



# TruFade

## XENON ARC LIGHT FASTNESS TESTER

TruFade is designed for the user and has an excellent reputation for reliability, superior build quality and simplicity of use. It has a proven track record within many laboratories around the world.

MODEL NUMBER: **200**  
 STOCK CODE: **907-900 (240V)**  
**907-901 (110V)**



### KEY BENEFITS

#### SIMPLICITY OF OPERATION

Exceptionally easy to use. Can be operated with a minimum skill level.

#### INTUITIVE SOFTWARE

Totally intuitive. Routine testing can be started with only three touches of the touchscreen.

#### EFFICIENT LOADING

Easy access allows the specimens to be loaded in just a few seconds at a height ideal for most users.

#### GUIDES ENSURE CLEAR ASSESSMENT

Reliable assessment assured when placing the masks on the specimens.

#### EASY LAMP INSTALLATION

Tool-free lamp installation with access at a height suitable for most users.

#### WATER FILL EASILY ACCESSIBLE

32 litre integrated water reservoir at the front of the instrument for full accessibility and ease of use.

#### SOLARSENS RADIOMETER

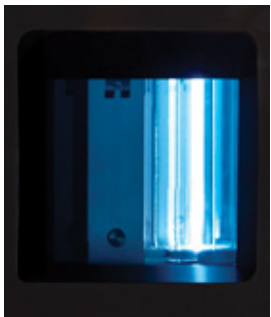
Positioned on the carousel in the same plane as the sample holders, to ensure irradiance is measured in the same position of the specimens under test.

#### TRI-SIDED SPECIMEN HOLDERS

Tri-sided specimen holders increase the usable exposure space to up to 1640<sup>2</sup>cm.

#### ERGONOMIC DESIGN

The unique innovative design maximise the available testing capacity and enables a faster throughput of testing.



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## MARKET POSITION

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TruFade is compliant with ISO, AATCC and retailer standards. (See Page 9)

Its compact ergonomic design, intuitive software and extensive range of user benefits make it ideal for laboratories and factories of all sizes in all parts of the globe.

### INDEPENDENT LABORATORIES

- These laboratories will often have more than one Light Fastness Tester (LFT) with different capacities to accommodate their varying testing demands in terms of product type, volume and the standard body.
- Having TruFade, with its simplicity of use and intuitive software, as a second instrument offers the flexibility to easily switch between US and ISO standards to avoid the downtime and loss of regular high volume caused by changing to an alternative standard.

### FACTORY LABORATORIES

- The compact design of TruFade makes it ideal for all factories with a requirement to meet the Light Fastness Testing demands of high-end customers.

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## MARKET SECTORS / PRODUCT TYPES

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CURTAINS



SPORTSWEAR



OUTDOOR WEAR



OUTDOOR UPHOLSTERY



TENTING



GOLF WEAR

# UNPARALLELED SIMPLICITY OF OPERATION

TruFade has many benefits and positive 'touchpoints'; for both users and laboratory managers.

## 1 Intuitive Software

Routine testing can be started with only three touches of the screen.

Intuitive - can be operated with minimal training, saving time and reducing the potential for operator error.

## 2 Efficient Specimen Loading

Easy access to load the specimens which can be loaded in just a few seconds and at a height which is ideal for most users.

## 3 Guides ensure clear assessment

Reliable assessment assured when placing the masks on the specimens.

## 4 Easy to install Lamp

Tool-free lamp installation with access at a height suitable for most users.

## 5 Effortless Water Fill

32 litre integrated water reservoir at the front of the instrument for full accessibility and ease of use.





# ADVANCED SOFTWARE MADE SIMPLE

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The software is very simple - no user manual required and it's as intuitive as a SmartPhone.

It can be configured to be as simple or comprehensive to meet the specific needs of the user. It allows routine testing to be started in as little as three touches of the screen.

