



# FLOXLAB CELLS

FOR RESERVOIR STIMULATION EXPERIMENTS

*Conductivity · Curing · Crush · Triaxial*

Laboratory testing cells for proppant evaluation and fracture conductivity studies



STANDARDS

**API RP 56/58/60**

*ISO 13503*

PRESSURE

**20,000 psi**

*max closure*

TEMPERATURE

**177 °C**

*max operating*

## CONDUCTIVITY & CURING CELLS

### AC-series

API Conductivity Cell — single, API RP 56/58

### SAC-series

Multi-Stack API Conductivity — 2 or 3 cells, shared pump

### FCC-series

Fracture Conductivity Cell — large slab, short & long-term

### ACC-series

Acid Fracture Conductivity — Hastelloy, carbonate formations

### FTC-series

Flow-Through Curing Cell — resin-coated proppant curing

### FLC-series

Fluid Loss Curing Cell — RCP conditioning, parallel cells

## CRUSH & TRIAXIAL CELLS

### CC-series

Proppant Crush Cell — ISO 13503-2, API RP 60

### PTC-series

Proppant Triaxial Cell — UCS & confined compression

## COMMON FEATURES

- ◆ Fully API / ISO compliant
- ◆ Stainless steel or Hastelloy wetted parts
- ◆ High-pressure & high-temperature operation
- ◆ Compatible with brine, nitrogen, acid, fracturing fluids
- ◆ Modular accessories (heaters, jackets, extruders)

## THE FAMILY AT A GLANCE



AC



FCC



CC



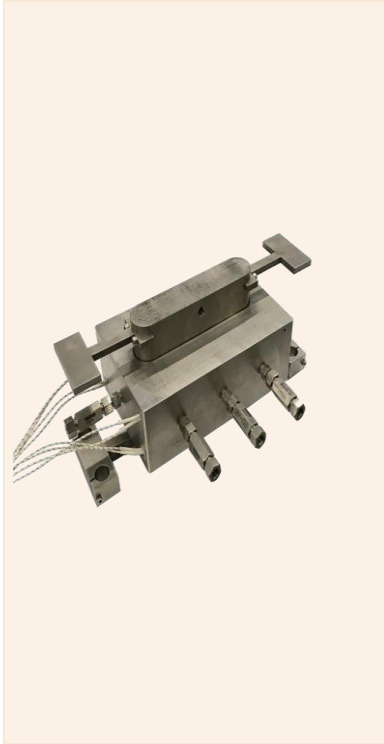
PTC



FLC

## AC-SERIES — API CONDUCTIVITY CELL

Single API conductivity cell for proppant pack permeability and conductivity



### KEY FEATURES

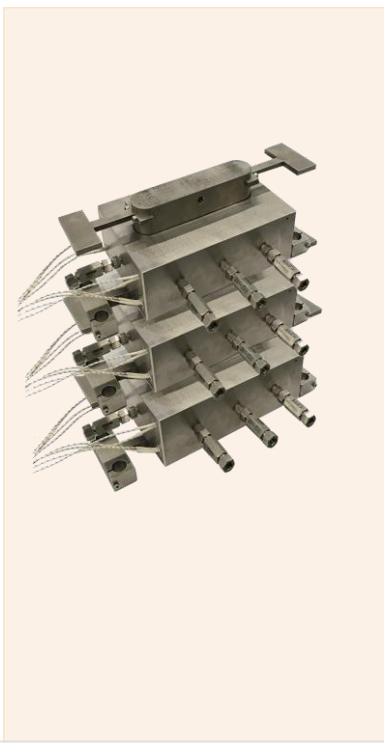
- ◆ API RP 56 & RP 58 compliant
- ◆ Reservoir-representative pressure & temperature
- ◆ Heated end-plates with thermocouple monitoring
- ◆ Three-port pressure-tap design for  $\Delta P$  measurement
- ◆ Compatible with brine, gas ( $N_2$ ) and other fluids
- ◆ Stainless steel construction (Hastelloy option)
- ◆ Designed for use with the PCM-1000 system

### KEY SPECIFICATIONS

Standard	API RP 56 & 58
Closure pressure	up to 20,000 psi
Temperature	ambient to 175 °C
Pore pressure	up to 1,000 psi
Sample size	7" × 1.5" × 1"
Wetted parts	Stainless steel
Pressure taps	3 ( $\Delta P$ )
Sand screen	Integrated

## SAC-SERIES — MULTI-STACK API CELL

Stacked API conductivity cells sharing a single hydraulic pump and pressure source



