CFU
INTERNATIONAL TRADE
& SERVICES INC.

Bitumen

Testing Equipments

The main area of usage of bituminous mixtures is in road construction. The title of bituminous mixtures is called Asphalt in USA. Bituminous mixtures consist of essentially two ingredients, aggregate and binder. The major difference between asphalt and concrete is that bitumen and bituminous materials are used as binder in asphalt.

Analysis and design tests of bituminous mixtures, bitumen and bituminous binders tests, asphalt and road quality tests are provided for engineering firms and construction companies to produce, inspect and evaluate the paving materials to ensure the strength, physical and mechanical performance and durability towards safe application and use.

In the asphalt section, CFU Testing Equipment is basically grouped in four main headings

- Analysis of Bituminous Mixtures
- Design and Testing of Bituminous Mixtures
- Asphalt and Road Quality Testing
- Bitumen and Bituminous Binders

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PENETRATION of BITUMINOUS MATERIALS

Product Code

CFB-0120	Semi-Automatic Digital Bitumen Penetrometer
CFB-0122	Sample Cup, Ø55x35 mm, stainless steel
CFB-0123	Sample Cup, Ø70x45 mm, stainless steel
CFB-0124	Penetration Needle, 2,5 g
CFB-0125	Transfer Dish for CFB-0120, CFB-0126 and CFB-0130

Models for 220-240V 50-60 Hz, 1 ph.	CFB-0120
Models for 110-120V 60 Hz, 1 ph.	CFB-0120-N

Standards

EN 1426; ASTM D5; AASHTO T49

The CFB-0120 Semi-Automatic Digital Bitumen Penetrometer is used to determine the penetration of bituminous samples under constant load, time and temperature.

The Penetrometer consists of a frame with a levelling screws and screw gear assembly with handwheel for vertical adjustment, a digital penetration measurement gauge with 0.01 mm resolution/readibility, a digital timer, a magnifying lens and a low voltage illuminator mounted on flexible arms.

Penetration time 0-99 sec can be set up by user with the digital timer The timer will allow the needle to free fall into the sample for the engaged time interval and then lock the needle from advancing while providing a direct reading of the test results.

A thermometer (IP38, ASTM 17C or 63C) required for the test should be ordered separately.

The Semi-Automatic Digital Penetrometer is supplied complete with;

- Penetration Needle, 2,5g, 1 pieces
- Needle holder
- Weights of 50g and 100g
- Transfer Dish
- Sample Cup Ø55x35 mm, 3 pieces, stainless steel

Dimensions	200x300x500 mm
Weight (approx.)	16 kg

PENETRATION of BITUMINOUS MATERIALS

Product Code

CFB-0126 Automatic Electronic Bitumen Penetrometer
CFB-0122 Sample Cup, Ø 55x35 mm, stainless steel
CFB-0123 Sample Cup, Ø 70x45 mm, stainless steel
CFB-0124 Penetration Needle, 2,5 g
CFB-0125 Transfer Dish for CFB-0120, CFB-0126 and CFB-0130

Models for 220-240V 50-60 Hz, 1 ph.	CFB-0126
Models for 110-120V 60 Hz, 1 ph.	CFB-0126-N

Standards

EN 1426; ASTM D5; AASHTO T49

The CFB-0126 Automatic Electronic Penetrometer is used for determination of the needle penetration according to EN 1426, ASTM D5 and AASHTO T49 standards. The penetration depth of the needle is determined with a pulse type electronic measuring system, which is separated from the plunger during the test, this allows the free guidance of the plunger which virtually eliminates friction during the test.

The frame with levelling screws and spirit level consists of a digital control unit with touch screen, an anodised aluminum base plate with centering guide, magnifying lens and low voltage illuminator mounted on flexible arms. The penetration depth of the cone is determined with a pulse type electronic measuring system, which is separated from the plunger during the test, this allows the free guidance of the plunger which virtually eliminates friction during the test.

The cone is lowered so that the tip of the cone just touches the surface of the soil by pressing up and down arrows on the screen with fast and slow motion option.In this process, magnifying glass and led lamp help the operator. .The pernetrometer allows the cone to free fall into the sample for the specific seted time interval. which can be set on display.

A thermometer (IP38, ASTM 17C or 63C) required for the test should be ordered separately.

The Automatic Electronic Penetrometer is supplied complete with;

- Penetration Needle, 1 piece.
- Needle holder
- Weights of 50g and 100g
- Transfer Dish
- Sample Cup, Ø 55x35 mm, 6 pieces, stainless steel

Technical Specifications

Measuring Range	0-50 mm
Resolution	0.01 mm
Total Test Load	100 g or 200 g
Loading Time	Adjustable from 0.1 to 9999 sec.

