

for the automatic
serial determination of
NITROGEN



DUMATHERM N Pro

Elemental analysis for nitrogen determination acc. to Dumas

Technical Data DUMATHERM N Pro

Data	DUMATHERM N Pro
Sample size	up to 1 g
Sample capacity	1 - 64 (+8) samples
Analysis time	3 - 5 min, depending on the sample type and sample size
Recovery rate	> 99,5 %
Detection limits with Helium	0,003 - 50 mg N absolut
Standard deviation	< 0,5 % (with standard sample preparation)
Operation	via PC* with DUMATHERM-Manager
Temperature range Combustion furnace	400 - 1.100 °C
Temperature range Reduction furnace	400 - 1.100 °C
Temperature range Desorption furnace	50 - 350 °C
Required gases and quality	Helium, quality grade 5.0 (99,999 %) Oxygen, quality grade 5,0 (99.999 %) Compressed air (100 % oil- and water free) or nitrogen, quality grade 2.6 (99.6 %, oil- and water free)
Gas installation	Pressure regulators for high purity gas; 1/4" cylindric thread (female)
Inlet pressure helium	3 - 6 bar
Inlet pressure oxygen	3 - 6 bar
Inlet pressure compr. air / nitrogen	3 - 6 bar
Ambient temperature	15 °C < t < 35 °C
Nominal voltage	230 VAC
Dimensions Device closed W / D / H	W / D / H = 870 x 580 x 860 mm
Min. dimensions for laboratory bench space*	W / D / H = 1100 x 780 x 1200 mm
Weight	ca. 95 kg
Nominal wattage DUMATHERM	1380 W
Current	max. 6 A
Wanted digital balance	Precision min. 0,1 mg

* Doors and upper protective hood open, sample changer pushed into rear position

Order information DUMATHERM N Pro

Order No.	Type	Description
14-0400	DT N Pro	DUMATHERM N. 64-place, complete with: - Autosampler for the automatic feeding of up to 64 (+8) samples - Starter Kit for 1.000 combustions - DUMATHERM-Manager, control software**

**Computer: PC / Laptop and printer are not included in the shipment

**Requirements for PC: Windows 10, 64bit, 2 x USB-interface

ACCESSORIES AND CONSUMABLES

Make sure to use only original C. Gerhardt consumables in order to obtain the best possible results. These parts have been tested thoroughly for the operation with DUMATHERM N Pro in the C. Gerhardt application lab.

Set of Consumables- DumaSet (with high performance reactor)



Copper must be ordered separately

Order No.	Type	Description
14-0194	DumaSet N Pro + CN	DUMATHERM Consumables for approx 1.000 combustions, containing: 1 x 14-0244 DumaReact, combustion reactor, filled with HT and LT catalyst 2 x DumaTube, Quartz tube für reactor 1 x DumaCollect, ash insert (unit with 10 pcs.) 10 x DumaFoil, Tin foil, conditioned, (10 boxes á 100 pcs.)

Set of Consumables - DumaSet



Copper must be ordered separately

Order No.	Type	Description
14-0186	DumaSet N Pro	Consumables for approx 1,000 solid samples, containing: 1 x 14-0245 DumaReact, Combustion reactor chromium free 2 x DumaTube, Quartz tube für reactor 1 x DumaCollect, ash insert (unit with 10 pcs.) 10 x DumaFoil, Tin foil, conditioned, (10 boxes á 100 pcs.)

Reactor - DumaReact



Order No.	Type	Description
14-0244	DumaReact	Prepacked combustion reactor, filled with HT- and LT-catalyst, 1 pc.

Reactor - DumaReact



Order No.	Type	Description
14-0245	DumaReact	Prepacked combustion reactor, filled with chromium-free catalyst, 1 pc.

