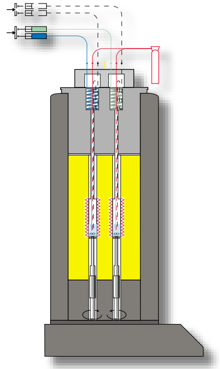
Setaram Calvet Calorimeters



HT1000

ambient → **+1000°C**

High temperature calorimeter

It covers a wide range of temperatures (from ambient to 1,000°C)

The HT1000 is especially intended for high temperature calorimetric measurements: processing of metals and mineral products, chemical reactions, gas – solid interactions (oxidation, reduction, corrosion), heat capacities.

It is equipped with a sample introducer, which is used in drop calorimetry for studies of mixtures in molten metal and mineral baths, phase plot studies and the formation of alloys.

TITRYS

ambient → **+75°C**

Titration calorimeter

This is also based on the Calvet principle, using vessels with introduction of liquids.

The Titrys is intended for titration, neutralization, dilution and reaction heat measurements, among others.

Calorimetry customized according to your analysis needs

If you are unable to find the model adapted to your needs, despite SETARAM's wide range of calorimeters, you should know that over the years SETARAM has developed calorimeters dedicated to specific types of applications, in particular for the analysis of large samples (several liters). Among the application treated mention can be made of control of waste, heat generation of fish, self-discharge of batteries, etc.

Calvet Calorimeters Characteristics

	BT2.15	MS80	C80	C500	HT1000	MHTC96 drop	Titrys
Temperature range (°C)	-196 / 200	amb. / 200	amb. / 300	amb. / 500	amb. / 1,000	amb. / 1,500	amb. / 75
Vessels volume (ml)	12.5	12.5	12.5	8.5	8.5	5 to 5.7	12.5
Resolution (µW)	0.10	0.08	0.10	1	4	8	0.10
Noise RMS (µW)	0.20	0.10	0.10	7	8	330	0.10
Specific Noise RMS (µW/ml)	0.016	0.008	0.008	0.80	0.90	0.05	0.008
Time Constant (s)	150	200	150	150	150	120	150
Vessels:							
standard tight	●	●	●	●			
standard non tight					●	●	
vacuum	●	●	●	●			
high pressure (100 bars)	●		●	●			
with pressure measurement (350 bars)			●				
mixing vessel using reversal	●	●	●				
membrane mixing			●				
ampoule	●		●				
with gas circulation	●	●	●	●			
mixing by circulation of liquids			●				
Cp of solids	●	●	●	●	●	●	
Cp of liquids	●	●	●				
with percolation			●				
with evaporation			●				
with conductivity			● (liquid / gas)				
Joule Effect	●	●	●	●	●		●

Technical specifications are given as indications only and are not contractual.
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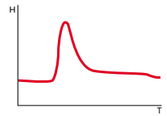
Calvet Calorimeters

SETARAM
Scientific & Industrial Equipment
KEP TECHNOLOGIES

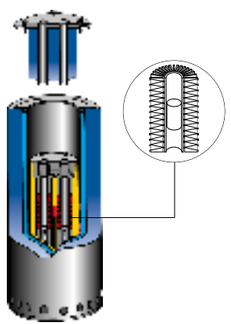
Calvet



Calorimeters

-150°C +1500°C

Thanks to their remarkable versatility, calorimetric methods are increasingly used to characterize a large number of materials and chemical compounds, and to study all the temperature related to decomposition and transition phenomena (melting, polymerization) of these products.
Its area of application has also spread to the study of catalysis, safety and the characterization of industrial processes.



• Based on the Calvet principle
SETARAM has long experience of developing several heat conducting calorimeters and micro-calorimeters. These devices use the Calvet principle, which permits working in isotherm and temperature scanning modes over a wide range of temperatures.

• Full measurement of heat flux
They use high performance thermopiles that completely surround the area where the thermal phenomenon occurs.

Compared to traditional DSCs, they are highly sensitive and permit integrating the entire heat flux generated during a thermal phenomenon.