Dimensions	270x480x750 mm
Weight (approx.)	24 kg
Power	75 W

PENETRATION of BITUMINOUS MATERIALS

Product Code

CFB-0130 Fully Automatic Electronic Bitumen Penetrometer
CFB-0122 Sample Cup, Ø 55x35 mm, stainless steel
CFB-0123 Sample Cup, Ø 70x45 mm, stainless steel
CFB-0124 Penetration Needle, 2,5 g
CFB-0125 Transfer Dish for CFB-0120, CFB-0126 and CFB-0130

Models for 220-240V 50-60 Hz, 1 ph.	CFB-0130
Models for 110-120V 60 Hz, 1 ph.	CFB-0130-N

Standards

EN 1426; ASTM D5; AASHTO T49

CFB-0130 Fully Automatic Electronic Bitumen Penetrometer with automatic surface detection is used for determination of the needle penetration according to EN 1426, ASTM D5 and AASHTO T49 standards. The penetration depth of the needle is determined with a pulse type electronic measuring system, which is separated from the plunger during the test, this allows the free guidance of the plunger which virtually eliminates friction during the test. CFB-0130 incorporates automatic surface detection which reduces operator based errors and enables performing penetration tests in a quicker way.

Before the start of each test, the measuring system automatically resets, and then the penetration needle moves down to the sample using the electric drive. The plunger is then automatically released onto the sample and raised automatically after the testing period. The test result is displayed on the digital TFT touchscreen.

A magnifying glass and an ultra- bright LED lamp are supplied to assist the operator in addition to automatic surface detection technology. The plunger can easily be removed for weight calibration.

In addition to automatic surface detection, CFB-0130 has a PT 100 temperature sensor to measure the temperature in the transfer dish.

The Automatic Electronic Penetrometer is supplied complete with;

- Penetration Needle, 1 piece.
- Needle Holder, 1 piece.
- Weights of 50g and 100g
- Transfer Dish
- Sample Cup, Ø55x35 mm, 6 pieces, stainless steel

Technical Specifications

Measuring Range	0-50 mm
Resolution	0.01 mm
Total Test Load	100 g (plunger 97.5 g + 2.5 g pen. needle)
Loading Time	5 seconds (adj. from 0.1 to 9999 sec.)

Dimensions	270x480x750 mm
Weight (approx.)	24 kg
Power	75 W

SOFTENING POINT / RING & BALL METHOD

Product Code

CFB-0240 Automatic Ring and Ball/Softening Point Tester
CFB-0241 Two Rings Assembly for CFB-0240
CFGG-1335 Glass Griffin Beaker, 800 mL, Heat Resistant
CFB-0236E Pouring Plate, EN, Metal
CFB-0236A Pouring Plate, ASTM, Brass

Models for 220-240V 50-60 Hz, 1 ph.	CFB-0240
Models for 110-120V 60 Hz, 1 ph.	CFB-0240-N

Standards

EN 1427; ASTM D36; AASHTO T53

CFU CFB-0240 Automatic Ring and Ball/Softening Point Tester is an innovative microprocessor controlled automatic testing device which is used for determining the softening point of bituminous materials using water or glycerol as bath liquid in a range from 30°C to 150°C.

Two bitumen samples casted in shouldered brass rings while being held in horizontal position, temperature is increased under controlled rate acc. to standards. The softening point is the average temperature value of two samples at the time they collapse 25 mm while each carrying a steel ball.

CFB-0240 is equipped with the assembly (CFB-0241), a cooling and heating system, speed controlled magnetic stirrer, motorized beaker lift, optic sensors, temperature probe with its holder, USB port for PC connection and data transfer from control unit.

UTS-0241 Assembly includes a ring holder, a bottom plate, 2pcs. brass rings, 2pcs. brass ball centering guides, 2pcs. stainless steel balls, a glass beaker (UTGG-1335) and a magnetic stirrer bar.

The pouring plate, should be ordered separately.

Two revolutionary features of the CFB-0240 are the immersed heating resistance and the cooling mechanism for the specimen pre-conditioning. Immersed heating resistance provides direct heat transfer to bath liquid without any loss and it is more efficient than the traditional hot plates. Combined with the PID control, temperature gradient is strictly maintained during the test. Cooling unit reduces the temperature of the bath liquid to 5°C automatically. This feature eliminates the dependency to a refrigerator or dealing with ice cubes for test preparation.

To ensure uniform temperature distribution, bath liquid is stirred by an integrated step motor with adjustable speed and a magnetic stirring bar.

Optic sensors instantaneously detect the specimen collapse and the control unit records the softening point temperature value.

Control unit collects data from the temperature probe and governs the cooling and heating systems in PID control loop. Apart from the control, it utilizes user interface functions such as defining test sequences, multiple point & offset calibration of the temperature probe, calibration preparation menu, fine tuning of temperature gradient and visual simulation of the test area.

