SELFRAG Lab is a laboratory batch equipment. It uses the high voltage pulse power technology of SELFRAG for the selective fragmentation of composite materials, mineralogical and geological samples in the kilogram range.
### Design
Self-contained, compact, semi-automated device, designed for installation on level, solid ground in interiors. Constructed in accordance with EU standards.

### Outer dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. L x W x H</td>
<td>237 x 87 x 206 cm</td>
</tr>
<tr>
<td>Clear ceiling height</td>
<td>250 cm</td>
</tr>
<tr>
<td>Total weight</td>
<td>2250 kg</td>
</tr>
</tbody>
</table>

### Operating conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working temperature</td>
<td>12 - 32 °C</td>
</tr>
<tr>
<td>Ambiant conditions when not operating</td>
<td>4 - 40 °C</td>
</tr>
<tr>
<td>Humidity max</td>
<td>75%</td>
</tr>
</tbody>
</table>

### Required telecommunications infrastructure
For remote customer support a LAN connection is required (internet connection RJ45).

### Control, user interface
PLC with graphic touch panel.
- Process status
- Diagnostic information

### Settings

- Voltage (output impulse generator) | 90 – 200 kV
- Pulse frequency | 1 – 5 Hz
- Working electrode gap | 10 – 40 mm

### Required utilities

**Gas loop:**
- Dry Nitrogen (N2) Class 4.5 | 7 bar

### Electrical energy

- Connection (3-phase, Neutral, Ground – 3L-N-PE) | 400V* / +10% / 50-60 Hz
*Other net voltages can be supplied by using a transformer

### Power consumption:

- Peak power consumption | max. 6 kW
- Current | max. 10 A
- Standby mode | max. 0.2 kW

### Emissions

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sound pressure level (LeqL)</td>
<td></td>
</tr>
<tr>
<td>At stand-by</td>
<td>56dB(A)</td>
</tr>
<tr>
<td>During processing</td>
<td>79dB(A)</td>
</tr>
<tr>
<td>Sound exposure level (LEX)</td>
<td>70dB(A)</td>
</tr>
</tbody>
</table>
Application
The SELFRAG Lab Microvessel is designed for the selective fragmentation of small quantities (1 - 2 g) of solids in a cross-contamination-free closed setup.

Mode of operation
The loaded Microvessel is operated inside the water filled standard process vessel PG V 2.8 + 2.10

Technical specifications

Design
The micro container set consists of: electrode top, counter-electrode bottom, PE sleeve as a liner and 2 stainless steel fixing-rings to attach liner with top and bottom.

Materials

<table>
<thead>
<tr>
<th>Materials</th>
<th>complete</th>
<th>electrode</th>
<th>counter-electrode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Steel</td>
<td>Part-Nr: 151031</td>
<td>Part-Nr: 151034</td>
<td>Part-Nr: 150776</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>Part-Nr: 151032</td>
<td>Part-Nr: 151035</td>
<td>Part-Nr: 150784</td>
</tr>
<tr>
<td>Copper</td>
<td>Part-Nr: 151033</td>
<td>Part-Nr: 151036</td>
<td>Part-Nr: 150833</td>
</tr>
</tbody>
</table>

Each set comes with
Fixing rings: stainless steel (Part-Nr: 150781)
Liner: PE sleeve (Part-Nr: 150780)

Dimensions
Max. L × W × H: 40 × 40 × 54 mm
Volume: 4.7 cm³

Capacity
Max. sample volume: 2.5 cm³
Maximal size of single piece: Ø 18 x 7.5 mm

Operating Parameters
Max. Voltage: 90 kV
Max. Discharges per batch: 20 pulses
Lifetime Electrode: 500-1000 pulses
Pulse rate: 2Hz or less

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**Application**
The SELFRAG Lab Standard Process Vessel Kit PG V 2.8+2.10 is designed for the selective fragmentation of composite materials, mineralogical and geological samples in the kilogram range.

