




HBO₂


Raddec Hyperbaric Oxidiser

Efficient and rapid extraction of tritium and ¹⁴C

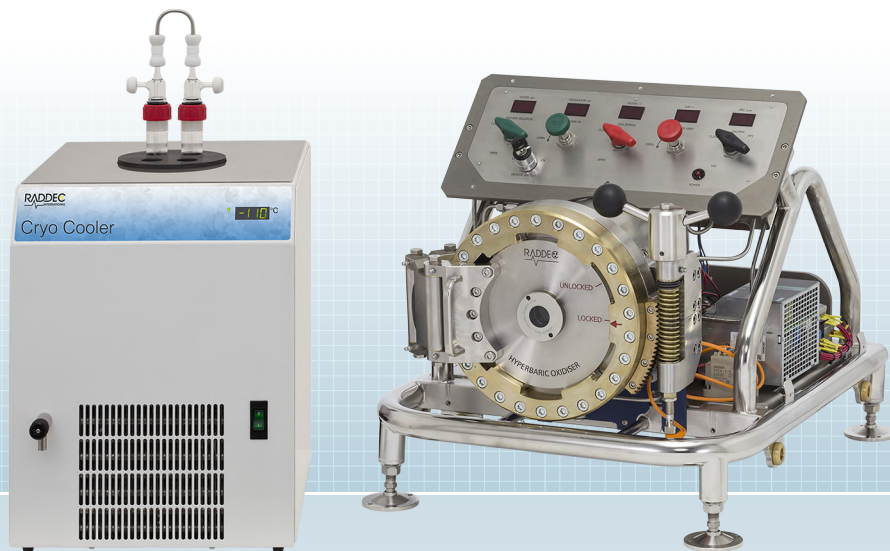
Complete and clean oxidation of organic-rich materials (foodstuffs, marine and freshwater fish, meat, vegetation, wood, oils, plastics, and soft wastes) using high pressure oxygen to promote efficient combustion.

Application areas: Nuclear decommissioning, waste characterization, environmental monitoring, C¹⁴ extraction

 110 kg
total system weight

 240V 10A

 Working footprint with Cyro-cooler:
1400mm, 600mm, 1000mm (w,h,d)



Key features

- Efficient and rapid extraction of ³H and ¹⁴C from combustible materials, organic-rich materials, soft wastes and explosives.
- Rapid and effective combustion of samples (up to 20g).
- Incorporates a novel door locking mechanism with three safety interlocks.
- Complete combustion in approximately one minute
- Permits the water generated to be used for for tritium analysis by LSC or ³He in-growth mass spectrometry.
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Specifications & system requirements

Hardware	5 Litre stainless steel pressure vessel
	Rotary (multi-lug) door locking
	Pressure relief valve (Safety evaluated for routine 100 Bar operation)
	Resistance wire (Nichrome) sample ignition system
	Combustion chamber viewing window
	Gas transfer/analyte recovery system
Safety systems	Dashboard with (incorporating) 5 digital displays and 5 gas flow controls <ul style="list-style-type: none"> • Dual pressure transducers with digital displays (high and low pressure systems/circuits) • Dual thermocouples with digital displays • Mass flow controller with digital display
	National Instruments data Logger
Gas transfer system	Ignition interlocks (closure and remote ignition key)
	User-controlled valves
	Single stage Regulator
	2-stage vacuum pump
Cryo-trapping system	Mass Flow Controller (computer controlled)
	-110°C cryo-electrical (refrigerated) condenser
	Graf-Blok condenser/thermal interface – high efficiency graphite block heat exchanger
Monitoring and visualisation software	Vacuum tight glass condenser tubes (dual stage/high efficiency)
	Labview operating system
System requirements	HBO ₂ +: bespoke data visualization and control package
	Power: 240V 32A (others possible)
	Compressed gas bottle: 300 bar (Oxygen)
	Compressed gas bottle: 300 bar (Nitrogen)
	Local vapour extraction
	Sample pelletisation press
PC computer for data visualisation	

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