The device can also be connected to a computer via on board USB-Port to record test data for each minute and export the data in an excel sheet.

USOFT-0240 Software for Automatic Softening Point Test permits to select the test method and the test parameters, run the test automatically, store, retrieve and print data, diagnose and calibrate the instrument.

CFB-0240

Main Features

- Uses both water and glycerol as bath liquid (30-150°C)
- Automatic pre-conditioning and test start
- User defined test sequences and automatic finalization of the test
- PID controlled heating and cooling system
- Optic sensors for accurate determination of softening point
- Motorized beaker lift
- Colored touch-screen graphic display
- Title information input such as date/time, test number, operator name
- Versatile calibration and calibration preparation menu
- USB-Port for PC connection
- PC-software for data acquisition and excel output

Safety Features

- Heater is automatically shut down at the end of the test cycle and cooling media and a solenoid valve is automatically opened by the controller.
- Automatic test interruption when there is a probe failure or when the probe is not positioned properly.

Dimensions	850x650x400mm
Weight (approx.)	60 kg
Power	1200 W

SOFTENING POINT / RING & BALL METHOD

Product Code

CFB-0231E	Two Rings Assembly for Ring and Ball Test, EN
CFB-0231A	Two Rings Assembly for Ring and Ball Test, ASTM
CFD-1412	LCD Digital Hot Plate with Magnetic Stirrer, EN 1427, ASTM D36
CFD-1410Y	Digital Hot Plate with Magnetic Stirrer
CFB-0236E	Pouring Plate, EN, Metal
CFB-0236A	Pouring Plate, ASTM, Brass
CFGG-1330	Borosilicate Glass Beaker 600 ml
CFGG-1335	Glass Griffin Beaker, 800 ml
CFGT-1305	Glass Thermometer Max. 110°C
CFGT-1315	Glass Thermometer Max. 250°C
CFGT-2050	ASTM 15C Thermometer -2 +80°C (IP60C)
CFGT-2055	ASTM 16C Thermometer +30 + 200°C (IP61C)

Models for 220-240V 50-60 Hz, 1 ph.	CFB-1412	CFB-1410Y
Models for 110-120V 60 Hz, 1 ph.	CFB-1412-N	-

Standards

EN 1427; ASTM D36; AASHTO T53

CFB-0231E and CFB-0231A assemblies are used for determining the softening point of bituminous materials by ring and ball method with UTD-1412 or UTD-1410Y hot plate.

UTD-0412 hot plate with magnetic stirrer which works conforming to EN and ASTM standards.

The hot plates include an immersion type temperature sensor with it's holder and a stirring bar. The hot plates which are supplied with an immersion type temperature sensor with it's holder and a stirring bar should be ordered separately.

If required, pouring plate, glass thermometers (UTGT-1305, UTGT-1315) or ASTM thermometers (15C or 16C) should be ordered separately.

The assemblies include a ring holder, a bottom plate, 2pcs. brass rings, 2pcs. brass ball centering guides, 2pcs. stainless steel balls and a glass beaker (CFB-0231E with UTGG-1330 or CFB-0231A with UTGG-1335).

Dimensions	280x400x200mm (packed)
Weight (approx.)	4 kg
Power	650 W

WATER CONTENT of BITUMINOUS EMULSIONS

Product Code

CFB-0255	Water in Bituminous Materials Test Set (Dean-Stark Method) 230V 50-60 Hz, 1 ph

Standards

AASHTO T48, T55, T59; EN 1428; ASTM D244

The CFB-0255 test set is used for determining the water content of bituminous emulsions. The test is based on distilling the sample with a volatile solvent.

The material to be tested is heated under reflux with a water immiscible solvent, which distills together with the water in the sample.

Condensed solvent and water are continuously separated in a trap, the water settles in the graduated section of the trap, and the solvent returns to the still.

Test Set Consists Of;

- Electric Heater with Thermo Regulator
- Glass Condenser
- Glass Receiver
- Glass Still, 10 ml

Dimensions	200x200x450 mm
Weight (approx.)	4 kg
Power	250 W

BREAKING POINT of BITUMINOUS MATERIALS

Product Code

CFB-0257	Fraas Breaking Point Apparatus
CFB-0258	Stainless Steel Plaque for CFB-0257 (pack of 10)

Standards

EN 12593

The CFB-0257 Breaking Point Apparatus is used to determine the breaking point of solid and semisolid bitumen.

The Fraass Breaking Point is the temperature at which bitumen first becomes brittle, as indicated by the appearance of cracks when a thin film of bitumen on a metal plaque is cooled and flexed in accordance with specified conditions.

The apparatus consists of a bending device, a plaque made of springly stainless steel 41x20x0.15 mm, a cooling device, a thermometer IP 42 C, a plate and stand.

