



# 2914

# **Test Cell for Solid Insulates**



# 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 insulates 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 250°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 adjust from outside and monitored at any time
- The test cell can be evacuate
- Measurements can be carried out under protective gas
- The test cell can also be used for impregnation purposes

# **MEASURING INSTRUMENTS**

- High precision C, L & tan δ Measuring bridge type 2840
- C, L & tan δ Measuring bridge
  type 2820a
- Precision Oil an ad Solid Dielectric Analyzer type 2830/31
- 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 insulates Tettex offers complete test systems.

Capacitance and dissipation factor tan  $\delta$  measurements as well as DC-Resistivity and DC-Resistance are carried out most efficiently with the complete dissipation factor and capacitance measuring bridge with built in DC, AC power supply as well as temperature controller and standard capacitor 2830/2831.

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 Precision Oil an ad Solid Dielectric Analyzer type 2830/31 and our reliable vacuum pump type 2973.





Haefely has a policy of continuous product improvement. Therefore we reserve the right to change design and specification without notice.





# **TECHNICAL SPECIFICATIONS**

Test surface	20 cm <sup>2</sup>
Diameter of measuring	49.5 mm
electrode	
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.
Heating-up time	≈ 15 min.
Temperature control:	with temperature
	controller built in the
	Precision Oil an ad Solid
	Dielectric Analyzer type
	2830/31
Electrode pressure	010 N/cm <sup>2</sup> , continuously
	adjustable
Max. test voltage	2000 V RMS, 50/60Hz
Measuring frequency	401500 Hz
	(measurements with
	Tettex measuring bridges,
	on request), max. 100 kHz
	(measurements with high-
	frequency measuring
	bridges)
Test cell evacuation up to	3 x 10-4 mbar

# **ORDER SPECIFICATION**

- Scope of supply
- Test cell for solid insulates 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



(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
Insulation resistance measuring	
instrument	type 5476



2973



5476







# **AUTOMATIC MEASURING INSTRUMENTS**

	Fully automatic precision measuring bridge	Type 2840
_	NA	

- Measuring instrument with digital display and built-in stand
   Type MIDAS 2880
- High-voltage cable (for connection between test-cell and MIDAS 2880)
   No. 4841036

# CAPACITANCE AND DISSIPATION FACTOR TAN $\boldsymbol{\delta}$ measuring equipment

#### **STANDARD SYSTEMS**

Precision Oil an ad Solid Dielectric Analyzer type 2830/31

#### **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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