### KEY FEATURES

- ◆ Stacked configuration: 2 or 3 cells in one column
- ◆ Single hydraulic pump drives all cells simultaneously
- ◆ Reduces footprint and accelerates testing throughput
- ◆ Identical closure conditions across all cells
- ◆ ISO 13503-5 & API RP 56/58 compliant
- ◆ Independent flow paths for each cell
- ◆ Stainless steel — Hastelloy option for corrosive fluids

### KEY SPECIFICATIONS

Standard	ISO 13503-5
Capacity	2 or 3 cells
Closure pressure	up to 20,000 psi
Temperature	ambient to 175 °C
Pore pressure	up to 1,000 psi
Sample / cell	7" × 1.5" × 1"
Wetted parts	Stainless steel
Pump	Shared, indep. flow

## FCC-SERIES — FRACTURE CONDUCTIVITY CELL

Short-term and long-term tests on large rock slabs



### KEY FEATURES

- ◆ Designed for use with the FCM-1000 system
- ◆ Heated end-plates with precise temperature control
- ◆ Two loading pistons with leakoff ports
- ◆ Two inlets/outlets for fluid flow
- ◆ 4 LVDTs measure fracture width at multiple positions
- ◆ 3 inline pressure taps for  $\Delta P$  measurement
- ◆ Sample: two stacked rock slabs (1.5"  $\times$  7"  $\times$  1" each)

### KEY SPECIFICATIONS

Standard	API methods
Max temperature	175 °C
Closure stress	up to 20,000 psi
Pore pressure	up to 1,000 psi
Sample type	Two stacked slabs
Sample size	7" $\times$ 1.5" $\times$ 2"
LVDTs	4 (fracture width)
Wetted parts	SS / Hastelloy

## ACC-SERIES — ACID FRACTURE CELL

Hastelloy cell for simulating acid fracturing in carbonate formations



### KEY FEATURES

- ◆ Designed for use with the ACM-3000 acid fracture system
- ◆ Acid etching and conductivity in a single cell
- ◆ Hastelloy construction — resistant to hot acid environments
- ◆ Two loading pistons with leakoff ports
- ◆ Two inlets/outlets for acid and brine circulation
- ◆ 4 LVDTs measure fracture width at multiple positions
- ◆ 3 inline pressure taps for  $\Delta P$  measurement
- ◆ Sample: two stacked rock slabs (1.5"  $\times$  7"  $\times$  3.5" each)

### KEY SPECIFICATIONS

Application	Carbonate acid frac
Max temperature	175 °C
Closure stress	up to 20,000 psi
Acid pressure	up to 1,000 psi
Frac. pressure	up to 3,000 psi
Sample size	7" $\times$ 1.5" $\times$ 7"
Wetted parts	Hastelloy
LVDTs	4 (fracture width)

## FTC-SERIES — FLOW-THROUGH CURING CELL

Cures RCP plugs at high temperature and variable closure stress



### KEY FEATURES

- ◆ Designed for use with the RCP tester
- ◆ Cures resin-coated proppant plugs at high temperatures
- ◆ Bonded steel platens for variable closure stress
- ◆ Sample chamber with hardened upper and lower platens
- ◆ Fluid ports in platens enable leak-off monitoring
- ◆ Heating mantle maintains temperature up to 175 °C
- ◆ Extension connector for sample removal after curing

### KEY SPECIFICATIONS

Sample diameter	up to 2" (L=2×Ø)
Closure pressure	up to 10,000 psi
Temperature	up to 175 °C
Wetted parts	Stainless steel
Heating	External mantle
Application	RCP curing
Output	Plug for UCS test
Compatibility	RCP Tester

## FLC-SERIES — FLUID LOSS CURING CELL

RCP conditioning under closure stress and temperature (API RP 60)



### KEY FEATURES

- ◆ Engineered to precondition resin-coated proppant packs
- ◆ Operates under elevated temperature and closure stress
- ◆ Prepares plugs prior to UCS testing
- ◆ Floating piston accumulator — N<sub>2</sub>-charged closure
- ◆ Removable cap with leak-off port and sand screen
- ◆ Run 3 to 6 cells concurrently in oven or with mantle
- ◆ Compliant with API RP 60

### KEY SPECIFICATIONS

Standard	API RP 60
Closure pressure	up to 10,000 psi
Temperature	up to 175 °C
Pack diameters	1" / 1.5" / 2"
Pack length	up to 4"
Models	FLC 25 / 38 / 50
Wetted parts	Stainless steel
Operation	3–6 cells in parallel