Dimensions	100x100x300 mm
Weight (approx.)	3 kg

SOLUBILITY

Product Code

CFB-0260E	Solubility Test Set for Bitumen and Bituminous Binders
CFGG-2005	Filter Flask, 500 ml
CFGG-2240	Gooch Crucible, Glass, for CFB-0260
CFGG-2242	Funnel for CFB-0260, Glass
CFGG-2244	Powdered Glass, for CFB-0260, 100 g
CFGP-1222	Rubber Stoper with a hole, for CFB-0260
CFGP-1226	Rubber Ring, for CFB-0260
CFGG-3590	Water Trompe/Aspirator Filter Pumps for Vacuum Filtration with Anolog Manometer

Standards

EN 12592

Solubility Test Set is used for determining the degree of solubility of bituminous binders having little or no mineral matter other than recovered bituminous binders from asphalt mixes.

The test set includes of a filter flask, a sintered glass crucible, a funnel, 100g powdered glass, a rubber ring and a rubber stopper.

UTGE-3590 Metal water trompe/aspirator filter pump is supplied complete with 2m plastic tube, 1m rubber tube and 4 pcs. tube clamps.

Solvent and water trompe shoud be ordered seperately.

Dimensions	105x105x300 mm
Weight (approx.)	1 kg

EFFECT of HEAT and AIR on MOVING FILM of BITUMEN

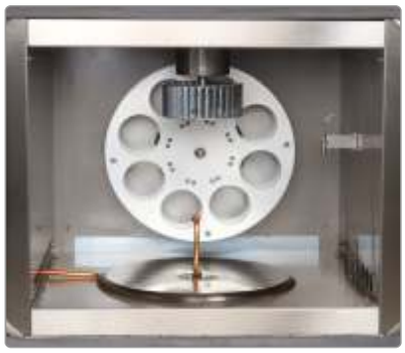
Product Code

CFB-0340A Rolling Thin-Film Oven Test (RTFOT), ASTM
CFB-0340E-T Rolling Thin-Film Oven Test (RTFOT), EN 220-240 V 50 Hz, 1ph
CFB-0342 Spare Glass Container for CFB-0340A and CFB

Models for 220-240V 50 Hz, 1 ph.	CFB-0340A-T
Models for 110-120V 60 Hz, 1 ph.	CFB-0340A-N
Models for 220-240V 60 Hz, 1 ph.	CFB-0340A-N

Standards

EN 12607-1; ASTM D2872



Rolling Thin-Film Ovens are used for determination of the resistance to hardening of semisolid asphaltic materials/ bitumen or bituminous binders under the combined effects of heat and air with the rolling thin-film oven test (RTFOT) method.

The Internal chamber of CFB-0340A and CFB-0340E are manufactured from stainless steel, insulated with fiberglass or similar, the door has a symmetrically located window.

The ovens have a programmable temperature controller which works in PID mode and digital display system.

Grade A platinium resistance thermometer is used for measuring and controiling the temperature of the oven.

The temperature can be read from the digital unit placed on the oven. Over tempereture controlled by a mechanical switch. Conforming to the CE Directives.

Air Compressor should be ordered separately. Maximum pressure should not exceed 2 bar when an air compressor is used.

CFGE-3572

The Rolling Thin-Film Ovens are supplied complete with;

- Glass Comtainers, 8 pcs.
- Air-Drying Unit (UTGE-3572)
- Transparent Hose, 8/5,5mm(OD/ID), 3m.

Dimensions	800x700x750 mm
Weight (approx.)	62 kg

EFFECT of HEAT / AIR and LOSS on HEATING

Product Code

CFB-0345	Bitumen Oven for Thin Film Oven Test (TFOT method) and Loss on Heat Test
CFGT-2045	Thermometer 155°C to 170°C with 0.5 °C division ASTM 13C (IP 47C)
CFB-0346	Rotating Shelf Ø 250 mm for Loss on Heating Test
CFGH-1425	Sample Cup Aluminium Ø 55x35 mm for Loss on Heating Test, 9 pcs.
CFB-0348	Rotating Shelf for Thin Film Oven Test
CFGH-1399	Sample Cup, Aluminium, Ø 140x9.5 mm for Thin Film Oven Test (TFOT) 4 pcs.

Models for 220-240V 50 Hz, 1 ph.	CFB-0345-T
Models for 110-120V 60 Hz, 1 ph.	CFB-0345-N
Models for 220-240V 60 Hz, 1 ph.	CFB-0345-N

Standards

EN 12607-2,13303; ASTM D6, D1754; AASHTO T47, T179; BS 2000

CFB-0345Bitumen Oven is used for determining the loss in mass, of oil and asphaltic / bituminous compounds when heated with the loss on heating test method or the effect of heat and air on semisolid asphaltic / bituminous materials with the thin film oven test (TFOT) method.