## Menu Screen

The user interface is clear and easy to navigate, and starting the testing easy and efficient. The menu screen gives the user access to:

- Standard:** A Standard can be selected from a pre-programmed list or the user can define their own method.
- Timer:** TruFade can be set to run continuously or it can be set to stop automatically after a pre-determined period of time or at specific time of day for specimen inspection.
- Exposure:** Comprehensive sample management and reports the total sample exposure in kJ/m<sup>2</sup> or hours for each sample holder.
- Service:** For easy maintenance, this screen shows the status of the Xenon Lamp and the Optical Filters and will alert the user when these items need to be changed as defined in the Standard.
- Settings:** Provides adjustments for various settings such as date, time, language etc.



## Test Information

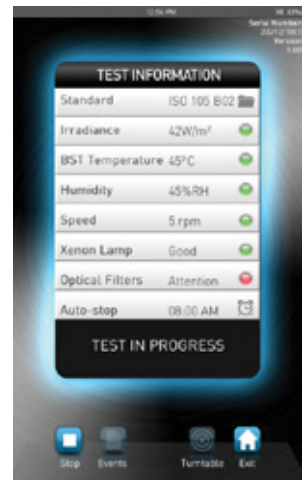
The test information works on a simple 'traffic light' system which allows the user to see, at a glance, if all their parameters are within the specification.

Once the instrument is started, feedback on the parameters is provided, to enable the user to act instantly to stop the test and correct any issues.

## Standards Screen

The entire set of parameters associated with each standard are pre-defined. This includes, where appropriate: Irradiance, Temperature and Relative Humidity. Standards are selected with one touch of the screen, minimising downtime in between tests.

User defined standards can also be created, and each setting of the test is easily and freely programmed.



## Exposure Screen

During testing it will continuously record, in the real-time, the time duration in TruFade for each specimen including the exposure time for each face of the 3-sided sample holder. If a specimen is removed with the intention of keeping the instrument running, a Hold function can be used to freeze each individual sample's value until it is returned. Individual sides of the sample holder can also easily be reset.

## Other Functions

An Events Screen records test events, including when tests are started or stopped, when the Xenon Lamp has been changed and any system messages. All activity on the instrument can be tracked when it is left unattended.



# TRI-SIDED SPECIMEN HOLDERS

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This unique innovative design feature maximises the available testing capacity, enables a faster throughput of testing, and importantly, allows a compact design for the instrument offering easier access to the chamber and lamp.

## WHAT IS THE TRI-SIDED SPECIMEN HOLDER?

Traditional light fastness machines have specimen holders which either constantly face the lamp (single sided), or face the lamp on alternate revolutions (two sided) - also known as 'flip-flop'.

The advantage of TruFade's multi-faceted specimen holder is that the instrument can be made much smaller than other instruments in the market without compromising the available testing area.

The 3-sided specimen holders are labelled A, B, C for easy sample tracking and to identify the particular location on the carousel.



## THE BENEFITS OF THE TRI-SIDED SPECIMEN HOLDERS

1. It maximises testing capacity (for this type of instrument)
2. Allows easy access to the chamber and lamp

### 1. MAXIMISES TESTING CAPACITY

The three sides available for mounting blue wools and test specimens offers a specimen capacity of 1640cm<sup>2</sup>.

This capacity enables the user to optimise the rate of testing as it increases the number of specimens that can be tested in a given time in comparison with instruments of a similar size.

Within the easily accessible carousel is space for 9 Tri-sided specimen holders when using Blue Wools. When using irradiance control, one of the holders will be replaced by the SolarSens radiometer. ( See Page 8).

For testing to US standards another position could be taken by the Black Standard Thermometer.

TruFade will hold either 7 or 8 or 9 tri-sided samples holders dependent upon how the test is set-up. This creates 21 or 24 faces with exposure to the lamp.



### 2. EASY ACCESS TO THE CHAMBER AND LAMP

As TruFade only needs nine specimen holder positions to achieve the 1640cm<sup>2</sup> capacity, it allowed our designers to make the carousel and testing chamber more compact and easily accessible to make loading the samples is relatively effortless.

