



## Ductility Testing Machine

### 1. Available Variants

1. **Semi Automatic - 10-100 Mm/Min - Non-Refrigerated**
2. **Digital Temp Control - Refrigerated**
3. **Thermostatic - Non-Refrigerated**
4. **Semi Automatic - 10-100 Mm/Min - Refrigerated**

### 2. Details

#### 2.1 Semi Automatic - 10-100 Mm/Min - Non-Refrigerated

##### Application and Principle

Ductility is defined as distance in cms to which a standard briquette of bitumen can be stretched before the thread breaks. The briquette is stretched at a rate of 50 mm/min.  $\pm$  2.5mm per minute at a temperature of  $25^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$

##### Apparatus Description

The apparatus consists of water bath with a thermostatic heater, and a circulating pump to maintain uniform water temperature. One half of the briquette moulds is fixed in a fixed plate in the water bath, the other half of the briquette mould is fixed to a carrier, which slides over a rotating threaded shaft with a clutch.

##### Details

1. Unit is fitted with Multi-purpose Dedicated Touch screen Graphics controller, which serves the purpose of multi-functionality.
2. Heater on/off, Stepper Motor on/off, Stirrer on/off, Temperature control and Elongation measurement - All these functions are operated & controlled through TOUCH SCREEN CONTROLLER.
3. Stepper Motor to achieve variable speed range from 10-100 mm/min
4. Speed is selected/altered through Touch screen Controller with one-touch. Required speed can be entered using online keyboard.
5. The motor and gears to rotate the shaft are housed in a cabinet fixed above the other end of the bath.
6. A pointer fixed to the carrier moves over a scale graduated from 0-100 cm x 1mm fixed on the bath with "0" (Zero) of the scale towards the fixed plates side.

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GST TIN No. : 24AABCE4018L1ZU  
I.T. PAN No. : AABCE 4018L  
IEC No. : 0813026598 Dt. 04/03/2014  
CIN No. : U29199GJ2004PTC045078  
TAN No. : AHME00572F



7. An operator can also log the Elongation Measurement readings directly into the TOUCH SCREEN CONTROLLER, with one touch Push. No need to observe it manually on the scale, thereby eliminating the Human Error.
8. An operator can also cross verify the logged elongation readings with stainless steel scale to authentic the generated readings.
9. Water bath inside is fabricated from of stainless steel material with insulation and fitted with water drain cock
10. Water bath is also fitted with immersion heater for temperature control.
11. Control panel is equipped with Mains switch, Heater indication lamp, Stirrer indication lamp and Touch screen controller.

#### Note

Refrigerated ductility testing machine to operate at 25 °C with control accuracy of  $\pm 0.1$  °C also available. Price on request.

#### Optional Accessories At Extra Cost

1. Data acquisition software
2. Elastic Recovery Mould with Base Plate
3. Glass Thermometer 0 - 44°C X 0.2°C
4. Mould casting plate (3 Nos.) to be procured at an extra cost

## 2.2 Digital Temp Control - Refrigerated

### Compliance Standards

IS 1208-1978 (R.A.2013), AASHTO T 51, ASTM D113, EN 13589 & EN 13398, JIS K 2207

### Applications

Ductility is defined as distance in cms to which a standard briquette of bitumen can be stretched before the thread breaks. The briquette is stretched at a rate of 50 mm/min  $\pm 2.5$  mm per minute at a temperature of 25°C  $\pm 0.1$ °C. The Machine is having built in refrigeration system to work a below ambient temperature up to 10°C in tropical conditions. The Machine will operate at 25°C with control accuracy of  $\pm 0.1$ °C as per the requirement of IS.

