

## ACID DIGESTION VESSEL, 4748\_Paar

1. **Be careful!** The vessel could BUSRT. The vessel is suitable for hydrothermal reaction in a temperature-controlled oven.
2. **Limited parameters of the use:** recommended max. temperature = 250 °C, the solution volume = 125 ml, the weight of inorganic sample = 5.0 g, the weight of organic sample - 0.5 g.
  - a. for inorganic samples, leave at least 33 % of the cup capacity as free space
  - b. for organic non-oxidizing samples, leave at least 50 % of the cup capacity
  - c. for oxidizing medium leave at least 75 % free space
3. The minimum and maximum amounts of nitric acid for an organic sample are 12 and 15 ml.
4. It is permitted to use chloric acid due to its unpredictable reaction.
5. Open the vessel manually.
6. Vessel parts (picture 1):
 

|   |  |
|---|--|
| A - vessel body                                   | F - blow-off disc (thicker 'silver' ring)  |
| B - screw cap                                     | G - corrosion disc (thinner 'silver' ring) |
| C - compression screws                            | H - PTFE cup/cover                         |
| D - pressure plate (306 AC) + wave spring (336AC) | CH - bottom plate                          |
| E - compression ring (307 AC)                     |  |



Picture 1: Parts of the acid digestion vessel.

7. Add the reaction solution according to the limited parameters (point 2)) **in the correct sequence** (from the bottom): insert the base plate (CH) with the label facing down (out from the vessel body) to the vessel body (A), add the PTFE cup and cover (H) to the vessel body, place the corrosion discs (G - thinner) on the PTFE disc and up blow-off disc (F - thicker), continue with pressure plate with a wave spring (D) and top with a compression ring (E). Put the screwcap (B) to the vessel body and turn it down as far as possible by hand. Add compression screws (C) to the screw cap by hand (picture 2). Screw until one whole thread is observable on the underside.
8. Then use the 'vessel key' (picture 2 B) and tighten the socked head screws firmly in a crisscross pattern, moving in sequence around the circle. Repeat it four times on each screw for final torque.



Picture 2: Completed the acid digestion vessel (hydrothermal reactor) (A) and vessel key (B).

9. Put the vessel in a preheated oven.
10. After the reaction, take the vessel out from the oven; ATTENTION – it is HOT. Cooling to room temperature will take more than 2 hours. During this time, do NOT open the vessel.
11. If you need faster cooling, put the vessel in the metal bowl, and put everything in a sink. Fill the sink with cold water (NOT the bowl).
12. The cleaning procedure:
  - a. Immerse the PTFE cup and cover (Fig. 1-H) in Sulphuric acid (2M), and leave it there for 30 minutes. Pour the acid out, followed by water and ethanol immersion. Sonicate the cup and the cover in a baker filled with water for 15 minutes.
  - b. If the PTFE cup and cover are not colored, it is sufficient to wash the PTFE cup and the cover with ethanol and water.