The wide opening door presents no restrictions for the user as it ensure easy access to all stations at a height that is ergonomically ideal for most users.

The carousel can be turned manually or via the software.

The sample holders themselves are very easy to handle as they just drop onto a location on the carousel, not typical of all instruments of this type.



This is one of the major benefits of TruFade is that it makes the experience of loading the specimens very user friendly - the Solar Sens, Black Panel and specimens can be loaded in just a few seconds.

## GUIDES ENSURE CLEAR ASSESSMENT

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'User friendly' is a term used often by companies but TruFade is actually genuinely user friendly.

One of the many seemingly small design elements, which together make TruFade incredibly easy to use, are positioning guides, small notches in the sample holder.

These notches makes life much easier for the user when, for example, testing Blue Wool:

- For a Blue Wool test a mask (also known as a 'cover') is placed upon it, which at some point during the test process, will be removed for initial assessment.
- This initial assessment may show that the specimen needs further testing for which the mask needs to be re-positioned but it is important that it is placed on exactly the same position or the final assessment could be compromised.
- When using Light Fastness Testers from other manufactures, this mask may be placed in a slightly different position. Consequently, once the test process is complete, the fade will not show as a clean edge but will inevitably be indistinct. This will undoubtedly impact upon the user's ability to give an final assessment.
- The standard actually requests that the mask should be positioned exactly where it came off. This is extremely difficult to do that without these guides.
- However, with TruFade all the user needs to do after that initial assessment is to drop the mask back on and clipped it in position – the notches on the Tri-sided holder ensure it can only go one place. The final assessment is simple and the results are unequivocal as it far easier to assess if there is a clean line between the original and the test.
- James Heal premounted Blue Wools and specimen mounting cards are also supplied with the same notches to further complement this process.



The mask or cover is placed upon the specimen and firmly positioned using the notches on the Tri-sided holder.



After a mid-test visual assessment these guides ensure the mask or cover is placed back in exactly the same position.



At the end of the test

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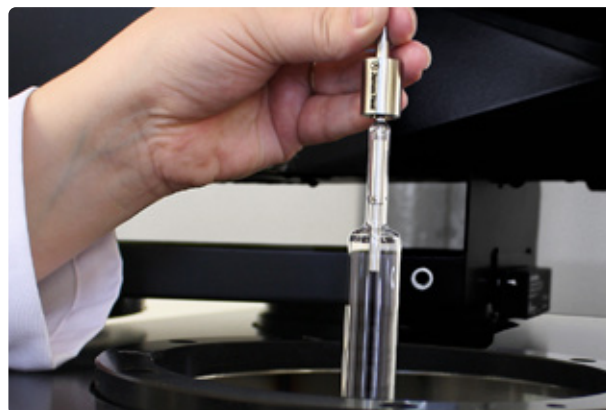
## EASY TO ACCESS AND FIT THE LAMP

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The light is generated by a 2200W (2.2 kW) continuous wave Xenon Arc Lamp with a life of around 1500 hours.

The lamp is very easy to fit and replace, with access at the top of the instrument at a height suitable for most users. Fitting the lamp is tool-free with a design that ensures the lamp slots into position and is installed correctly.



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## EASILY ACCESSIBLE WATER RESERVOIR

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A pull-out 32 litre integrated water reservoir at the front of the instrument provides accessibility and ease of use.

Easy filling for laboratories who wish to use distilled water.



