Drive innovation & creative pursuit of superior performance

**BD Inventions** is a newly founded company which targets on Research, Development, and Manufacture of the latest **FOG II Digital Soil Calcimeter**. Our driving goal is to provide products that meet and exceed customer’s requirements. By working in close collaboration with our customers, we can ensure that we provide not only a technologically advanced product, but also a value chain through the whole process. Premium products along with excellent technical support help our customers to achieve their goals.

**New Technology. Rapidly to Market.**

**BD Inventions** philosophy is to provide the very latest and innovative technologies that are required by our customers so as to improve their efficiency.

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**FOG II** Digital Soil Calcimeter with Soil Moisture Compensation

The **FOG II** Digital Soil Calcimeter with automatic temperature compensation offers dramatically improved levels of performance, productivity, reliability, ease of use and flexibility.

The **FOG II** Digital Soil Calcimeter is the ideal tool for agriculture scientists and farmers. Testing soil every two years and applying frequent small amounts of lime can help farmers avoid top soil acidification.

**FOG II** is patented from Hellenic Industrial Property Organisation (OBI) patent No 1008089 and PCT application number PCT/GR2013/000048 & Publication number WO2014060782 A1

**HCl(aq) + CaCO_{3}(s) → CaCl_{2}(aq) + CO_{2}(g) + H_{2}O(l)**
Why is Calcium (Ca) important?

- **Soil**: Calcium opens up (flocculates) the soil, improving structure and allowing roots, earthworms, oxygen, water and microbes to move freely through the soil.

- **Plants**: Calcium is often referred to as the “trucker of all minerals” in relation to its role in mobilizing other nutrients.

- **Plant Deficiency Symptoms**: Stunted root systems and a lack of vegetable vigour. Blossom end rot in tomatoes, capsicums and zucchini. Internal browning or blackening of celery, potatoes and Brussels sprouts. Deformation and Necrosis of young leaves.

**Soil total carbonate salts** (CaCO₃, MgCO₃, etc.), is of great interest on account of its high usefulness for diagnosing soil status in terms of nutrient contents, structure, texture or biological activity. These salts are measured to determine soil buffering capacity with relation to soil fertility, chemical and pedogenic processes. The determination of total carbonates is expressed as percentage of CaCO₃ and is based on the volumetric analysis of the carbon dioxide released upon addition of HCl to soil carbonates.

**Calcium Benefits**

- Good soil structure associated with correct calcium levels.
- Avoid soil crusting. Soils are harder to damage and recover sooner after poaching or compaction when exposed to traffic by machinery or animals in wet conditions.
- Calcium neutralizes soil acidity.
- Calcium plays a critical role in improving soil structure and quality.
- Reduces soil salinity and phosphorous loss.
- Improves water percolation.
- Increases root development.
- Only N and K are required in larger amounts by plants.
- High potassium levels reduce the uptake of Ca.

**Wide range of applications and market sectors**

Soils scientists • Ecologists • Agronomists and farm consultants
Farmers • Gardeners • Golf greens and sports pitches • Potters

**FOGII Digital Calcimeter Specifications**

<table>
<thead>
<tr>
<th>User Interface</th>
<th>Keyboard membrane, back-lighted LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>3×AA alkaline or rechargeable batteries</td>
</tr>
<tr>
<td>Units</td>
<td>% CaCO₃</td>
</tr>
<tr>
<td>Working Range</td>
<td>0–100% CaCO₃</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.5% CaCO₃</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1%</td>
</tr>
<tr>
<td>Linearity (r²)</td>
<td>0.999</td>
</tr>
<tr>
<td>Temperature</td>
<td>Automatic compensation with built-in temperature sensor 5–50°C</td>
</tr>
<tr>
<td>Reaction Vessel</td>
<td>Glass bottle</td>
</tr>
<tr>
<td>Sample Volume</td>
<td>0.5–5g</td>
</tr>
<tr>
<td>Sample Analysis Time</td>
<td>Approx. 30 sec.</td>
</tr>
<tr>
<td>Memory</td>
<td>The last 50 measurements can be stored internally</td>
</tr>
<tr>
<td>Protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Dimensions (LxWxH)</td>
<td>200×94×39mm</td>
</tr>
<tr>
<td>Weight</td>
<td>350g</td>
</tr>
<tr>
<td>Material</td>
<td>Case: ABS (UL 94 HB) • Membrane keyboard: Polyester (PET) • Display: Resin coated (scratch resistant)</td>
</tr>
<tr>
<td>CE Mark</td>
<td>Complies with the EU directive</td>
</tr>
</tbody>
</table>

**UMP-1 Soil Moisture Probe Specifications**

| Water content measurement range | 0-100 % Vol. water content |
| Water content accuracy         | ± 2%                      |
| Electrical conductivity accuracy| ± 1%v                     |
| Soil temperature accuracy      | ±0.2°C (across the entire temperature range) |

**Calcimeter Advantages:**

- digital
- portable
- low cost
- accurate, precise
- automatic
- rapid and reliable results
- productive
- ease of use

**Ordering Details**

<table>
<thead>
<tr>
<th>INSTRUMENT</th>
<th>ACCESSORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOGII Basic</td>
<td>UMP-1 (mod)</td>
</tr>
<tr>
<td></td>
<td>GPS module</td>
</tr>
<tr>
<td>FOGII FieldKit</td>
<td>CRV-DOL Continuation Reaction Valve</td>
</tr>
<tr>
<td></td>
<td>BT-100 Replacement bottle</td>
</tr>
<tr>
<td>FOGII Plus</td>
<td>HC-150 Head cup complete</td>
</tr>
</tbody>
</table>

**INSTRUMENT**

- FOGII Basic Calculator incl. cuvettes, bottle, tubing, batteries & operating instructions
- FOGII FieldKit Calculator and accessories as with Basic version, also with pocket balance 0.01g, hard plastic carry case complete for field analysis
- FOGII Plus Calculator and accessories as with FieldKit version, also with UMP-1 modified soil moisture probe with 1m cable

**Accessories**

- UMP-1 soil moisture probe 1m
- GPS receiver for field measurements (factory installed)
- CRV-DOL Continuation Reaction Valve
- BT-100 Replacement bottle
- HC-150 Head cup complete

**Using the FOGII Digital Calcimeter**

1. Place the glass bottle into the Reaction Vessel.
2. Add 1mL electromineral of 4% HCl.
3. Place the PtCl₆ cup on the reaction vessel.
4. Place the PtCl₆ cup on the reaction vessel.
5. Add 500 µL of 6M HCl into the reaction vessel.
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50. Add 500 µL of 6M HCl into the reaction vessel.

**Sample Analysis Time Approx. 30 sec.**

**Sample Volume 0.5–5g.**

**Reaction Vessel** Glass bottle

**Sample Volume** 0.5–5g.

**Sample Analysis Time** Approx. 30 sec.

**Memory** The last 50 measurements can be stored internally.

**Protection** IP65

**Dimensions (LxWxH)** 200×94×39mm

**Weight** 350g

**Material** Case: ABS (UL 94 HB) • Membrane keyboard: Polyester (PET) • Display: Resin coated (scratch resistant)

**CE Mark** Complies with the EU directive

**Linearity (r²)** 0.999

**Temperature** Automatic compensation with built-in temperature sensor 5–50°C

**Calcimeter and accessories as with FieldKit**

**Calcimeter incl. cuvettes, bottle, tubing, batteries & operating instructions**

**GPS receiver for field measurements (factory installed)**

**CRV-DOL Continuation Reaction Valve**

**BT-100 Replacement bottle**

**HC-150 Head cup complete**

**Acknowledgements**

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