The internal chamber of the CFB-0345Thin Film Bitumen Oven is made of stainless steel and the door has a panel window.

Oven has a working temperature ambient to 200°C, digital PID controller and circulation fan.

Supplied complete with ASTM 13C thermometer (155 to 170°C)

Rotating shelfs (CFB-0346 or/and CFB-0348) and sample cups (UTGH-1425 or/and UTGH-1399) should be ordered separately according to the test type.

Dimensions	910x800x550 mm
Weight (approx.)	60 kg

VISCOSITY of CCFBACK BITUMINOUS BINDERS and EMULSIONS

Product Code

CFB-1200	Digital Standard Tar / Efflux Viscometer, 220-230 V 50-60 Hz 1 ph.
CFB-1202	Go/Not Go Gauge for 10 mm Orifice, for CFB-1208
CFB-1204	Go/Not Go Gauge for 4 mm Orifice, for CFB-1210
CFB-1206	Go/Not Go Gauge for 2 mm Orifice, for CFB-1212
CFB-1208	Cup 10 mm dia. for CFB-1200
CFB-1210	Cup 4 mm dia. for CFB-1200
CFB-1212	Cup 2 mm dia. for CFB-1200
CFGT-2010	Thermometer IP 8 C, 0 to 45°C
CFB-1216	100 ml Cylinder with Graduation at 20, 25 and 75ml
CFB-1218	Light Mineral Oil, 5L, EN 12846- ve 2, CFB-1200

Standards

EN 12846, 13357

The CFB-1200Digital Standart Tar / Efflux Viscometer is used for determining the viscosity of cCFBack, fluxed bituminous binders and bituminous emulsions. The Viscometer consists of a tank fitted with a thermostat, a rheostat, an agitator, an immersion heater to heat the water to the required temperature and a cooling coil for connection to the water supply.The temperature is checked with a thermometer capable of measuring in the 0-45°C range.

Cups, thermometer (UTGT-2010), Go/Not Go Gauges and light mineral oil should be ordered separately.

Required Cup Sizes According to Different Standards:
EN 12846 : 2, 4 and 10 mm dia.
EN 13357 : 4 and 10 mm dia.

Dimensions	262x262x550 mm
Weight (approx.)	10 kg
Power	300 W

ENGLER VISCOMETER

Product Code

CFB-1250	Digital Engler Viscometer
CFB-1252	Engler Viscosity Thermometer, 18-28°C, ASTM 23C
CFB-1254	Engler Viscosity Thermometer, 39-54°C, ASTM 24C
CFB-1256	Engler Viscosity Thermometer, 95-105°C, ASTM 25C
CFGT-2005	IP 76C Thermometer, 10-55°C, 0.5°C Divisions
CFB-1260	Kohlraush Calibration Flask, 200 ml
CFB-1262	Strainer No. 50, ASTM
CFB-1264	Testing Flask, 50ml, for CFB-1250

Models for 220-240V 50-60 Hz, 1 ph.	CFB-1250
Models for 110-120V 60 Hz, 1 ph.	CFB-1250-N

Standards

ASTM D1665, D490; AASHTO T54

The CFB-1250 Digital Engler Viscometer is used for determining the viscosity of tars and their fluid products. Apparatus consists of a contact thermo regulator and a stirring device.

The thermometers, the calibration flask, strainer and testing flask are not included.

Dimensions	265x265x550 mm
Weight (approx.)	10 kg
Power	300 W

SAYBOLT VISCOSITY

Product Code

CFB-1300	Saybolt Two-Tube Digital Viscometer
CFB-1302	Filter Funnel with Wire Mesh and Clip for UTAS-1300
CFB-1304	Withdrawal Tube for UTAS-1300
CFB-1306	Saybolt Viscosity Thermometer Set for UTAS-1300, 6 pcs.
CFB-1308	Saybolt Viscosity Flask, glass, 60 ml
CFB-1310	Heat Transfer Oil for UTAS-1300, 5 lt.

Standards

ASTM D88, D7496; AASHTO T72

Models for 220-240V 50-60 Hz, 1 ph.	CFB-1300
Models for 110-120V 60 Hz, 1 ph.	CFB-1300-N

The Saybolt Two-Tube Digital Viscometer is supplied complete with;

- Universal Orifice, 2 pcs
- Furol Orific, 2 pcs
- Thermometer Support, 2 pcs
- Heat Transfer Oil, 5 lt
- Key, Saybolt viscosity flask, glass, 60 ml, 2 pcs.
- Stopper, 2 pcs
- 3 m Plastic Hose

Dimensions	450x300x550 mm
Weight (approx.)	10 kg
Power	750 W

The CFB-1300 Saybolt Viscometer is used to determine empirical measurement of Saybolt Viscosity of petroleum products at specified temperatures. The time it takes for a 60mL sample to flow through a tube with a specified diameter (furol or universal) is measured and reported in seconds.