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## ADDITIONAL FEATURES AND BENEFITS

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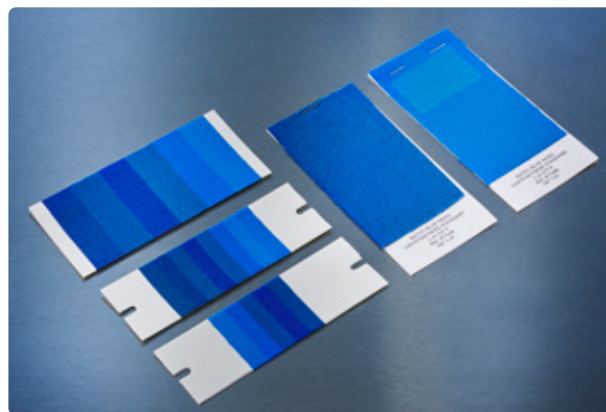
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### ORIGINAL SOURCE OF BLUE WOOL

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James Heal supply Blue Wools used for light and weathering fastness testing. We supply 'European' Blue Wool Standards (ISO 105-B08), which originate from DEK (Deutsche Echtheitskommission) who hold the global master standard for Blue Wools and every batch produced is checked for compliance before it is released. Our American Blue Wools originate from AATCC.

Our Blue Wools are supplied in pieces or in strips bonded to card or we can develop bespoke cards to match the needs of our customers.





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## SOLARSENS RADIOMETER

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In 'Controlled Irradiance Mode' (See Page 11); the SolarSens is positioned on the carousel to measure the light output from the Xenon lamp, keeping it constant by continuously adjusting power to the lamp.

It is self-regulating and adapts to changing chamber conditions by adjusting the temperature and humidity automatically.

The SolarSens is positioned on the carousel in the same plane as the sample holders, to ensure irradiance is measured in the same position of the specimens under test.

SolarSens also measures the black standard temperature and ensures the target value is continuously maintained to give an unparalleled accuracy of measurement.

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## QUALITY ASSURANCE

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Before each TruFade instrument leaves our premises in the UK, they undergo stringent engineering tests and testing to the AATCC Standard 16 Option 3 Blue Wool L2 for  $20 \pm 2$  hours. The top and bottom of the specimens are then assessed against the specified grey scale change.

This test uses the actual lamp and glassware that the specific customer will receive.

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## COMPACT INSTRUMENT WITH EXCELLENT CAPACITY

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The innovative design of the Tri-sided specimen holder maximises the available testing capacity, offering usable exposure space to up to  $1640\text{cm}^2$ .

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## QUIET WITH NO BUILD-UP OF HEAT

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TruFade is very quiet while running and ducting avoids a build-up of heat in the laboratory which allows the instrument to be located within an air conditioned environment



# TRUFADE STANDARDS



AATCC	adidas	DS	ISO
AATCC 16.3	adidas® Group 5.11	DS-288-C	ISO 105-B02 ISO 12040



IUF	M&S	NEXT	SLF 402
IUF 402	M&S C9 M&S C9A	NEXT TM1	SLF 402

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# FREQUENTLY ASKED QUESTIONS

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## DOES THE TRI-SIDED SPECIMEN HOLDER IMPACT UPON THE TEST?

Simple Answer - 'NO'!

- We have undertaken extensive benchmarking ourselves to prove that the tri-sided specimen holder has no adverse influence on the end result of the test.
- Our internal tests indicate that the tri-sided specimen holder correlates well with other Light Fastness Testers in the market, both in terms of final grade and tonal change in fading.

## DOES THE TEST TAKE 3 TIMES LONGER WITH TRI-SIDED SPECIMEN HOLDERS?

Simple Answer - 'NO'!

The output from the lamps 3 x higher than specified. With multi-faceted specimen holders the irradiance generated from the lamp is set to compensate for the periods where the specimens are facing away from the lamp. To explain further:

- **Single sided Specimen Holder**

Using the ISO-105-B02 method as an example, where the desired irradiance is  $42\text{W/m}^2$  at the specimen surface, a constantly facing instrument (single sided specimen holder) would maintain the irradiance at  $42\text{W/m}^2$  for **100%** of the specimen exposure time.

- **Two sided Specimen Holder**

Accordingly, for a two sided specimen holder, the irradiance would need to be set to  $84\text{W/m}^2$ , so effectively when the specimens are facing the lamp they are receiving a 'double dose' of irradiance.

