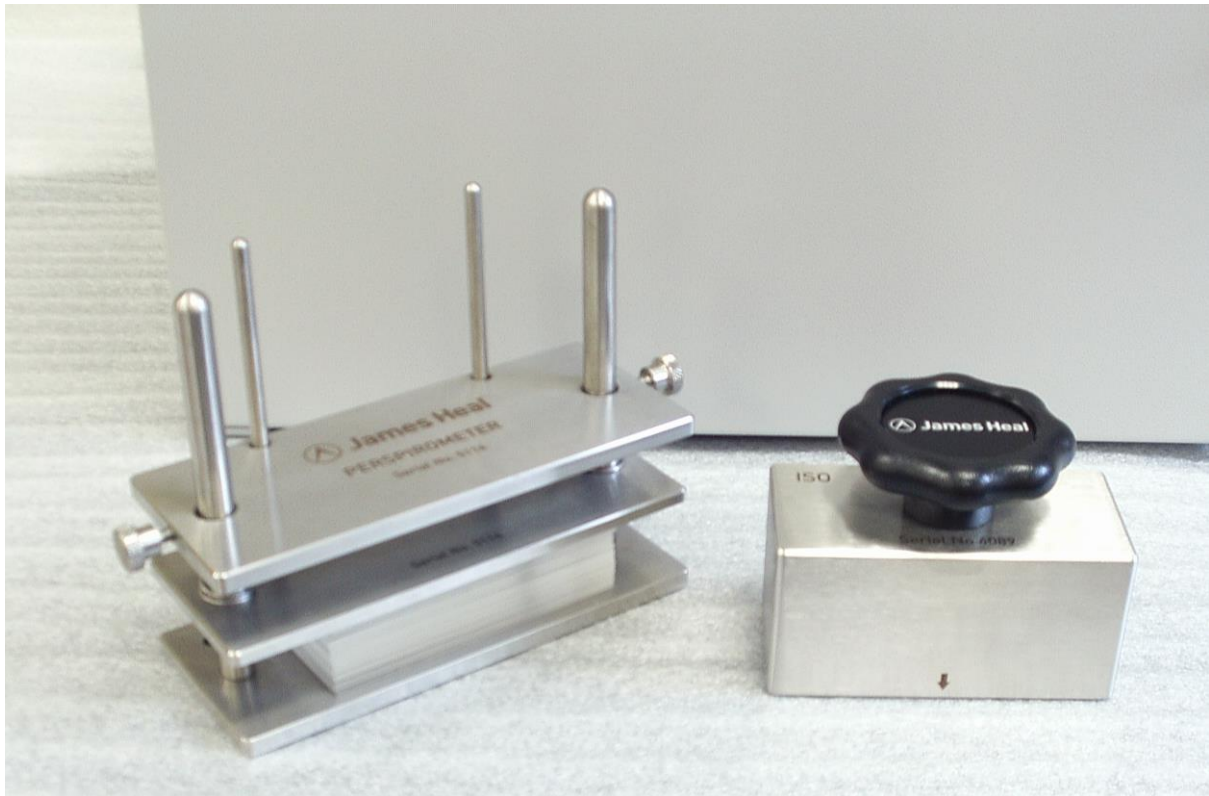
- Perspirometer
- Incubator/Oven - capable of maintaining  $37 \pm 2^{\circ}\text{C}$  (See Accessories).
- Alkaline and acid test solutions.
- Two adjacent fabrics each measuring 100 x 40 mm one piece made of the same kind of fibre as that of the textile to be tested, or that pre-dominating in the case of blends, the second piece made of the fibre indicated as follows or, in the case of blends, of the kind of fibre second in order of predominance, or as otherwise specified.

**If first piece is :      second piece to be :**

cotton	wool
wool	cotton
silk	cotton
linen	wool
viscose	wool
acetate	viscose
polyamide	wool or viscose
polyester	wool or cotton
acrylic	wool or cotton

- Alternatively, Multifibre Test Fabric may be used (See Accessories).
- Grey Scales for assessing change in colour and staining (See Accessories).

## Perspirometer - Identification of Parts



- 1 Top Plate and Knobs
- 2 Spring Plate and Springs
- 3 Acrylic Separator Plates
- 4 Base

- 5 Compression Weight

## TEST SPECIMENS

If the textile to be tested is fabric, place a specimen 100 x 40 mm between the two adjacent fabrics and sew along one of the shorter sides to form a composite specimen. Two such composite specimens are required.

If the textile to be tested is yarn, knit it into fabric and treat it as above or form a layer of parallel lengths of it between the two adjacent fabrics - the amount of yarn taken being approximately equal to half the combined mass of the adjacent fabrics. Sew along two opposite sides to hold the yarn in place and to form a composite specimen. Two such composite specimens are required.

If the textile to be tested is loose fibre, comb and compress an amount approximately equal to half the combined mass of the adjacent fabrics into a sheet 100 x 40 mm. Place the sheet between the two adjacent fabrics and sew along all four sides to hold the fibres in place and to form a composite specimen. Two such composite specimens are required.

