IKA® Analytical line
Calorimeters C 2000

C 2000 basic, C 2000 control, C 2000 basic high pressure and C 2000 control high pressure

The C 2000 basic and C 2000 control calorimeters are the newest systems from **IKA®** for determining gross calorific values of liquid and solid samples.

A high level of automation with extremely simple handling characterizes these instruments. In addition to the isoperibolic measurement procedure (static jacket), a dynamic (reduced-time) working method is also available. Halogen resistant decomposition vessels of the C 5012 series for quantitative decomposition of sulfur and halogens in parallel to determining gross calorific values are available.

To provide the calorimeters with cooling water, they need to be connected to a thermostat like the KV 600 (page 131) or a firmly installed water connection.

The C 2000 basic is equipped with a very convenient console to operate the unit. The C 2000 control is delivered with the proven C 5040 CalWin calorimeter software in order to control the system via PC. Network connection and special configuration for data exchange with LIMS can be implemented at any time.

The C 2000 high pressure is a combination of the C 2000 basic / C 2000 control and the C 62 digestion container (up to 1200 bar operating pressure), see page 147.

- Automatic water handling system includes tempering, filling and emptying of calorimeter inner vessel
- Automatic oxygen filling of decomposition vessel
- Automatic decomposition vessel identification
- Automatic sample ignition
- Validation according to DIN 51900, ASTM 240 D, ISO 1928, BSI etc.
- GHOST-certified
- Working methods:
  isoperibol, measurement time:
  approx. 22 min
  dynamic, measurement time:
  approx. 7 min
- Compact, integrated modular design for convenient operation
- Cooling water supply via thermostat (KV 600) or firmly installed water connection (C 25 pressure regulating valve recommended, page 147)
- Interface connections for each of the following: scale, printer, monitor and sample rack C 5020 (page 147)
- User-friendly software C 5040 CalWin for controlling the calorimeter and administration of measuring data (page 146)
- LIMS integration is possible
- Special halogen resistent vessel for quantitative decomposition of halogens and sulfur
- The decomposition vessel can be changed over to use disposable crucible C 14 burns during measuring (page 148)
- Up to 8 calorimeters can be conrolled by a single PC, using a multi-serial plug-in card (see C 5041 CalWin plus, page 146)

Power input	1,8 kW
Power ON-time	permanent operation
Protection class acc. to DIN EN 60529	IP 21
Permissible ambient temperature	20 - 25 °C (constant)
Permissible humidity	80 %
Dimensions (W x D x H)	440 x 450 x 500 mm
Weight	30 kg
Working range	40.000 J
Reproducibility based on analysis of 1 g benzoic acid NBS 39i	isoperibol 0,05 % RSD dynamic 0,1 % RSD
Working modes	isoperibol 25 °C isoperibol 30 °C dynamic 25 °C dynamic 30 °C
Measurement time: isoperibol dynamic	up to 22 min up to 7 min
Operating oxygen pressure	30 bar
Cooling medium	tap water
Min. flow rate	60 l/h
Operated with KV 600 Cooling water supply:	
Pressure	0,3 bar
Temperature (depending on working mode)	18 / 25 °C
Operated at firmly installed water connection:	
Pressure after C 25 pressure regulating valve	1 - 1,5 bar
Temperature (depending on working mode)	12 - 28 °C
Max. pressure at the tap	6 bar

IKA® Analytical line
Calorimeters C 2000

C 2000 basic version 1
Consisting of:
C 2000 basic
C 5010 Decomposition vessel, standard

C 2000 basic high pressure
Consisting of:
C 2000 basic
C 62 Decomposition vessel, high pressure
C 60 Conversion set

C 2000 basic version 2
Consisting of:
C 2000 basic
C 5012 Decomposition vessel, halogen resistant

	Ident. No.		Ident. No.	
Version 1	**8801800**	230 V 50/60Hz	**8801801**	115 V 50/60 Hz
Version 2	**8801900**	230 V 50/60 Hz	**8801901**	115 V 50/60 Hz
basic high pressure	**8802300**	230 V 50/60 Hz	**8802301**	115 V 50/60 Hz

C 2000 control version 1
Consisting of:
C 2000 control
C 5010 Decomposition vessel, standard
C 5040 CalWin, calorimeter software