The actual irradiance over the course of the whole test would be **50%** of the set irradiance, because the specimens are only facing the lamp 50% of the time.

- **Tri-sided Specimen Holder**

For a three sided specimen holder, such as in TruFade, the set irradiance would have to be 3 x the amount required by the standard. Accordingly when the specimens are facing the lamp they are exposed to  $126\text{W/m}^2$

Over the duration of the test, the actual irradiance per face would be **33%** of the set irradiance, because the specimens only face the lamp 33% of the time.

So regardless if the specimens face the lamp for 100%, 50% or 33% of the test they all receive the same amount of irradiance per face as the lamp power is adjusted to compensate for the different configuration of the specimen holders. In each of the examples above, the irradiance per face is the same at  $42\text{W/m}^2$

Therefore the time taken to process the test is exactly the same for a LFT with Tri-sided holders as it would be for those with two or single sides.

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## FREQUENTLY ASKED QUESTIONS (cont.)

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### WHAT IS IRRADIANCE?

In radiometry, irradiance is a measurement of radiant flux (power) received by a surface per unit area.

The unit of power is the Watt (abbreviated W) and the power is usually measured the power per unit area, consequently irradiance is typically quoted as  $W/m^2$  - that is Watts per square meter.

Irradiance is sometimes called "intensity".

### WHAT IS NOMINAL POWER MODE AND CONTROLLED IRRADIANCE MODE?

TruFade can operate in either "controlled irradiance mode" or "blue wool mode". The term "blue wool mode" is also synonymous with "nominal power mode".

#### **Blue Wool Mode / Nominal Power Mode**

Blue Wool mode can be used when Controlled Irradiance is not required or not available.

The electrical power to the xenon lamp is set to a nominal value and the endpoint of the test is determined by the fading of the Blue Wool references. As the xenon lamp ages with use, the radiant energy declines and therefore the testing time will be extended as it will take more time to complete.

#### **Controlled Irradiance**

With controlled irradiance, there is closed loop control. The radiant energy from the xenon lamp is measured and the electrical power to the lamp varied accordingly. This permits the dosage of radiant energy to be calculated as the test progresses and the test time remains more consistent. Some standards state exposure to a specified dosage of radiant energy without the use of Blue Wool references.

Currently, the use of controlled irradiance mode is becoming more prevalent. Many standards now require controlled irradiance but continue to use the Blue Wool references to determine the end-point of the test.

TruFade uses the SolarSens radiometer, which also incorporates a black standard thermometer, to measure the radiant energy with a 300-400 nm broadband sensor.

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## FREQUENTLY ASKED QUESTIONS (cont.)

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### WHY IS THE WATER SUPPLY IMPORTANT?

TruFade must have a continuous supply of distilled water or water purified to a specific grade, complying with ISO 3696, minimum Grade 3 is required (e.g. ISO 3696 Grade 3, 2 & 1 are all acceptable).

There are two alternate method of feeding TruFade with water:

1. Manually filled directly into the easily accessible internal water reservoir situated at the front of the instrument.
2. Direct water automatically fed directly, and filtered via a standalone filter, into the TruFade internal water reservoir via the water inlet valve.

The filter process removes a very high percentage of impurities from the water, including dissolved salts (ions), from the feed water. Whichever water source is used, the distilled or purified water is atomised to generate vapour to create the required humidity.

Distilled or water purified is used to prevent these impurities from being sprayed onto the specimens, glassware or sample holders and will prevent impurities accumulating within pipes.

If mains water is used or if the filter malfunctions the mineral content in the untreated water will result in impurities being attached to the glass in the form of a white powder which will severely compromise the test results.

Contamination of the specimens by impurities would prevent a proportion of the light from reaching the specimen. Consequently the SolarSens and glassware would also become coated and automatically increase the power output of the lamp to compensate, using more power and reducing the effective life of the lamp and the effectiveness of the instrument.

