

NEW EXPERIMENTAL VESSELS FOR THE C 80 CALORIMETER

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The C80 calorimeter is designed following the Calvet principle thus providing a space of 15 cm³ (\emptyset : 17 mm; h : 80 mm) in which a wide range of vessels can be fitted. New vessels are continuously developed therefore extending the files of applications of the C80 calorimeter among the latest vessels the following one are presented.

- Heat of evaporation of a liquid
- Vapour pressure of a liquid
- Thermal conductivity of liquids and gases
- Pressure monitoring inside the vessel
- Continuous mixing with mechanical stirrer
- Flow mixing of two liquids

I - Heat of evaporation of a liquid

The evaporation of a liquid is carried out on installing the vacuum inside the vessel through a capillary. The vessel is weighed before and after the evaporation and the heat flow is monitored. The heat of evaporation can be determined with an accuracy better than 3% up to 200°C.

II - Vapour pressure determination

The same experimental vessel can also be used for the determination of vapour pressure of a liquid. A counter-pressure is applied at the outlet of the capillary, the calorimeter detects whether an evaporation is occurring or not. The accuracy has a value of 0.01 bar.

III - Thermal conductivity of liquids and gases

A special vessel is filled with the fluid (liquid or gas) to analyze. A constant power is generated in this vessel. The calorimetric output is correlated to the thermal conductivity of the fluid. After calibration the thermal conductivity can be measured with a reproducibility of 1% up to 200°C.

IV - Pressure monitoring

For hazards evaluation a sample is located in a closed vessel, then its temperature scanned upwards. This new vessel offers the possibility of the simultaneous monitoring of heat flow and pressure up to 350 bars.

V - Mixing with mechanical stirrer

Besides the reversing mixing vessel when there are some difficulties to obtain a good homogeneity, a mixing vessel with a metallic membrane can be used : its advantage is that the perforator of the membrane can be used as a stirrer. This stirrer can also be motorized to have a permanent stirring during the mixing.

VI - Flow mixing of two liquids