

Liquid heat capacity vessel

INTRODUCTION

With the standard calorimetric method, the accuracy of heat capacity determination of a liquid depends on the corrective term due to the vapor phase above the liquid. In order to overcome this difficulty, a special calorimetric vessel has been designed.

DESCRIPTION

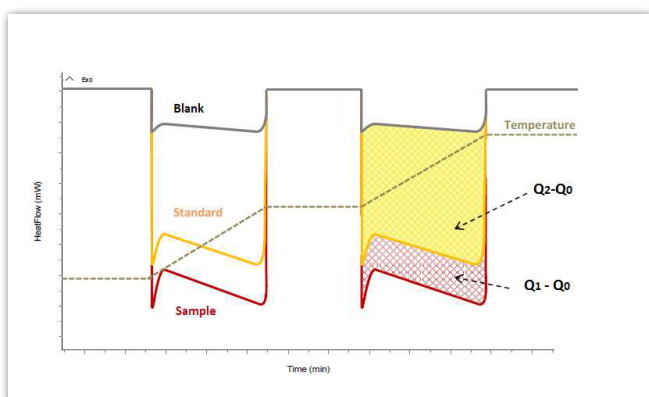
The main feature is a tube welded to the experimental vessel. Its filling is done through the tube thanks to a syringe until there is liquid in the tube. The top of the vessel is machined so that no vapor or bubbles can be retained in the experimental vessel. When the liquid is heated, it expands freely in the tube while the volume of liquid in the vessel remains constant. The determination of the heat capacity of this corresponding volume is achieved using the step-heating mode.

If Q_0 is the differential calorimetric area corresponding to an increase ΔT of the temperature of the calorimeter when the two vessels (measurement and reference) are empty, Q_1 when the measurement vessel is filled with a standard liquid of known heat capacity and Q_2 with the liquid to be investigated, the following equation is used to calculate the C_p :

$$C_{p_2} = C_{p_1} \cdot \frac{\rho_1}{\rho_2} \cdot \frac{Q_2 - Q_0}{Q_1 - Q_0}$$

Where:

r_1, r_2 : densities of standard and sample and CP_1, CP_2 : heat capacity of standard and sample



CHARACTERISTICS

- Nature:
 - Stainless steel (S60/1445)
 - Hastelloy C276 (S60/1512)
- Volume: 14.4 cm³ • Max. Temperature: 220°C
- Filling by syringe • Possibility of applying a pressure on the liquid (in case of high vapor pressure).

APPLICATIONS

- C_p of organic liquids
- C_p of any non viscous liquid which is stable on the studied temperature range

INSTRUMENT

CALVET

Ambient to 300°C



HIGHEST HEAT MEASUREMENT ACCURACY

3D sensor based on thermocouples with Joule effect calibration.

ISOTHERMAL OR TEMPERATURE SCANNING MODES

for increased flexibility and replication of real life conditions

CONVENIENT INTERCHANGEABLE CRUCIBLES AND CELLS

to perform even the most demanding experiments using one instrument :

- high pressure (1000bar) and high vacuum
- pressure measurement and control
- mixing/stirring experiments.

EXTERNAL COUPLING CAPABILITY

designed to increase your research options including manometry, BET instrumentation, gas analyzers, humidity controllers and gas panels