The viscometer can be used for temperatures between 21 and 99 °C (70 to 210 °F) The viscometer includes water-oil bath, stirrer, cooling coil, electric heater with digital thermo regülatör.

Viscosity Thermometer set consists of 6 thermometers with the temperature ranges; 19 to 27°C, 34 to 42°C, 49 to 57°C, 57 to 65°C, 79 to 87°C (250 mm length) and 95 to 103°C where each thermometer has 0.1°C subdivisions.

Filter funnel, withdrawal tube and thermometer set should be ordered separately.

FLASH POINT and FIRE POINT

Product Code

CFB-1350	Cleveland Flash Tester, 220-240 V 50-60 Hz
CFGT-2040	Thermometer IP28C, -6 +400°C

Standards

EN 22592; ASTM D92

The CFB-1350 Cleveland Flash Tester is used for determining the flash and fire point of petroleum products.

It consists of a brass cup mounted on an electric heater with a temperature controller and a thermometer (-6 C to +400 C).

Conforming to the CE European Directive.

Dimensions	250x300x250 mm
Weight (approx.)	5 kg
Power	600 W

FLASH POINT

Product Code

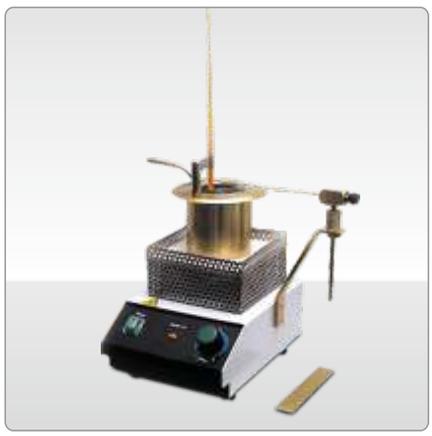
CFB-1360	TAG Open Cup Flash Point Tester, 220-230V 50-60 Hz
CFGT-2030	Pensky-Martens/TAG Thermometer 9C -5 +110°C
CFGT-2070	Thermometer ASTM 35C +90 +170°C

Standards

ASTM D1310, D3143

The CFB-1360 TAG Open Cup Flash Point Tester is used for determination of flash points of.

The test set consists of an electric furnace with electronic contoller of heating power, flame rotating ignition device (LPG supply required), glass cup, insulating plate, support and clamp for thermometer, gauge, stainless steel frame and double-line fuse. Thermometers should be ordered separately.



Dimensions	250x170x400 mm
Weight (approx.)	4 kg
Power	600 W

DUCTILITY

Product Code

CFB-1400	Ductility Testing Machine
CFB-1420	Ductility Testing Machine with a Cooler
CFB-1402A	Ductility Briquette Mould, Brass, ASTM D113 and AASHTO T51
CFB-1402NF	Ductility Briquette Mould, NF
CFB-1403A	Ductility Briquette Mould, Chrome Plated Brass, AASHTO T301
CFB-1405	Ductility Mould Base Plate, For One Mould, Brass
CFB-1405-3	Ductility Mould Base Plate, For Three Moulds, Brass
CFB-1406A	Ductility Mould, Brass, ASTM D6084, AASHTO T300
CFB-1406E	Ductility Mould, Brass, EN 13589
CFB-1408E	Ductility Mould, Brass, EN 13398

Models for 220-240V 50-60 Hz, 1 ph.	CFB-1400	CFB-1420
Models for 110-120V 60 Hz, 1 ph.	CFB-1400-N	CFB-1420-N

Standards

EN 13398; ASTM D113, D6084; AASHTO T51; NF T66

The CFB-1400 Ductility Testing Machine is used to determine the ductility of bituminous materials in a briquette mould by measuring the breaking elongation at a constant speed of 50 mm/min.

It is designed for testing 3 specimens simultaneously. The Internal tank is made of stainless steel. The bath is fitted with an immersion heater in order to obtain (in normal conditions), the 25°C test temperature. Each machine comprises speed control and water circulator to maintain the homogenous water temperature.

CFB-1400 and CFB-1420 have the same specifications, except that UTAS-0420 contains an internal cooler. It is not possible to convert CFB-1400 to CFB-1420.

Moulds and mould base plates should be ordered separately.