• Accurate measurement of reaction heat
Calvet calorimeters are differential devices. Two thermopiles respectively enclose a measurement vessel in which the sample to be studied is placed, and a reference vessel containing a thermally inert product. Differential analysis permits eliminating all the parasite thermal phenomena not associated with the reaction and thus permits very high sensitivity.

• Large volume of sample
A large quantity of sample can be studied (measurement is possible even on diluted solutions).

It is possible to make a mechanical or electric link between the measurement vessel and the outside (mechanical: pressure control, circulation of liquid; electric: calibration by Joule effect).

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Calvet Calorimeters

BT2.15

-196°C +200°C

Low temperature calorimeter

The BT2.15 covers a temperature range from–196°C to + 200°C.

It permits studying all freezing and crystallization phenomena at very low temperatures for different products (oils, polymers, hydrates, materials for construction and superconductors).

Sensitive, with programmable temperature, the BT2.15 is available with different experimental vessels adapted to the applications to be performed (see table).

The BT2.15 calorimeter can be adapted on a turnover machine.

MS80

ambient +200°C

Very high sensitivity calorimeter

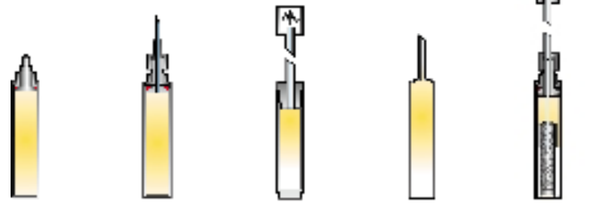
The MS80 is the most sensitive device of the "Calvet calorimetry" line.

It is mostly used in isotherm mode, between ambient temperature and + 200°C.

The MS80 is above all intended for very low thermal effects (battery self-discharge, self-decomposition of powders, heat generation of small animals and plants) as well as studies of mixtures and gaseous adsorption (catalysis).

The MS80 is available with different experimental vessels (see table).

It is available in 2 and 4 vessel versions (volume 15 cm^3 or 100 cm^3).



C80 standard vessel | *C80 vacuum vessel* | *C80 pressure transducer - fitted vessel (350 bars)* | *C80 Cp of liquids vessel* | *C80 liquids percolation vessel*

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Calvet Calorimeters

C 80

ambient +300°C

Mixing and reaction calorimeter

The C80 is **the most versatile** calorimeter of the SETARAM range. Used in isotherm or scanning mode from ambient temperature to 300°C, it detects low power thermal phenomena.

It is especially intended for measuring the heat of mixtures and reactions useful for the chemical, specialty chemical, petrochemical, pharmaceutical, food processing, and cement industries, among others.

An impressive choice of vessels (15cm^3) as well as a turnover machine are available to carry out these different applications (see table and diagrams).

C500

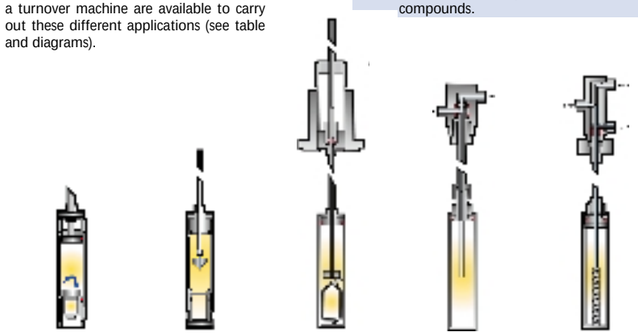
ambient +500°C

Average temperature calorimeter

Developed recently at the SETARAM Research and Development laboratory, the C500 can operate over a range from ambient temperature to 500°C.

It is used at constant or variable temperatures with standard and/or high-pressure vessels adapted to high temperatures to study the thermal stability of chemical compounds.

It has to permit the study of thermal phenomena linked to the processing of nuclear and industrial wastes and the decomposition of chemical compounds.



C80 mixing vessel using reversal | *C80 membrane mixing vessel* | *C80 ampoule vessel* | *C80 gas circulation vessel* | *C80 mixing vessel using circulation*