C 2000 control high pressure
Consisting of:
C 2000 control
C 62 Decomposition vessel, high pressure
C 60 Conversion set

C 2000 control version 2
Consisting of:
C 2000 control
C 5012 Decomposition vessel, halogen resistent
C 5040 CalWin, calorimeter software
A PC or Notebook is required to operate the C 2000 control

	Ident. No.		Ident. No.	
Version 1	**8802000**	230 V 50/60Hz	**8802001**	115 V 50/60 Hz
Version 2	**8802100**	230 V 50/60 Hz	**8802101**	115 V 50/60 Hz
control high pressure	**8802400**	230 V 50/60 Hz	**8802401**	115 V 50/60 Hz

C 2000 Extension device

Consisting of:
C 2000 control (without calorimeter software, without decomposition vessel),
C 5041.10 Connection cable
(for 8x interface box)

	Ident. No.		Ident. No.	
	8802200	230 V 50/60Hz	**8802201**	115 V 50/60 Hz

IKA® Analytical line
Calorimeters C 5000

C 5000 control and C 5000 duocontrol
The **IKA®** calorimeter C 5000 is the only calorimeter in the world that offers a free selection of 3 working methods: Thus it is possible to perform determinations of gross calorific values of liquid and solid samples in adiabatic (approx. 14 - 18 min), isoperibolic (approx. 22 min) and dynamic (reduced time: approx. 10 min) mode.
A high level of automation in addition to an extensive range of accessories leave nothing more to wish for.

- Automatic water handling system includes tempering, filling and emptying of calorimeter inner vessel
- Automatic oxygen filling and degassing of the decomposition vessel
- Automatic decomposition vessel identification
- Validation according to DIN 51900, ASTM 240 D, ISO 1928, BSI etc.
- GHOST-certified
- Interface connections for each of the following: scale, printer, monitor and sample rack C 5020 (page 147)
- User-friendly software C 5040 CalWin for controlling the calorimeter and administration of measuring data (page 146)
- LIMS integration is possible
- Special halogen resistent vessel for quantitative decomposition of halogens and sulfur
- The decomposition vessel can be changed over to use disposable crucible C 14 burns during measuring (page 148)
- The C 5000 control can be expanded to the duocontrol system with two measurement cells at any time

Power input (with one measuring cell)		1,3 kW
Power ON-time		permanant operation
Protection class acc. to DIN EN 60529		IP 21
Permissible ambient temperature		20 - 25 °C (constant)
Permissible humidity		80 %
Weight		41 kg
Working range		40.000 J
Reproducibility based on analysis of 1 g benzoic acid NBS 39i		adiabatic / isoperibol 0,05 % RSD dynamic 0,1 % RSD
Working modes		adiabatic isoperibol dynamic
Measurement time:	adiabatic isoperibol dynamic	up to 15 min up to 22 min up to 10 min
Operating oxygene pressure		30 bar
Cooling medium (C 5004)		tap water
Flow rate		70 - 140 l/h
Operated (C 5004) with KV 600:		
Temperature		16 - 20 °C
Operated at firmly installed water connection:		
Min. / max. temperature		15 / 19 °C
Max. pressure at the tap		9 bar

IKA® Analytical line
Calorimeters C 5000

C 5000 control package 1/10
Consisting of:
C 5000 Controller
C 5003 Measurement cell
C 5010 Decomposition vessel, standard
C 5001 Cooling system

C 5000 control package 1/12
Consisting of:
C 5000 Controller
C 5003 Measurement cell
C 5012 Decomposition vessel , halogen resistant
C 5001 Cooling system

Dimensions (W x D x H) 740 x 380 x 400 mm

	Ident. No.		Ident. No.	
Package 1/10	**8801000**	230 V 50/60Hz	**8801001**	115 V 50/60 Hz
Package 1/12	**8801500**	230 V 50/60 Hz	**8801501**	115 V 50/60 Hz

C 5000 control package 2/10
Cooling water supply via thermostat KV 600 (page 147) or firmly installed water connection.
Consisting of:
C 5000 Controller
C 5003 Measurement cell
C 5010 Decomposition vessel, standard
C 5004 Heat exchanger

