The Ozone Module

Your Compact and Powerful Ozone Generator is Here!

- Continuous 14% Ozone production
- Compatible with batch or flow reactors
- Precise control of oxygen flow rate
- Small footprint
Ozonolysis has many advantages over other oxidative methods for generating aldehydes, alcohols and carboxylic acids. Ozonolysis is fast, atom efficient, and progresses cleanly in high conversion and yield. Other methods use toxic reagents, generate heavy metal waste, require water and are difficult to control leading to generation of side products.

ThalesNano’s Ozone Module gives you a safe and efficient way of generating ozone from oxygen with precise control of the ozone/oxygen amount through the built-in mass flow controller. You only need to connect the Ozone Module to a low pressure oxygen cylinder and the other gas end to your cooled reaction area to make ozonolysis a flexible and easy method in either batch or flow.

### Specification

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Oxygen flow rate:</td>
<td>10-100 mL/min</td>
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<tr>
<td>Maximum oxygen inlet pressure:</td>
<td>8 bar</td>
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<tr>
<td>O₃/O₂ v/v%:</td>
<td>14% at 20 mL/min oxygen flow rate</td>
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<tr>
<td>Maximum reaction pressure:</td>
<td>3 bar</td>
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<tr>
<td>Width:</td>
<td>451 mm</td>
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<tr>
<td>Height:</td>
<td>223 mm</td>
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<tr>
<td>Depth:</td>
<td>291.3 mm</td>
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### Reaction examples

- **Carboxylic acid (oxidative work-up)**
  - R₁-CHO + O₃ → R₁-COOH
  - 84% isol. yield
  - 1) 1 mL/min, MeOH, RT
  - 2) 0.7 mL/min of 0.1 M NaBH₄/MeOH, RT

- **Aldehyde, ketone or alcohol (reductive work-up)**
  - R₂-C=CH₂ + O₃ → R₂-CHO + H₂O
  - 87% isol. yield
  - 1) 0.5 mL/min, MeOH, -20 °C
  - 2) 0.5 mL/min of 5 M H₂O₂/MeOH, -10 °C

- **100% conversion 83% selectivity**
  - 0.05 M in EtOH, Quench: NaBH₄
  - RT, 0.5 mL/min, 7% O₃