Quartz tube - DumaTube



Copper must be ordered separately

Order No.	Type	Description
14-0203	DumaTube	Quartz tube for reactor, OD 26mm, L 450mm, 2mm wall thickness, 1 pc

Copper - DumaCop


Order No.	Type	Description
14-0046	DumaCop	Copper for reduction, 5 boxes á 450 g (one box is enough for one filling for quartz tube 14-0203)
14-0246	DumaCop	Copper for reduction, 10 boxes á 450 g (one box is enough for one filling for quartz tube 14-0203)

HT wool - DumaPad (for quartz tube and combustion reactor)


Order No.	Type	Description
14-0225	DumaPad	HT Wool pads combibox, content: 30 pcs. small + 30 pcs. large
14-0274	DumaPad	HT Wool pads small , content: 60 pcs.
14-0275	DumaPad	HT Wool pads large , content: 60 pcs.

End caps for reactor


Order No.	Type	Description
14-0273		End caps for reactor small/large, content: - 10 x end caps small - 10 x end caps big

Filling funnel


Order No.	Type	Description
14-0218		Funnel for the filling of the reactors and traps, 1 pc.

Tin foil - DumaFoil


Order No.	Type	Description
14-0017	DumaFoil	DumaFoil, tin foil 3.5 x 3.5cm, 100 pcs.
14-0417	DumaFoil	DumaFoil XL, tin foil 4.3 x 4.3 cm, specially designed for weighing in larger samples, 100 pcs.

Sealing for quartz tube

Order No.	Type	Description
14-0020		Seal for top of quartz tube, black, D 26mm, 4 pcs
14-0019		Seal for bottom of quartz tube, green, D 18 mm, 4 pcs



Ash insert - DumaCollect



Order No.	Type	Description
14-0015	DumaCollect	Ash insert, ceramics, with bottom, for single use L 100 mm, package with 10 pcs.

Standard - DumaEDTA



Order No.	Type	Description
14-0032	DumaEDTA	EDTA Calibration Standard, 10g

Sample magazine retrofit kits



Order No.	Type	Description
		All sample magazine retrofit kits consist of: 1 x Sample feeding plate 1 x Sample transfer unit 1 x Encapsulating device for samples (3-piece) 1 x Positioning insert for autosampler 1 x Calibration kit sample magazine (3-piece) 1 x Gauge for sample height (only KIT100 + KIT144) 1 x Short instruction
14-0264	KIT64	DUMATHERM N Pro Kit Sample magazine 64-place + 8 for 64 samples + 8 emergency samples. Suitable for sample sizes up to 1 g.
14-0265	KIT100	DUMATHERM N Pro Kit Sample magazine 100-place + 10 for 100 samples + 10 emergency samples. Suitable for sample sizes up to 300 mg.
14-0266	KIT144	DUMATHERM N Pro Kit Sample magazine 144-place + 12 for 144 samples + 12 emergency samples. Suitable for sample sizes up to 100 mg.

Sample transfer unit



For laboratories with a very high sample throughput, we recommend the usage of additional sample transfer units.

Order No.	Type	Description
14-0279		Sample transfer unit 64-place+8, complete
14-0280		Sample transfer unit 100-place+10, complete
14-0281		Sample transfer unit 144-place+12, complete

Adsorber tube - DumaCO₂



Order No.	Type	Description
14-0021	DumaCO ₂	CO ₂ adsorber tube, filled with adsorbent and gas tightly closed, package with 6 pcs.

Absorbent - DumaSorb



Order No.	Type	Description
14-0022	DumaSorb	Absorbent for liquid samples, content 25 g
14-0295	Super-absorber	Absorbent, special, for low salt- and low fat liquid samples of up to max. 400 mg, content 50 g

Accessories for adsorption trap for water

Order No.	Type	Description
14-0219		Absorbent for water adsorption trap 14-0061, Content 100 g, 1 bottle
14-0061		Adsorption trap for water complete (Glass part, O-rings and 2 endcaps)
14-0243		Wool for water adsorption trap, 5g
14-0081		Silicone seal for water adsorption trap, 2 pcs