### Details

The apparatus consists of water bath with a heater, and a circulating pump to maintain uniform water temperature. one half of the briquette molds is fixed in a fixed plate in the

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water bath, the other half of the briquette mold is fixed to a carrier which slides over a rotating threaded shaft with a clutch, The motor and gears to rotate the shaft are housed in a cabinet fixed above the other end of the bath. A pointer fixed to the carrier moves over a scale graduated from 0-100 cm x 1mm fixed on the bath with "0" (Zero) of the scale towards the fixed plates side. The rotating shaft has 2 speeds of travel for the bracket, 5 cm/min and 1cm/min, selected by a clutch. Water bath inside is of stainless steel with insulation and water drain cock. A heater which is fitted inside the water bath. The Temp. is controlled by dual display Microprocessor based Auto Tuning PID Digital Temp. indicator cum controller. Control switches for motor, stirrer, heater and indicator lamps are fixed at a convenient place on the water bath. Complete with three briquette moulds, Working on 220/230 Volts AC, single phase.

#### Optional Accessories At Extra Cost

1. Elastic Recovery Mould with Base Plate
2. Glass Thermometer 0 - 44°C X 0.2°C
3. Mould casting plate (3 Nos.) to be procured at an extra cost

## 2.3 Thermostatic - Non-Refrigerated

### Application and Principle

Ductility is defined as distance in cms to which a standard briquette of bitumen can be stretched before the thread breaks. The briquette is stretched at a rate of 50 mm/min.  $\pm$  2.5mm per minute at a temperature of 25°C  $\pm$  0.1°C

### Apparatus Description

The apparatus consists of water bath with a thermostatic heater, and a circulating pump to maintain uniform water temperature. One half of the briquette moulds is fixed in a fixed plate in the water bath, the other half of the briquette mould is fixed to a carrier, which slides over a rotating threaded shaft with a clutch. The motor and gears to rotate the shaft are housed in a cabinet fixed above the other end of the bath. A pointer fixed to the carrier moves over a scale graduated from 0-100 cm x 1mm fixed on the bath with "0" (Zero) of the scale towards the fixed plates side. The rotating shaft has 2 speeds of travel for the bracket, 5 cm/min and 1 cm/min - selected by a clutch. Water bath inside is of stainless steel with insulation and water drain cock . A heater with thermostatic control is fitted inside the water bath. Control switches for motor, stirrer, heater and indicator lamps are fixed at a convenient place on the water bath. Complete with three briquette moulds and one base plate, All supply single phase.

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## Note

Refrigerated ductility testing machine to operate at 27 °C with control accuracy of  $\pm 0.1$  °C also available. Price on request. The Ductility Testing Machine can be supplied with Digital Temp. controller for accurate temp. control at extra cost

## 2.4 Semi Automatic - 10-100 Mm/Min - Refrigerated

### Application and Principle

Ductility is defined as distance in cm to which a standard briquette of bitumen can be stretched before the thread breaks. The briquette is stretched at a rate of 50 mm/min.  $\pm 2.5$ mm per minute at a temperature from 5° to 30°C.

The Machine is having built in refrigeration system to work a below ambient temperature up to 10°C in tropical conditions. The Machine will operate at 25°C with control accuracy of  $\pm 0.1$ °C as per the requirement of IS.

### Salient Features

- This instruments is specially designed for the tropical regions, where radiation of sun-rays are higher than the average.
- The Machine is having built-in refrigeration system to conduct ductility test below ambient temperature up to 10 °C in tropical conditions.
- Entire instrument is mounted on a sturdy, rigid stand to conduct the test with ease.
- Equipped with direct drive stepper motor to maintain constant speed
- Vibration free and smooth operation
- Provides variable rates of pull / travel : 10-100 mm/minute
- Brass/Bronze Gears to prevent rusting

### Apparatus Description

The apparatus consists of water bath with refrigeration system and a circulating pump to maintain uniform water temperature. One half of the briquette moulds is fixed in a fixed plate in the water bath, the other half of the briquette mould is fixed to a carrier, which slides over a rotating threaded shaft with a clutch.

### Details

- Unit is fitted with Multi-purpose Dedicated Touch screen Graphics controller, which serves the purpose of multi-functionality.