## CC-SERIES — PROPPANT CRUSH CELL

Crush-resistance evaluation per ISO 13503-2 and API RP 56/58/60



### KEY FEATURES

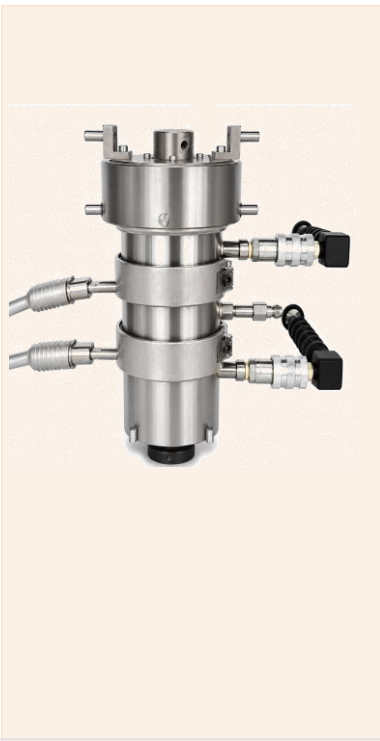
- ◆ Designed for use with the PCT apparatus
- ◆ ISO 13503-2 and API RP 56 / 58 / 60 compliant
- ◆ Cylindrical chamber with upper and lower platens
- ◆ Filled at 1.22 cm<sup>3</sup>/cm<sup>2</sup> with sieved proppant
- ◆ Withstands crush pressures up to 20,000 psi
- ◆ Compatible with mesh sizes 12/18, 18/30, 30/50
- ◆ Stainless steel — fast loading/unloading

### KEY SPECIFICATIONS

Standard	ISO 13503-2 / RP 60
Max crush press.	20,000 psi
Press stress	300 kN
Inside diameter	2.5" (64 mm)
Outside diameter	3.5" (89 mm)
Piston height	3.5" (89 mm)
Loading rate	≤ 2,000 psi/min
Wetted parts	Stainless steel

## PTC-SERIES — PROPPANT TRIAXIAL CELL

Unconfined and confined compression on resin-coated proppant plugs



### KEY FEATURES

- ◆ Designed for use with the RCP tester
- ◆ Sample assembly submerged in oil under confining pressure
- ◆ Low-friction loading piston for triaxial testing
- ◆ Heating mantle for controlled temperature
- ◆ Specimen up to 2"  $\varnothing$  (length = 2 ×  $\varnothing$ )

### KEY SPECIFICATIONS

Application	UCS & triaxial
Specimen $\varnothing$	up to 2" (50 mm)
Specimen length	2 × $\varnothing$
Axial load	up to 250 kN
Confining press.	up to 10,000 psi
Temperature	ambient to 175 °C
Heating	External mantle
Compatibility	RCP Tester

# PRODUCT RANGE — SUMMARY



Comparison of the eight Floxlab cell families at a glance

Cell	Application	Standard	Max stress	Max temp.	Wetted parts
<b>AC-series</b>	API conductivity (single)	API RP 56/58	20,000 psi	175 °C	Stainless steel
<b>SAC-series</b>	API conductivity (stack)	ISO 13503-5	20,000 psi	175 °C	Stainless steel
<b>FCC-series</b>	Fracture conductivity	API methods	20,000 psi	175 °C	SS / Hastelloy
<b>ACC-series</b>	Acid fracture conductivity	API methods	20,000 psi	175 °C	Hastelloy
<b>FTC-series</b>	RCP curing under stress	Internal	10,000 psi	175 °C	Stainless steel
<b>CC-series</b>	Proppant crush resistance	ISO 13503-2 / RP 60	20,000 psi	ambient	Stainless steel
<b>FLC-series</b>	RCP fluid loss & curing	API RP 60	10,000 psi	175 °C	Stainless steel
<b>PTC-series</b>	Proppant triaxial / UCS	Internal	10,000 psi	175 °C	Stainless steel

## ENGINEERED IN FRANCE · USED WORLDWIDE

- ◆ All cells are operated with Floxlab's matching test apparatus (PCM-1000, FCM-1000, ACM-3000, RCP Tester, PCT press).
- ◆ Optional accessories include heating mantles, ovens, hydraulic pumps, LVDTs, thermocouples and pressure sensors.
- ◆ Custom configurations and OEM versions available on request — contact our engineering team for a tailored quote.

# Contact us

*Talk to our engineering team about your reservoir stimulation testing needs*

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