Dimensions	300x1850x550 mm
Weight (approx.)	80 kg
Power	350 W

DUCTILITY

Product Code

CFB-1430	Force Ductility Testing Machine
CFB-1402A	Ductility Briquette Mould, Brass, ASTM D113 and AASHTO T51
CFB-1402NF	Ductility Briquette Mould, NF
CFB-1403A	Ductility Briquette Mould, Chrome Plated Brass, AASHTO T301
CFB-1405	Ductility Mould Base Plate, for One Mould, Brass
CFB-1405-3	Ductility Mould Base Plate, for Three Moulds, Brass
CFB-1406A	Ductility Mould, Brass, ASTM D6084, AASHTO T300
CFB-1406E	Ductility Mould, Brass, EN 13589
CFB-1408E	Ductility Mould, Brass, EN 13398
CFGE-4110	Cooler / Circulator Unit

Models for 220-240V 50-60 Hz, 1 ph.	CFB-1430	UTGE-4110
Models for 110-120V 60 Hz, 1 ph.	CFB-1430-N	UTGE-4110-N

Standards

EN 13589, 13398, 13703; ASTM D113, D6084; AASHTO T51, AASHTO T300

The CFB-1430 Force Ductility Testing Machine is used to determine the the deformation energy required to stretch a bitumen sample from 200 mm elongation to 400 mm elongation. Force ductility machine is capable of testing 3 specimens simultaneously. The speed of the machine can be adjusted from 5 mm/ min. to 100 mm/ min. Internal tank is made of stainless steel. The bath is fitted with an immersion heater in order to obtain the 25°C test temperature required for normal ductility testing. Water bath is covered by insulating material to reduce the heat loss during testing. The machine can be supplied with an external Cooler / Circulator Unit necessary to obtain the 5°C test temperature required for force ductility testing according to EN 13589.

CFB-1430 Force Ductility Testing Machine has 3 load cells. The accuracy of load cells are ±0,1N with a maximum capacity of 300 N. Test speed can be adjusted and load-displacement curves can be drawn through the software. Software for CFB-1430 is capable of calculating deformation energy according to EN 13589 and displaying force vs displacement graphs for each sample separately or on the same screen.

Cooler/Circulator Unit (UTGE-4110), moulds and mould base plates should be ordered separately.

Main Features

- Elongation measurement through motor encoder.
- 3 simultaneous load measurements with 18 bit resolution.
- Ethernet for connection to PC (not included).
- Colour large TFT graphic display with touch screen
- PID controlled heating and cooling system.
- Fine adjustment of test starting position for easy insertion and removal of different types of test moulds.
- Closed-loop PID temperature control of 25±0.5°C
- Temperature range from 4°C to ambient temperature (±0.5°C) with the Cooler / Circulator Unit (UTGE-4110)

Software

- Selection of test parameters can be made either by TFT graphic display or computer software.
- Automatic calculation of deformation energy.
- Display of load vs deformation graphs.
- Ability to export test data to Microsoft Excel in *.xls file format.
- Software assistance for elastic recovery test according to EN 13398 to minimise operator error.

	CFB-1430	CFB-4110
Dimensions	620x2420x420 mm	800x700x600 mm
Weight (approx.)	160 kg	85 kg
Power	350 W	350 W

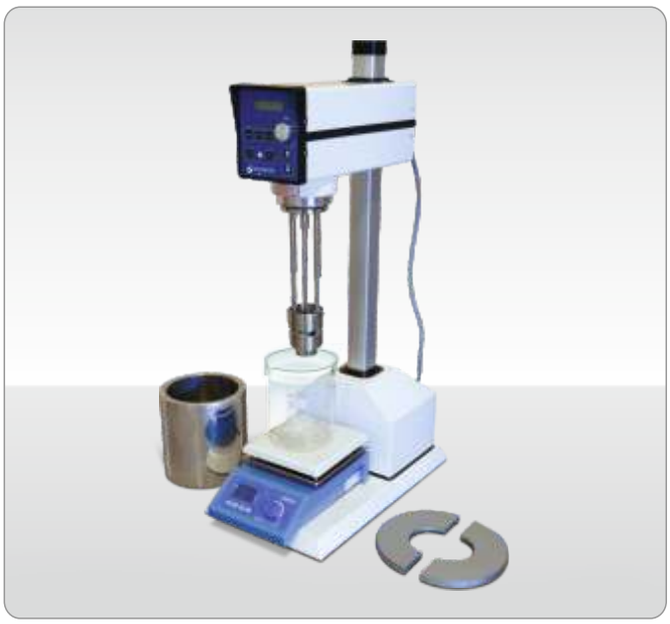
UTGE-4110

UTGE-1430

VOLATILE CONSTITUENTS in CCFBACK ASPHALTIC PRODUCTS

Product Code

CFB-1440 Polymer Modified Bitumen Mixer
CFB-1441 Heat Insulated Metal Vessel, for 2000 mL glass beaker.



Standards

EN 12697-35

Modified Bitumen is used to prevent deteriorations like permanent deformation (wheel track), thermal cracking and segregation of binder from aggregate which might occur at pavement constructions.

Polymer Modified Bitumen Mixer is used to mix different type of polymer dopes with bitumen homogeneously at proper temperature.

