

Modular Line

Bendtsen

For the determination of surface roughness and air permeance according to Bendtsen method.

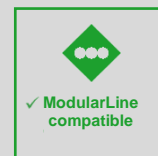
For:



✓ PAPER



✓ BOARD



MOST IMPORTANT BENEFITS:

- ✓ Easy operation via inbuilt touch screen
- ✓ Automatic and manual measuring process
- ✓ Pressure difference adjustable
- ✓ Simultaneous measurement of air permeance and roughness
- ✓ Compensation of the barometric pressure

 **FRANK-PTI**
QUALITY TESTING INSTRUMENTS

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PRODUCT DESCRIPTION

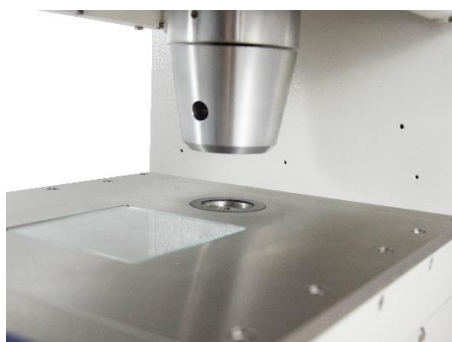
The Bendtsen measurement process is specified both for surface roughness and air permeability. It works according to the air leak method with preset pressure differentials. The ModularLine Bendtsen testing device is available in various different variant models. According to configuration the roughness of the upper surface and / or the lower surface as well as the air permeability can be measured.

A device can therefore contain up to three measurement units, each equipped with a closed measurement and regulation system and the latest generation of sensors. Barometric pressure compensation gives you the most accurate results and reproducibility. The results can be displayed in ml/min or $\mu\text{m}/\text{Pa}\cdot\text{s}$ as required. Calculation according to Gurley is also possible.

TEST DESCRIPTION

After inserting the sample and the start of the test sequence, the roughness or air permeance measurement head is automatically placed on the sample and measurement is started. Automated positioning of the head almost rules out inaccuracies of measurement due to outside influence.

Depending on the selected measurement pressure a pressure difference of 0.74, 1.47 or 2.20 kPa is created and the throughflow between measurement blade and sample is measured. The air permeability is determined using the same technique, where the airflow through the sample is measured. The same selectable pressure regulation bands apply here.



Bendtsen with 1 measuring head, air permeability

TECHNICAL DATA

DEVICE / INSTRUMENT

- Ease of use due to big touch screen
- Separate start and stop buttons
- Compensation of barometric air pressure
- Measuring range 25-5000 ml/min standard (depending on sensor)
- Measurement time: 10s (after pressure is reached)
- Difference pressure adjustable: 0.74 kPa, 1.47 kPa, 2.20 kPa
- Compatible ProbNet
- Can be used as ModularLine Module

Protection class: 2
Protection degree: IP44

APPLICABLE STANDARDS

ISO 8791-2	roughness / smoothness
ISO 5636-1/-3	air permeance
DIN 53108	roughness (replaced)
*more standards available	

MEASURING

Dwelling pressure:	Dead weight of the measuring head roughness 267g
Measuring range:	Depending on sensor: 25-5000 standard
Measuring time:	From reaching the measuring pressure: 10 s
Selectable measuring pressure:	0,74 / 1,47 / 2,20 kPa
Measuring accuracy	Depending on sensor
Pressure difference:	+/-0,005kPa linear
Flow rate:	+/-0,5% of final value
Roughness measuring blade:	Ø 31,5mm 150 μm
Porosity measuring area:	10cm ² +/-0,2cm ²
Results:	Air permeability P [$\mu\text{m}/\text{Ps}$] Air permeability V [ml/min] Roughness [ml/min] Gurley [s] (Calculated)
Statistics:	Mean values Standard deviation Coefficient of variation Min. and max. of test series

Connections

Power:	230V / 50-60Hz
Consumption	<80 W
Water:	No
Compressed air:	6 bar Connector for hose 6mm

DATA

RS232:	Data output
Ethernet:	Data output. / MQTT
USB:	Updates / Service



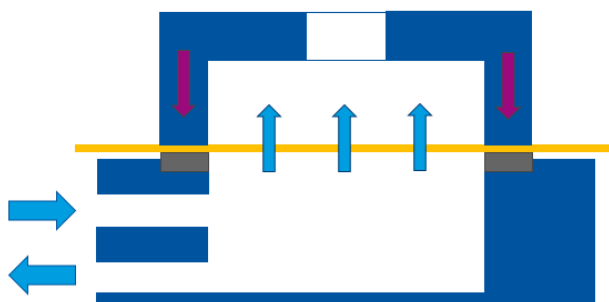
Bendtsen with 3 measuring heads



Detailed view of one head



Over view measuring heads



Measuring method porosity acc. Bendtsen

Dimensions

Version 1-2 heads S624000001-6	L x H x W 600 x 600 x 270 mm
Version 3 heads S624000007	600 x 600 x 330 mm
Weight:	netto/brutto
Version 1-2 heads S624000001-6	app. 45kg / 72kg
Version 3 heads S624000007	app. 51kg / 77kg

ARTICLES / MODELS

- S624000001 Bendtsen 1 head – porosity
- S624000002 Bendtsen 1 head – roughness top side (standard)
- S624000003 Bendtsen 1 head – roughness bottom side
- S624000004 Bendtsen 2 head– roughness b. side / t. side
- S624000005 Bendtsen 2 head– roughness t. side / porosity
- S624000006 Bendtsen 2 head– roughness b. side / porosity
- S624000007 Bendtsen 3 head– roughness b. & t. side / poro. (Special construction with wider housing)

* more versions and sensors on request

Available Sensors:

Porosity

- S624001001 Sensor, range 10-5000 ml/min (standard)
- S624001002 Sensor, range 15-3000 ml/min
- S624001003 Sensor, range 2-1000 ml/min
- S624001004 Double sensor, range 0,5-5000 ml/min

Roughness Top side

- S624001011 Sensor, range 25-5000 ml/min (standard)
- S624001012 Sensor, range 15-3000 ml/min
- S624001013 Sensor, range 5-1000 ml/min
- S624001014 Double sensor, range 0,5-5000 ml/min

Roughness Bottom side

- S624001021 Sensor, range 25-5000 ml/min (standard)
- S624001022 Sensor, range 15-3000 ml/min
- S624001023 Sensor, range 5-1000 ml/min
- S624001024 Double sensor, range 0,5-5000 ml/min

- S406900001 ProbeNet software incl. 1 licence

* requirements explained upon request



Measuring method roughness acc. Bendtsen