C 5000 control package 2/12
Cooling water supply via thermostat KV 600 (page 147) or firmly installed water connection.
Consisting of:
C 5000 Controller
C 5003 Measurement cell
C 5012 Decomposition vessel, halogen resistent
C 5004 Heat exchanger

Dimensions (W x D x H) 560 x 380 x 400 mm

	Ident. No.		Ident. No.	
Package 2/10	**8801200**	230 V 50/60Hz	**8801201**	115 V 50/60 Hz
Package 2/12	**8801600**	230 V 50/60 Hz	**8801601**	115 V 50/60 Hz

C 5000 duocontrol package 3/10
System with two measurement cells.
Consisting of:
C 5000 Controller
C 5003 Measurement cell (2 pieces)
C 5010 Decomposition vessel, standard (2 pieces)
C 5002 Cooling system

C 5000 duocontrol package 3/12
System with two measurement cells.
Consisting of:
C 5000 Controller
C 5003 Measurement cell (2 pieces)
C 5010 Decomposition vessel, halogen resistant (2 pieces)
C 5002 Cooling system

Dimensions (W x D x H) 1.440 x 380 x 400 mm

	Ident. No.		Ident. No.	
Package 3/10	**8801100**	230 V 50/60Hz	**8801101**	115 V 50/60 Hz
Package 3/12	**8801700**	230 V 50/60 Hz	**8801701**	115 V 50/60 Hz

IKA® Analytical line
Calorimeters C 7000

C 7000
The C 7000 is the first **IKA®** calorimeter with a completely dry system for measuring the gross calorific value of solid and liquid samples. The temperature is measured directly in the decomposition system. This results in measurement times in the range of 3 to 7 minutes (depending on the sample). The system can manage up to 8 different decomposition vessels using a code ring scheme.

- High sample frequency
- Precise and reproducible determination of gross calorific values according to ISO 1928
- Reduction of routine work through automatic application flow
- Automatic decomposition vessel identification
- Interface connections for scale, printer and PC
- User-friendly software C 5040 CalWin for controlling the calorimeter and administration of measuring data (page 146)
- Special halogen resistent vessel for quantitative decomposition of halogens and sulfur
- The decomposition vessel can be changed over to use combustible crucibles C 14 burns during measuring (page 148)

Power input	0,1 kW
Power ON-time	permanent operation
Protection class acc. to DIN EN 60529	IP 21
Permissible ambient temperature	18 - 30 °C (constant)
Permissible humidity	80 %
Dimensions (W x D x H)	310 x 490 x 460
Weight (C 7000 and C 7002)	43 kg
Working range	30.000 J
Reproducibility based on 1 g benzoic acid NBS 39i	0,2 % RSD
Working mode	patented double dry working procedure
Measurement time	3 - 7 min
Operating oxygen pressure	30 bar
Cooling medium (C 7002)	tap water
Flow rate (C 7002)	2 - 3 l/min
Temperature	12 - 30 °C (cooling water)
Max. pressure at the tap	9 bar

IKA® Analytical line

Calorimeters C 7000

C 7000 basic equipment set 1
Consisting of:
C 7000 Measurement cell
C 7010 Decomposition vessel, standard
C 7002 Cooling system
C 48 Oxygen station

Ident. No.		Ident. No.	
8800900	230 V 50/60 Hz	**8800901**	115 V 50/60 Hz

C 7000 basic equipment set 2
Consisting of:
C 7000 Measurement cell
C 7012 Decomposition vessel, halogen resistent
C 7002 Cooling system
C 48 Oxygen station

Ident. No.		Ident. No.	
8801400	230 V 50/60 Hz	**8801401**	115 V 50/60 Hz

IKA® Analytical line

Software calorimeters

C 5040 CalWin
CalWin is a control and evaluation software for all **IKA®** calorimeters (C 2000, C 4000, C 5000, C 7000). Requires a PC running any of the following operating systems: Windows 95 / 98 / ME / NT / 2000 or XP, and at least one free serial interface and 50 MB of available disk space.