14-0219



14-0061



14-0243



14-0081

Encapsulating device



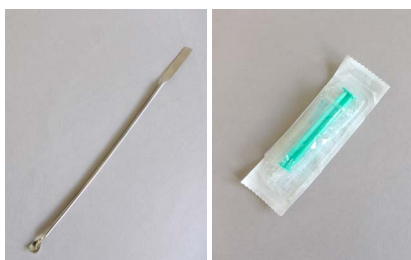
Order No.	Type	Description
14-0025		Encapsulating device for samples, 3-part, for sample magazine 64-place
14-0276		Encapsulating device for samples, 3-part, for sample magazine 100-place
14-0285		Encapsulating device for samples, 3-part, for sample magazine 144-place

CameraKit



Order No.	Type	Description
14-0414		CameraKit DUMATHERM, complete with: 1 x Camera, USB 2.0 uEye XS Camera incl. autofocus-optic, CMOS colour sensor, 5 Megapixel, Full-HD 2 x Fixing screws with nuts 1 x USB-data cable, 3 m <i>Compatible with DUMATHERM N Pro from Version 3</i>

Sampling devices for solid & liquid samples



Order No.	Type	Description
14-0073		Spatula for solid samples, 1 pc
14-0095		Syringe, 1 ml for liquid samples, 1 pc

Tweezer



Order No.	Type	Description
14-0072		Tweezer, 1 pc

Ash finger extractor



Order No.	Type	Description
14-0068		Ash finger extractor, 1 pc For removing and inserting the hot ash inserts

Special tool for DUMATHERM



Order No.	Type	Description
14-0064		Tool for taking out reactor tubes, 1 pc.

Wrench for reactor



Order No.	Type	Description
14-0288		Special Wrench for top reactor nut, 1 pc

Rod for filling



Order No.	Type	Description
14-0065		Rod for reactor tube filling, 1 pc.

DumaCollect Stainless steel ash insert

Order No.	Type	Description
14-0240	DumaCollectsteel	Ash insert made of stainless steel, for reuse , 1 pc.
14-0241	DumaCollectsteel	StarterKit Stainless steel ash insert, complete with case: 2 x stainless steel ash insert, 30 x DumaPads, drill, hammer, crucible half shell and pin punch to remove the ash from the crucible.



Spare parts for bottom reactor connection

Order No.	Type	Description
14-0052		Bottom connection, complete with teflon tubing inner Ø 4 mm
14-0231		Upgrade Kit 18 - Bottom connection, complete with teflon tubing inner Ø 6 mm (especially for samples with high salt content, e.g. fertilizers)
14-0075		Bottom reactor connection Teflon Ø 4 mm, with nuts and ferrules
14-0236		Bottom reactor connection Teflon Ø 6 mm, with nuts and ferrules
14-0045		Thread piece stainless steel Ø 4 mm, for bottom reactor connection 14-0075, incl. sealing ring 14-0019 and metal ring 14-0142
14-0067		Thread piece PEEK Ø 4 mm, for bottom reactor connection 14-0075
14-0232		Thread piece stainless steel Ø 6 mm, for bottom reactor connection 14-0236
14-0019		Sealing ring for reactor connection, green - 4 pcs, suitable for 14-0045, 14-0067, 14-0232
14-0142		Metal ring for reactor connection, suitable for 14-0045, 14-0067, 14-0232



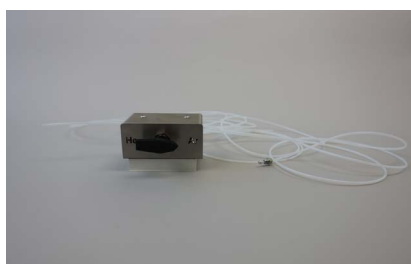
Reactor trays

Order No.	Type	Description
14-0672		Reactor rack
14-0076		Metal stand for supporting reactor tubes



Upgrade Kit 17

Order No.	Type	Description
14-0660		Helium Economy Kit - Gas switching system for switching from helium to argon in standby mode
14-0049		Upgrade Kit 17 - Safety trap gas outlets for saving helium in standby mode