Mixer provides perfect mixtures by means of its special disintegrator head which operates at 6000-8000 r.p.m. Heat loss is kept at minimum level by a thermal isolation vessel.

CFB-1440 is supplied complete with;

- UTGG-1345 2000 ml Borosilicate Glass Beaker
- CFB-1441 Thermal Isolation Vessel for Glass Beaker
- UTD-1410 Digital Hot Plate with Magnetic Stirrer

Speed	6000 – 8000 r.p.m
Dimensions	950x310x510 mm
Power	220V, 50 Hz, 1ph

Programmable integrated timer
Digital heater with a capacity of 300 °C

VOLATILE CONSTITUENTS in CCFBACK ASPHALTIC PRODUCTS

Product Code

CFB-1500 Apparatus for Distillation of CCFBack Asphalt
CFGT-2025 High Distillation Thermometer, Range-2 +400°C, ASTM 8C

Models for 220-240V 50-60 Hz, 1 ph.	CFB-1500
Models for 110-120V 60 Hz, 1 ph.	CFB-1500-N

Standards

ASTM D402; AASHTO T78

The CFB-1500 is used for the examination of cut-back asphaltic materials by the distillation test. The apparatus consists of a distillation flask, condenser, adapter, shield, electric heater with thermoregulator, cylinder receiver, thermometer (ASTM 8C), shield and flask support.

Dimensions	300x300x600 mm
Weight (approx.)	6 kg

MEASURE THE DENSITY of THIN ASPHALT & CONCRETE LAYERS

Product Code

Model 4640 B Thin Layer Density Gauge

Model 4640-B features patented technology to measure the density of thin asphalt and concrete layers from 2.5 to 10 cm thick (1 to 4 inches) without influence from underlying material. The 4640-B is specified by many state DOTs, government agencies and contractors as the best test method for determining the density of bituminous overlays.

Eliminates the need for nomographs and manual corrections: Variations in the density or composition of the base material do not affect the test results. No field calculations or charts are needed.

Operator selected depth of measurement: Enter the thickness of the overlay into the gauge memory and then accurately measure the overlay density (compaction) without influence from the underlying material.

Data storage is computer compatible: Store up to 750 readings by location and project number. Transfer stored readings to a printer or computer via RS232 interface. Additional site information can also be stored with each test.

The 4640-B meets or exceeds all applicable ASTM Standards.

Calibration: The Troxler 4640-B calibration process is unique. Your test results will improve and job penalties can be eliminated. For special materials, up to 11 field calibrations can be performed and stored.

User friendly: The operator will find the 4640-B very easy to use. It is a menu driven gauge, prompting the operator through the test procedure.

Mechanical Specifications
Case: Colored polycarbonate top shell withaluminum cast base
Operating Temp:
Ambient : -10 to 70°C (14 to 158°F)
Surface : 175°C (350°F)
Storage Temperature : -55 to 85°C (-70 to 185°F)
Gauge Size : 472 x 231 x 158 mm (18.6 x 9.1 x 6.2 inches)
Gauge Height (including handles): 240 mm (9.5 inches)
Weight: 13.5 kg (29.7 pounds)
Shipping Weight: 40.8 kg (90 pounds) w/transport case

Radiological Specifications

Gamma Source	: 8 ±1mCi Cesium - 137
Source Encapsulation	: Stainless Steel
Shielding	: Tungsten and lead
Surface	: Dose Rates 5 mrem/hour max. top and sides of gauge, 15 mrem/hour max. bottom of gauge, gamma in shield position

Calibration Specifications
Accuracy of Density Standards: ±0.3%
Calibration Range: 1600-2700 kg / m^3 / 100-170 pcf density

Field Data Conversion:
4640-B contains a microprocessor providing direct reading in engineering units in pcf, kg/m^3 or g/cm^3; no calculation is required.

Electrical Specifications

Stored Energy	: 30 watt hours
Battery Recharge Time	: 14-16 hours (automatic shutoff)
Battery Recharge	: 110/220 V, 50-60 Hz or 12-14 VDC
Power Consumption (average)	: 0.16 watt/hours

Readout (LCD) Liquid Crystal Display - 4 x 6 alpha numeric Battery packs are fully protected against overcharge and overdischarge.

Provided with RS232 interface. Capable of operation with D size batteries for emergency use.

Special Functions:
Automatic standard count comparison and storage. Determination of count time for selected precision. Field offsets of density. Field calibration for special asphalts. Calculator mode with storage. Self-test and service programs: Display, Keypad and Ram Test; GM Tube Test; Statistical Stability and Drift Test.

Standard Accessories:
Supplied with the Model 4640-B: air gap fixture, 1" magnesium block, AC battery charger, DC charger cord, transport case

Optional Accessories:
PN 021140 Radiation Sign Kit,
PN 102866 Leak Test Kit