



## Benzene line: equipment, laboratory setup and staff training

### Benzene line - List of Equipment (Typical Specification)

Equipment set for Chemical Preparation of samples for  $^{14}\text{C}$  measurement by Liquid Scintillation Counting (LSC)

Description <u>Benzene Line</u>	Quantity
<b>1. Charring equipment</b>	
1.1. A vertical furnace (1100 watt, 220 volt, up to 1250 °C )	1
1.2. Stainless steel reaction vessels with cover (3 small, 2 middle, 1 large and 1 performed).	1
1.3. Thermo-destruction gas utilizing reactor.	1
1.4. A mounting for cooling and holding reaction vessels.	1
<b>2 The equipment for lithium carbide production of any kind of sample material</b>	
2.1. A vertical furnace (1100 watt, 220 volt, up to 1250 °C )	2
2.2. An easily discountable water-cooled hermetized head	1
2.3. Stainless steel cylindrical reaction vessels (5 small , 8 middle and 2 large )	15
2.4. Titanium liners	10
2.5. Special metal stand with a holder for mounting a vacuum gauge with valves for vacuum, argon and carbon dioxide, with fast cooling system for reactor vessels and with seats for storing clean reactor vessels	1
2.6. Stainless steel holders ( 15 of different sizes ) and vacuum thermo-destruction technology	15
2.7. An auxiliary equipment.	1
<b>2.8.*</b> Equipment set for <u>Capsule technology</u> . (Applicable for small samples)	1
<b>2.9.*</b> <u>Microliner thermodestruction technology set</u> . (Applicable for small samples)	1
<b>3. The equipment for lithium carbide production of carbon dioxide and charcoal</b>	
3.1. CO <sub>2</sub> to carbide conversion reaction vessels (5 reactors)	5
3.2. A holder for mounting a vacuum gauge with valves for vacuum, argon and carbon dioxide, with cryogenic-trap for carbon dioxide with quickly weigh system.	4
3.3. An auxiliary equipment.	1
<b>4. The equipment for acetylene production.</b>	
4.1. A lithium carbide hydrolysis module large	1
4.2. A lithium carbide hydrolysis module special for micro-samples	1
4.3. The equipment for chemical purification and catching of acetylene	1
4.4. The equipment for chemical purification and catching of acetylene, adopted for micro-samples.	1
<b>5. The equipment for benzene synthesis.</b>	
5.1. Benzene synthesis system (2 modules). Each module consists of: two vacuum manifolds with gauges, Teflon valves, cryogenic traps, reaction vessel with catalyst, and heater-cooler system with temperature controller.	2

5.2. The glass benzene recovery vials with Teflon caps for refining and storage of benzene ( 70 <a href="#">vessels of different sizes</a> )	1
<b>6. The equipment for benzene purification by sublimation.</b>	
6.1 One vacuum manifolds with gauges, Teflon valves and cryogenic traps.	1
6.2. System for fast remove of the Radon	1
<b>7. <a href="#">Vials for long time precise measurement</a></b>	
7.1. <a href="#">Each vial</a> consists of Teflon ampoule, titanium holder, titanium spring, Teflon cap with pin valve (1.5 ml, 3.0 ml, and 7.0 ml).	40
<b>8. Sets of manuals in English</b>	1
<b>9. <a href="#">On-site installation of equipment and training to the end-user staff.</a></b>	
<b>10. On-site introduction and training of the end-user staff of sample processing and age calculation using ultra low-level LS spectrometer Quantulus 1220.</b>	
<b>11.* Extended training of the end-user staff of sample processing and age calculation (Agreed schedule and duration of on-site Or in other laboratory).</b>	

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