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- Heater on/off, Stepper Motor on/off, Stirrer on/off, Temperature control and Elongation measurement - All these functions are operated & controlled through TOUCH SCREEN CONTROLLER.
- Stepper Motor to achieve variable speed range from 10-100 mm/min
- Speed is selected/altered through Touch screen Controller with one-touch. Required speed can be entered using online keyboard.
- The motor and gears to rotate the shaft are housed in a cabinet fixed above the other end of the bath.
- A pointer fixed to the carrier moves over a scale graduated from 0-100 cm x 1mm fixed on the bath with "0" (Zero) of the scale towards the fixed plates side.
- An operator can also log the Elongation Measurement readings directly into the TOUCH SCREEN CONTROLLER, with one touch Push. No need to observe it manually on the scale, thereby eliminating the Human Error.
- An operator can also cross verify the logged elongation readings with stainless steel scale to authentic the generated readings.
- Water bath inside is fabricated from of stainless steel material with insulation and fitted with water drain cock
- Water bath is also fitted with immersion heater for temperature control.
- Control panel is equipped with Mains switch, Heater indication lamp, Stirrer indication lamp and Touch screen controller.
- Temperature control Accuracy : 0.1 C
- Speed range : 10-100 mm/min
- Heater watts : 750 Watts
- Power consumption : 1 Kw
- Supplied complete with : Three briquette moulds and one base plate
- Operates on : 230 volts, 50 Hz, single phase, AC Supply

### Refrigeration System

- Refrigeration system comprises of Compressor, cooling coil, and condenser assembly.
- Compressor will be of Kirloskar/Emerson/Danfoss/Equivalent reputed make.
- Complete refrigeration system will be provided with digital control panel, which will be fitted below the ductility water bath on sturdy stand frame.
- The digital control panel will be comprising of cooling switch, mains switch and Microprocessor based Auto tune PID Digital temperature controller cum indicator.

### Optional Accessories At Extra Cost

- Data acquisition software
- Elastic Recovery Mould with Base Plate
- Glass Thermometer 0 - 44°C X 0.2°C
- Mould casting plate (3 Nos.) to be procured at an extra cost

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### 3. Specifications

#### 3.1 Semi Automatic - 10-100 Mm/Min - Non-Refrigerated

| Specification                | Details                                   |
|------------------------------|-------------------------------------------|
| Temperature control Accuracy | 0.1°C                                     |
| Speed range                  | 10-100 mm/min                             |
| Heater watts                 | 750 Watts                                 |
| Power consumption            | 1 KW                                      |
| Supplied complete with       | Three briquette moulds and one base plate |
| Operates on                  | 230 Volts, 50 Hz, single phase, AC Supply |

#### 3.2 Digital Temp Control - Refrigerated

| Specification      | Details                          |
|--------------------|----------------------------------|
| Overall Dimensions | 1610 X 380 X 1160 (L X W X H) mm |

#### 3.3 Thermostatic - Non-Refrigerated

| Specification                            | Details      |
|------------------------------------------|--------------|
| Overall Dimensions in Inches (L x W x H) | 64 x 15 x 21 |
| Weight (Approx)                          | 58 kg        |

#### 3.4 Semi Automatic - 10-100 Mm/Min - Refrigerated

| Specification                | Details                                   |
|------------------------------|-------------------------------------------|
| Temperature control Accuracy | 0.1 C                                     |
| Speed range                  | 10-100 mm/min                             |
| Heater watts                 | 750 Watts                                 |
| Power consumption            | 1 Kw                                      |
| Supplied complete with       | Three briquette moulds and one base plate |
| Operates on                  | 230 volts, 50 Hz, single phase, AC Supply |

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## 4. Working Video

Click here for working video:

[https://www.youtube.com/watch?t=391s&v=SxU00\\_wlzA4](https://www.youtube.com/watch?t=391s&v=SxU00_wlzA4)

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