A build up of impurities, such as calcium deposits, within the pipes and the fine nozzles and sprays would adversely affect the humidity and would also damage the instrument requiring it to taken apart and thoroughly cleaned resulting in the loss of valuable production time.



# STANDARD ACCESSORIES

Code	
571-009	SolarSens (1)
571-010	Triangular Specimen Holders (9)
106-800	2200W Xenon Lamp (1)
766-570	Pack (500) OBA-free White Specimen Cards (1)
571-005	Lantern Assembly (Filter Holder) (1)
394-258	Infra-red Filters (KG1) (7)

These items can also be ordered individually.

## ACCESSORY KIT FOR ISO 105-B02 (794-910)



Code	
571-152	Double Slot Masks (27)
571-155	Single Slot Masks (27)

## ACCESSORY KIT FOR AATCC 16.3 (794-911)



Code	
571-158	Mask (apertures: 30 x 30mm) (24)
571-159	Mask (apertures: 30 x 15mm) (24)
	Black Panel Thermometer (BPT)

## SUITABLE FOR ISO 105-B07, AATCC 125 and M&S C9A



Code	
794-918	TruFade Sample Holder - Nickel Plated

Note: use when corrosive chemicals are used in the test procedure

## SUITABLE FOR ISO 105-B02, AATCC 16 and M&S C9



Code	
571-010	TruFade Sample Holder - Standard Anodised Version



Code	Individual Accessories - ISO 105-B02
106-800	2200W Xenon Lamp
394-258	Infra-red Filters (KG1)
571-250	Black Panel Thermometer (BPT)
716-866	Borosilicate Cylinder
571-152	Double Slot Mask - 1/3 cover (B02 : Method 1)
571-155	Single Slot Mask - 2/3 cover (B02 : Method 1)
571-156	Single Slot Mask - 3/4 cover (B02 : Method 2)
571-154	Single Slot Mask - 1/2 cover (B02 : Method 2)
571-157	Single Slot Mask - 1/4 cover (B02 : Method 2)



Code	Individual Accessories - AATCC 16.3
106-800	2200W Xenon Lamp
394-258	Infra-red Filters (KG1)
716-866	Borosilicate Cylinder
571-250	Black Panel Thermometer (BPT)
571-158	Mask (apertures: 30 x 30mm)
571-159	Mask (apertures: 30 x 15mm)



Code	Individual Accessories - Decathlon
394-267	Window glass filter

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## 2-YEAR SPARES KIT

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Code	200-SPARES Comprising:
571-319	Multi-Flop Pin (1)
571-031	Geneva Wheel (3)
386-616	Flexibeam Coupling (1)
350-596	Air Filter for Blower (large) (2)
195-502	Fan, 80mm, 24VDC, IP68 (1)
195-506	Fan Filter Assembly (for Fan 195-502) (3)
390-284	Filter (nylon) (2)
390-285	Float Valve and Elbow (2)
195-407	Ultrasonic Nebuliser (3)
716-866	Borosilicate Cylinder (1)
130-825	Fuse 1A, 5mm x 20mm, T (10)
130-809	Antisurge Fuse 3.15A (10)

# TEST MATERIALS

Code	
<b>766-200</b>	Grey Scale for Assessing Change in Colour ISO 105-A02
<b>766-476</b>	ISO Humidity Test Control Fabric - per pack (25 x 15cm)