**Mode of operation**
The vessel kit PG V 2.8+2.10 is a highly flexible setup, which can be easily adjusted to the processing task:

(i) closed metal shell: all material stays in the reaction chamber.
(ii) open metal shell: fragmented material can escape through a sieve from the process area into a tray.
   a. sieves are available from 8 mm to 0.3 mm
   b. collection tray available in different materials

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**Technical specifications**

**Design**

- **Outer process vessel shell**
  - Material: Stainless steel
  - Weight: 2900 g

- **Inner process lining**
  - Material: PE-1000
  - Weight: 3000 g

- **Fixing rings**
  - Material: stainless steel
  - Weight: 2x 400 g

- **Flexible Collection Vessel set rubber**
  - Material: Stainless steel + thermoplastique PVC
  - Weight: 2000 g

**Weight complete**
9000 g

**Outer dimensions**
Max. d1/d2 x H: Ø360/Ø206 x 375 mm
Max. Volume: 5.3 dm³

**Capacity**
Max. sample volume: 1 dm³
Maximal size of single piece: Ø 8 x 4 cm
### Process Vessel PG V 2.8 + 2.10

**Design**

<table>
<thead>
<tr>
<th>Standard process vessel open bottom V2.10b (Part Nr: 205399)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Dimensions d1/d2 xH</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard process vessel closed bottom V 2.8b (Part Nr: 205720)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Dimensions d1/d2 xH</strong></td>
</tr>
</tbody>
</table>

### Collection Vessels for PG V 2.8 + 2.10

**Design**

<table>
<thead>
<tr>
<th>Flexible collection Vessel set rubber (Part Nr: 205714)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Dimensions d1/d2 xH</strong></td>
</tr>
<tr>
<td><strong>Max. Capacity</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flexible collection Vessel rubber PG V 2.10 (Part Nr: 202826)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Material</strong></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td><strong>Dimensions d1/d2 xH</strong></td>
</tr>
<tr>
<td><strong>Max. Capacity</strong></td>
</tr>
</tbody>
</table>
Application
Sandwich Sieve System for PG V 2.10 units with more than 6 possible sieve openings from 5 mm to 0.3 mm with one system. It is easy to use and designed for the usage in SELFRAG LAB process chamber.

Mode of operation
By dislocating the 2 hole bottoms, 3 defined sieve openings are possible. Additional sieve grid can be placed between the hole bottoms to reach finer sizes. Available grid: 1 mm, 0.7 mm and 0.3 mm.

Technical specifications

Design
The system is made of: standard process Vessel open bottom, 2 hole bottom, various sieve grids, counter-electrode.

- Standard process Vessel open bottom V 2.10b (Part Nr : 205399)
  - Material: stainless steel + PE-1000
  - Weight: 6700 g
  - Dimensions: Ø360/Ø206 x 288 mm

- Upper/lower hole bottom
  - Material: stainless steel
  - Weight: 200 g
  - Dimensions: Ø x H 79.5 x 10 mm
  - Part Nr: (206729) (206728)

- Sieve grid
  - Material: stainless steel and nylon
  - Weight: 50 g
  - Dimensions: 1 mm; 0.7 mm; 0.3 mm, 01 available

- Sandwich sieves kit lab PG V 2.10b (Part Nr : 207318)
  - Material: Working-stainless steel and nylon
  - Weight: 250 g
  - Parts: 206729 / 206728
    - Sieve upper / lower
    - Electrode complet 205898
    - Sieve grid Nylon 0.1 / 0.3 / 0.7 / 1 mm
      - 202485 202489 202450 202491
    - Sieve grid stainless steel 0.1 / 0.7 / 1 mm
      - 202097 200301 200303

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Application
The sink station is used to charge, decant, unload and clean the process vessel.

Mode of operation
The station is equipped with a support frame to hold the process vessel, which can be easily tilted and fixed in a suitable position for decanting, unloading and cleaning. The sink is covered with a perforated metal plate.

The station is equipped with a tap and a handspray attached to a flexible braided hose for easy cleaning of components.

A sedimentation tank with overflow and siphon is located below the sink.

Technical specifications

Design
Galvanized welded steel construction

Outer dimensions
Max. L × W × H 120 × 80 × 140 cm
Working level 91 cm
Weight max. 250 kg
Complete Part-Nr : 202127

Connections:
Water connection ¼” inch thread
Drain 1” inch thread