Teflon tubing assembled



Order No.	Type	Description
14-0130		Purge line, Teflon, OD 2mm, L 250mm, with ferrules + nuts
14-0330		Teflon tubing, OD 3 mm, ID 1,5 mm, L 450mm, with ferrules + nuts

Adapter for gas pipes



14-0126 (14-0128)

14-0125 (14-0127)

Order No.	Type	Description
14-0126		Adapter 1/4", for PU-gas pipe 4mm
14-0125		Adapter 1/4", for gas pipe 2mm
14-0128		Adapter 3/8", for PU-gas pipe 4mm
14-0127		Adapter 3/8", for gas pipe 2mm

Accessories for gas pipeline

Order No.	Type	Description
14-0069		Ferrule for 4 x 0.75 mm tubing, 6 pcs
14-0070		Nuts M6 x 0.75 mm, for 2 mm stainless steel tubing, 10 pcs
14-0199		Nuts M6 x 0.75 mm, for 3 mm teflon tubing, 10 pcs
14-0071		Ferrules for 2 mm stainless steel tubing, 10 pcs
14-0099		Ferrules for 3 mm teflon tubing, 10 pcs
14-0091		Set for 3 mm teflon tubing, consisting of: ferrules 14-0099 + Nuts 14-0199, 10 pcs



DT leakage detector



Order no.	Type	Description
14-0008	LD239	DT leakage detector, including: - USB charging cable

DT Leak Troubleshooting Kit LTS



Order No.	Type	Description
14-0220	LTS	Leak Troubleshooting Kit, including: - PTFE tubing - Push-in fitting for 4mm PUN tube - Connector for TCD, top - Open-end spanner SW8 - Open-end spanner SW10

Sealing rings for Autosampler

Inside the autosampler is a feed cylinder equipped with O-ring seals. These O-ring seals must be exchanged regularly all 12.000 samples or once a year.

Order No.	Type	Description
14-0424		Sealing rings for Autosampler N Pro 64+ with sample feed cylinder long (stainless steel), Ø 23,5 x 3,5 mm, Set of 3
14-0272		Sealing rings for Autosampler N Pro 64+ with sample feed cylinder short (black), Ø 24,2 x 3,0 mm, Set of 3
14-0078		Sealing rings for Autosampler N 40+ (PN120) with sample tray, Ø 21,5 x 3,5 mm, Set of 3
14-0268		Screw tool kit for sample feed cylinder DUMATHERM (Required tool for replacing the O-rings, including instruction)



Tool set for DUMATHERM



Order No.	Type	Description
14-0057		Tool set DUMATHERM, including: 1 x Right-angle screwdriver, 5/64" 1 x Right-angle screwdriver 1/8" 1 x Right-angle screwdriver 9/64" 1 x Right-angle screwdriver 5/32"

SUPPORT AND SERVICE

In addition to its high quality instruments, C. Gerhardt offers comprehensive services to maintain the functionality and efficiency of your equipment.

INSTALLATION / EQUIPMENT QUALIFICATION

Selection	Type	Description
99-0204	ABI-DT	Installation and Instruction DUMATHERM - Installation and connection of the unit - functional check - operating instructions
99-0212	GQF-DT	Equipment Qualification (IQ/OQ) DUMATHERM - Installation of the unit and instruction - Installation Q ualification IQ and O perational Q ualification OQ , Guidance for P erformance Q ualification PQ - Training of laboratory personnel with certificate - Individual training certificates, if requested

SERVICING AND MAINTENANCE CONCEPTS

For detailed information on servicing and maintenance concepts, please contact your local authorised C. Gerhardt representative.

WORKSHOPS / SEMINARS / APPLICATIONS TRAINING

For detailed information on trainings and workshops, please contact your local authorised C. Gerhardt representative.

TABLE OF CONFIGURATION

Please arrange the required system

DUMATHERM

Quantity	Order No.	Type	Description

CONSUMABLES / ACCESSORIES

Quantity	Order No.	Type	Description

SUPPORT AND SERVICE

Quantity	Order No.	Type	Description

Send offer to:

Customer No.	
Company	
Name	
Address	
Tel.	
E-mail	
Web	