- Control, monitor and view working procedures
- Print and save measurement protocols
- Identify and record samples
- Administration of sample racks
- Flexible administration and evaluation of calibrations
- Flexible aministration and grouping of measurements
- Printing and saving calibration and result protocols suitable for certification
- Library functions
- Data transfer through COM to EXCEL and ACCESS
- Preprocessed work sheets for EXCEL (configarable by the user)

Ident. No.
3045000

C 5041 CalWin plus
To control up to 8 calorimeters of the same or different type.
Consisting of:
C 5040 CalWin,
PCI 8.2 PC Plug-in card (internal),
Interface box (8x)

Ident. No.
3166000

IKA® Analytical line

Calorimeters accessories

Accessories	Comments	Ident. No.
C 5010 Decomposition vessel, standard	for C 2000 / C 5000	**7114000**
C 5012 Decomposition vessel, halogen resistant	for C 2000 / C 5000	**7215000**
C 62 Decomposition vessel, "high pressure"	for C 2000	**3265000**
C 5010.4 Attachment for combustible crucible C 14	for C 5010 / C 5012	**3016900**
C 5010.5 Crucible holder, big	for C 5010 / C 5012	**3055900**
C 5030 Venting station with gas wash bottle acc. to DIN 12596 (for gas absorption)	for C 5010 / C 5012	**7198000**
C 5020 Sample rack	for C 2000 / C 5000	**7145000**
KV 600 Cooling water supply (230 V)	for C 2000 / C 5000 / C 7000	**3410500**
KV 600 Cooling water supply (115 V)	for C 2000 / C 5000 / C 7000	**3410501**
C 25 Pressure regulating valve to operate with firmly installed water connection	for C 2000	**3197200**
C 5041.10 Connection cable	for C 2000 / C 5000 / C 7000	**3036000**
C 21 Pelleting press	for C 2000 / C 5000 / C 7000	**1605300**
C 29 Pressure gauge, oxygen	for C 2000 / C 5000 / C 7000	**0750200**
C 7010 Decomposition vessel, standard	for C 7000	**3015000**
C 7012 Decomposition vessel, halogen resistant	for C 7000	**3017000**
C 48 Oxygen station	for C 7000	**1560000**
C 7010.8 Venting handle	for C 7010 / C 7012	**7095000**
C 7030 Venting station with gas wash bottle acc. to DIN 12596 (for gas absorption)	for C 7010 / C 7012	**3013300**
C 7002 Cooling system (230 V)	for C 7000	**7011000**
C 7002 Cooling system (115 V)	for C 7000	**7011001**
Instructions on the IKA® calorimeter systems	for C 2000 / C 5000 / C 7000, on request	

IKA® Analytical line

Calorimeters consumables

Consumables for all Calorimeters	Comments	Ident. No.
C 5003.1 Aqua Pro stabilizing agent	30 ml	**7207700**
C 710.4 Cotton thread, cut to length	500 pieces	**1483700**
C 5010.3 Ignition wire, spare	5 pieces	**7122800**
C 5012.3 Ignition wire, platinum	2 pieces	**2994900**
C 4 Quartz dish		**1695500**
C 5 Set of VA combustion crucibles	25 pieces	**1749500**
C 6 Quartz crucible, big		**0355100**
C 9 Gelatine capsules	100 pieces	**0749900**
C 10 Acetobutyrate capsules	100 pieces	**0750000**
C 12 Combusion bags 40 x 35 mm	100 pieces	**2201400**
C 12 A Combusion bags 70 x 35 mm	100 pieces	**2201500**
C 14 Combustible crucible	100 pieces	**7224500**
C 15 Paraffin strips	600 pieces	**3131100**
C 43 Benzoic acid NBS 39i	30 g	**0750600**
C 43A Benzoic acid	100 g	**0750700**
C 723 Benzoic acid, blister package	50 pieces	**3243000**
AOD 1.11 Control standard for sulfur and chlorine	50 ml	**3044000**
AOD 1.12 Control standard for fluorine and bromine	50 ml	**3080200**
C 62.1 Set of wearing parts (for C 2000 high pressure)		**3296300**
C 62.2 Combustion crucibles for C 62 (for C 2000 high pressure)		**3266000**
C 08 Pure iron ignition wire (for C 2000 high pressure)	200 m (coil)	**0749600**