



# 2914

## Test Cell for Solid Insulants



### GENERAL

The newly developed test cell is used for dielectric tests, i.e. it determines dissipation factor  $\tan \delta$  and dielectric constant  $\epsilon_r$  on test objects of solid insulants such as paper and plastic foils, as well as the specific resistivity.

The test cell is equipped with a shielded measuring electrode (guard ring) which eliminates partial capacitances which influence the test results.

This new design is the result of longstanding experience in the field of test cell building. It has been designed in accordance with VDE specifications 0303, 0311, 0345 (Fed. Republic of Germany), the ones of SEV (Switzerland), and the recommendations of CIGRE, IEC and ISO, as well as with ASTM standards (USA).

### ADVANTAGES

- The test cell is in accordance with international standards and specifications.
- The test cell is heatable
- The heating-up time is short
- The temperature is adjustable up to 300°C
- The measuring electrode can be removed from the test object while the bell-jar is on unit

- The pressure acting against the test object can be adjusted from outside and monitored at any time
- The test cell can be evacuated
- Measurements can be carried out under protective gas
- The test cell can also be used for impregnation purposes

### MANUAL MEASURING INSTRUMENTS

- Measuring bridge with digital display (without null indicator) type 2809
- Measuring bridge with built-in null indicator type 2809a
- Schering measuring bridge type 2801
- Measuring bridge with built-in oscilloscopic null indicator type 2811
- Measuring bridge with built-in null indicator type 2805
- Standard capacitor, 100 pF type 3320/100
- Pointer null indicator type 5516
- Oscilloscopic null indicator type 5517
- Dimensions 450 x 340 x 420 mm (17.7 x 13.4 x 16.5 inches)
- Weight 23 kg (51 lbs)

### COMPLETE TEST SYSTEMS

For dielectric measurements on test objects of solid insulants Tettex offers complete test systems.

Dissipation factor  $\tan \delta$  measurements are carried out most efficiently with the complete dissipation factor and capacitance measuring bridge with resonant power supply type 2821 or 2822.

Other measuring equipment is listed under „order specification“. Always check suitability of the equipment for the considered test cells. It should be noted that the power supply used must have a lower short-circuit power characteristic (e.g. a resonant power supply).

To heat up and to evacuate the test cell, we recommend our temperature controller type 2967 and our reliable vacuum pump type 2973



## TECHNICAL SPECIFICATIONS

Test surface	20 cm <sup>2</sup>
Diameter of measuring electrode	49.5 mm
Electrode material	stainless steel, hardened
Finish	lapped
Heating capacity	2 heating plates of 630 W each, 1260 W together
Electrode temperature	ambient temperature ... 250° C, max. 1 h...300°C
Heating-up time	≈ 15 min.
Temperature control:	with temperature controller type 2967
Electrode pressure	0...10 N/cm <sup>2</sup> , continuously adjustable
Max. test voltage	2000 V RMS, 50/60Hz
Measuring frequency	40...1500 Hz (measurements with Tettex measuring bridges, on request), max. 100 kHz (measurements with high-frequency measuring bridges)
Test cell evacuation up to	3 x 10 <sup>-4</sup> mbar

(If the test cell is ordered after the purchase of the measuring equipment, please indicate type of measuring bridge and power supply)

## OPTIONAL SUPPLY

- Temperature controller control range up to 300°C type 2967
- Vacuum pump equipment type 2973
- Resonant power supply max. 2 kV type 5251
- Insulation resistance measuring instrument type 5476

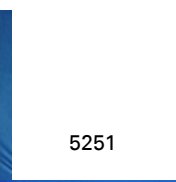
## ORDER SPECIFICATION

### Scope of supply

- Test cell for solid insulants type 2914, heating voltage 230 or 115 V, 50/60 Hz (please specify in order)
- 1 case with various accessories
- 2 connecting cables to measuring bridge and power supply
- When ordering temperature controller type 2967 the necessary 2 cables



2973



5251



5476



## AUTOMATIC MEASURING INSTRUMENTS

- Fully automatic precision measuring bridge  
Type 2877
- Measuring instrument with digital display and built-in standard capacitor  
Type 2818a
- High-voltage cable (for connection between  $C_N$ -terminal and external power supply)  
No. 17907-00
- Complete system comprising measuring instrument, standard capacitor and power-supply  
Type 2818/5283
- High-voltage cable (for connection between test-cell and power supply type 5283)  
No. 0178091
- Complete system comprising measuring instrument, standard capacitor and power-supply  
Type MIDAS 2880
- High-voltage cable (for connection between test-cell and MIDAS 2880)  
No. 4841036

## CAPACITANCE AND DISSIPATION FACTOR $\tan \delta$ MEASURING EQUIPMENT

### STANDARD SYSTEMS

- Precision measuring equipment complete with power supply, measuring bridge, standard capacitor, potential regulator and pointer null indicator  
type 2821
- Alternatively:
- Equipment as above but with an oscilloscopic null indicator  
type 2822

## DESIGN FEATURES

Basically, the test cell consists of a heatable, shielded plate capacitor (guard electrode capacitor).

The heatable high-voltage electrode is insulated and mounted on the base plate. Two different types of electrodes are supplied: a flat one, and one with raised rim for impregnation. The measuring electrode is equipped with a guard ring and shielded. This separate unit with built-in heating is mounted on a support and can be moved vertically. The vertical movement is carried out from outside via a hydraulic system, which also allows for a steady increase of the electrode pressure against the test object.

The test cell is protected by a bell jar and can be evacuated and filled with protective gas through the provided connections.

A safety switch allows measurements to be carried out only if the bell jar is put over the cell.

The base plate comprises sockets for the measuring bridge, the test voltage as well as the temperature controller. The manometer indicates the specific pressure of the electrodes against the test object.



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