Code	Blue Wool
<b>766-820</b>	ISO Blue Wool Standards Nos. 1-8 [Premounted 10 mm wide strips on card] - per pack (10 cards) Card Size: 135 x 45 mm    Size of each Blue Wool Strip: 10 x 45 mm    Card Type: OBA free White
<b>766-310</b>	ISO Blue Wool Standards Nos 1-8 - per set (8 pieces each 23 x 15cm)
<b>766-311</b>	ISO Blue Wool Standard No. 1 - per pack (1 piece 23 x 15cm)
<b>766-312</b>	ISO Blue Wool Standard No. 2 - per pack (1 piece 23 x 15cm)
<b>766-313</b>	ISO Blue Wool Standard No. 3 - per pack (1 piece 23 x 15cm)
<b>766-314</b>	ISO Blue Wool Standard No. 4 - per pack (1 piece 23 x 15cm)
<b>766-315</b>	ISO Blue Wool Standard No. 5 - per pack (1 piece 23 x 15cm)
<b>766-316</b>	ISO Blue Wool Standard No. 6 - per pack (1 piece 23 x 15cm)
<b>766-317</b>	ISO Blue Wool Standard No. 7 - per pack (1 piece 23 x 15cm)
<b>766-318</b>	ISO Blue Wool Standard No. 8 - per pack (1 piece 23 x 15cm)
<b>766-570</b>	OBA-free White Specimen Cards - per pack (500)

Code	Individual Test Materials - AATCC 16.3
<b>766-516</b>	AATCC Blue Wool Lightfastness Standard L-2 - per pack (50 x 75cm)
<b>766-521</b>	AATCC Standard of Fading for L-2
<b>766-522</b>	AATCC Standard of Fading for L-4
<b>766-504</b>	Xenon Reference Fabric-1 (XRF1)
<b>766-512</b>	AATCC Gray Scale for Color Change
<b>766-570</b>	OBA-free White Specimen Cards - per pack (500)

Code	Individual Test Materials - M&S
<b>706-717</b>	BHT-free Polythene Film - 25 micron thick - for M & S C9A - per pack (20m x 766 mm wide)

# INSTALLATION GUIDE

	Comment
Electricity*	230V AC      50/60Hz      Single Phase 16A      3.25kW 110V AC**      50/60Hz      Two Phase 16A      3.25kW
Air	Not required
Bench or Floor Standing	Floor Standing
Water Supply	Please refer to Page 12 of this document^^
Drainage	Requires connection to a drain via a nominal 32mm (1¼") diameter pipe^.
Air Extraction	The xenon lamp is air-cooled and the heat generated is exhausted at the rear of the TruFade. The warm air is discharged at a rate of 340 m³/h at approximately 50°C. The discharge does not contain ozone and is not detrimental to health. When an air conditioning unit cannot accommodate the 2kW heat output, the exhaust should be vented outside the room with 100mm internal diameter hose.
Conditioning	See above

\* Prior to installation, check the serial number plate on the rear of the unit to confirm the voltage, frequency and phase are in accordance with your local requirements.

\*\* Where 110V is the nominal supply voltage, TruFade must be connected across two phases to achieve 220V. One single-phase 110V supply is not suitable.

^ If a free drain is not available a container can be used which must be emptied regularly.

^^ Installation Requirements for water supply:

Electrical Supply:      Single Phase 100-230V 50/60Hz. Water: Potable (maximum TDS/Total Dissolved Solids = 1000)  
Water Pressure (Input): Minimum 2 bar (29 psi)  
Water Temperature:    1°C - 40°C  
Drain:                      Gravity

Code	Water Purification System Comprising:
<b>790-400</b>	Water Purification Unit (reverse osmosis) with alphanumeric display
	Integral 15 litre Tank
	Pre-Treatment Cartridge for Purification Unit
	Pre-Filter
	Filter Elements (3) for Pre-Filter (10 micron)
	Integral tap (to draw water for general laboratory use)

The Water Purification System will supply TruFade with pure water (up to 4 litres/hour) complying with ISO 3696 Grade 3\*

\*The use of any other inferior grade of water in TruFade will invalidate the warranty

Code	Spares for Water Purification System
<b>790-401</b>	Pre-Treatment Cartridge for Purification Unit
<b>790-402</b>	Filter Elements for Pre-Filter



# DIMENSIONS & WEIGHT

TruFade is designed to be floor standing

Dimensions (mm)	Height	Width	Depth	Weight (kg)
Door Closed	1600	754	830	340
Door Open	1600	1355	876	