## PROCEDURE

Thoroughly wet out one composite specimen in the appropriate solution at a liquor ratio of 50:1. This means weight of liquor to weight of specimen ratio, i.e., if composite specimen weighs 1g, then 50 ml of liquor are required.

Leave the specimens in the solutions at room temperature for 30 minutes. Move them from time to time to ensure uniform penetration of the liquor. Pour off the solutions and wipe off excess liquor between two glass rods. Then place each composite specimen between two acrylic plates, and into the Perspirometer unit, applying the 5 kg weight before tightening the fixing screws. **Alkaline and acid tests must be carried out in separate Perspirometer units.** Label the units, and always use them for the same tests to avoid contamination.

Place the loaded Perspirometer units into the Incubator/Oven for 4 hours at  $37 \pm 2^{\circ}\text{C}$ . The Incubator/Oven Model HX30 has a capacity of up to four (4) Perspirometer units.

Open out the specimen by breaking the stitching on all but one of the short sides and dry by hanging in the air at a temperature not exceeding  $60^{\circ}\text{C}$ , with the three parts in contact only at the line of stitching. Alternatively, separate the three parts and place on plastic coated mesh drying trays.

Assess the change in colour of each specimen and the staining of the adjacent fabrics with the grey scales.



## TEST REPORT

For both alkaline and acid solutions, report the numerical rating for the change in colour of the test specimen, and for the staining of each kind of adjacent fabric used.

## ACCESSORIES

The following are not supplied with the unit unless specifically ordered, but are available at short notice:

Incubator/Oven - for maintaining temperature of  $37 \pm 2^{\circ}\text{C}$ .

Air Circulation	Fan assisted
Internal Dimensions	300 (high) x 305 (wide) x 310 (deep) mm
Usable Volume	30 litres
Capacity	Up to 4 Perspirometer units
Interior	Corrosion-resistant stainless steel
Number of Shelves	2 (removable)
Temperature Range	Ambient+10°C to 220°C (or 180°C for 110V model)
Temperature Stability	$\pm 0.5^{\circ}\text{C}$
Controls	Digital Temperature Controller - displays preset and actual temperatures
Stock Code	730-420          230V 50/60Hz 730-422          110V 60Hz

Multifibre Test Fabric DW - roll (10 m) - Stock Code 702-500

Multifibre Test Fabric DW - roll (25 m) - Stock Code 702-501

Multifibre Test Fabric DW - roll (50 m) - Stock Code 702-502

Grey Scale for assessing Change in Colour ISO 105 A02 – Stock Code 766-200

Grey Scale for assessing Staining ISO 105 A03 - Stock Code 766-201

Spare Acrylic Separator Plates - pack (21) - Stock Code 750-604

Test Kit (ISO 105 E04) - comprising artificial perspirant and glassware - sufficient for making approximately 200 litres of alkaline and acidic test solutions – Stock Code 706-799

Test Kit (AATCC Test Method 15) - comprising artificial perspirant and glassware - sufficient for making 200 litres of acidic test solution – Stock Code 706-801

## APPENDIX 1

### COMPLETE KIT OF CHEMICALS AND GLASSWARE FOR PREPARING SOLUTIONS FOR COLOUR FASTNESS TO PERSPIRATION TESTING

#### For preparing alkaline and acid test solutions for EN ISO 105-E04

##### CONTENTS OF KIT 706-799

706-703	200 g	L-histidine monohydrochloride monohydrate $C_6H_9O_2N_3HCl \cdot H_2O$
706-704	2 kg	Sodium chloride NaCl
706-706	500 g	Disodium hydrogen orthophosphate $Na_2HPO_4 \cdot 2H_2O$
706-705	500 g	Sodium dihydrogen orthophosphate $NaH_2PO_4 \cdot 2H_2O$
706-707	Pack of 6	Vials of concentrated sodium hydroxide NaOH
706-179	2 Reels	Narrow Range pH Papers (pH 4-7)
706-702	2 Reels	Narrow Range pH Papers (pH 6-8)
716-801	1	1 litre Measuring cylinder
716-802	1	1 litre Beaker
716-804	1	Spatula
716-803	1	Glass rod
706-791	1 pack	Disposable gloves - per pack (10)

The kit contains sufficient chemicals for preparing approximately 200 litres each of alkaline and acid solutions.

## APPENDIX 2

### COMPLETE KIT OF CHEMICALS AND GLASSWARE FOR PREPARING SOLUTIONS FOR COLOUR FASTNESS TO PERSPIRATION TESTING

#### For preparing acid test solution for AATCC 15

##### CONTENTS OF KIT 706-801

706-704	2 kg	Sodium Chloride
706-774	500 mL	Lactic Acid, USP 85%
706-775	1 kg	Di-sodium Hydrogen Phosphate, Anhydrous
706-703	100 g	L-Histidine Monohydrochloride Monohydrate
706-791	1 pack	Disposable Gloves - per pack (10)
716-801	1	1 litre Measuring cylinder
716-802	2	1 litre Beaker
716-821	5	Petri Dish