



LABORATORY

Furnaces and ovens for processes in air, under protective gases or in vacuum

www.nabertherm.com

■ Made
■ in
■ Germany



Facts

- Production of Arts & Crafts furnaces, laboratory furnaces, dental furnaces and industrial furnaces since 1947
- Production site in Lilienthal/Bremen - Made in Germany
- 600 employees worldwide
- 150,000 customers in more than 100 countries
- Very wide product range of furnaces
- One of the biggest R&D departments in the furnace industry
- High vertical integration

Global Sales and Service Network

- Manufacturing only in Germany
- Decentralized sales and service close to the customer
- Own sales organization and long term sales partners in all important world markets
- Individual on-site customer service and consultation
- Fast remote maintenance options for complex furnaces
- Reference customers with similar furnaces or systems close to you
- Secured spare parts supply, many spare parts available from stock
- Further information see page 90

Setting Standards in Quality and Reliability

- Project planning and construction of tailor-made thermal process plants incl. material handling and charging systems
- Innovative controls and automation technology, adapted to customer needs
- Very reliable and durable furnace systems
- Customer test center for process assurance

Experience in Thermal Processing

- Thermal Process Technology
- Additive Manufacturing
- Advanced Materials
- Fiber Optics/Glass
- Foundry
- Laboratory
- Dental
- Arts & Crafts

Table of Contents



Muffle Furnaces up to 1400 °C

Muffle furnaces up to 1200 °C	6
Economy muffle furnaces up to 1100 °C	8
Muffle furnaces with brick insulation up to 1300 °C	9
Muffle furnaces up to 1400 °C	10
Muffle furnaces with embedded heating elements up to 1100 °C	11
Ashing furnaces up to 1100 °C.....	12
Ashing furnaces with integrated exhaust gas cleaning up to 1100 °C.....	14
Weighing furnaces up to 1200 °C.....	15
Exhaust systems/accessories for muffle furnaces	16

Tube Furnaces up to 1800 °C

Compact tube furnaces up to 1300 °C.....	20
Split-type tube furnaces for	
horizontal or vertical operation up to 1300 °C	22
Rotary tube furnaces for batch operation up to 1100 °C	24
Rotary hearth furnaces for processes with	
continuous movement up to 1300 °C	26
Tube furnaces with stand for horizontal	
and vertical operation up to 1500 °C	28
High-temperature tube furnaces	
with SiC rod heating up to 1600 °C	29
High-temperature tube furnaces for horizontal	
or vertical operation up to 1800 °C.....	30
Working tubes.....	32
Gas supply systems/vacuum operation	34
Control alternatives for tube furnaces	38
Customized tube furnaces	39

Ovens and Forced Convection Furnaces up to 850 °C

Ovens up to 300 °C	42
Chamber ovens up to 260 °C	44
Forced convection chamber furnaces – tabletop design	46
Forced convection chamber furnaces up to 675 liter	48
Ovens with safety technology	50
Forced convection chamber furnaces up to 500 liter with safety technology	51

Chamber Furnaces up to 1400 °C

Chamber furnaces up to 1400 °C.....	54
Chamber furnaces up to 1280 °C.....	56
Accessories for the heat treatment of metals	57

High-Temperature Furnaces up to 1800 °C

High-temperature furnaces MoSi ₂ heating elements	
table-top model up to 1800 °C	60
High-temperature furnaces with SiC rod heating	
table-top model up to 1600 °C	62
High-temperature bottom loading furnaces up to 1650 °C	63
High-temperature furnaces with scale up to 1750 °C	64
Combi high-temperature furnace up to 1750 °C	
with integrated catalytic post combustion	65
High-temperature furnaces MoSi ₂ heating elements	
floor-standing model up to 1800 °C.....	66
High-temperature furnaces with SiC rod heating	
floor-standing model up to 1550 °C.....	68
High-temperature furnaces with MoSi ₂ heating elements	
with refractory brick insulation up to 1700 °C.....	69

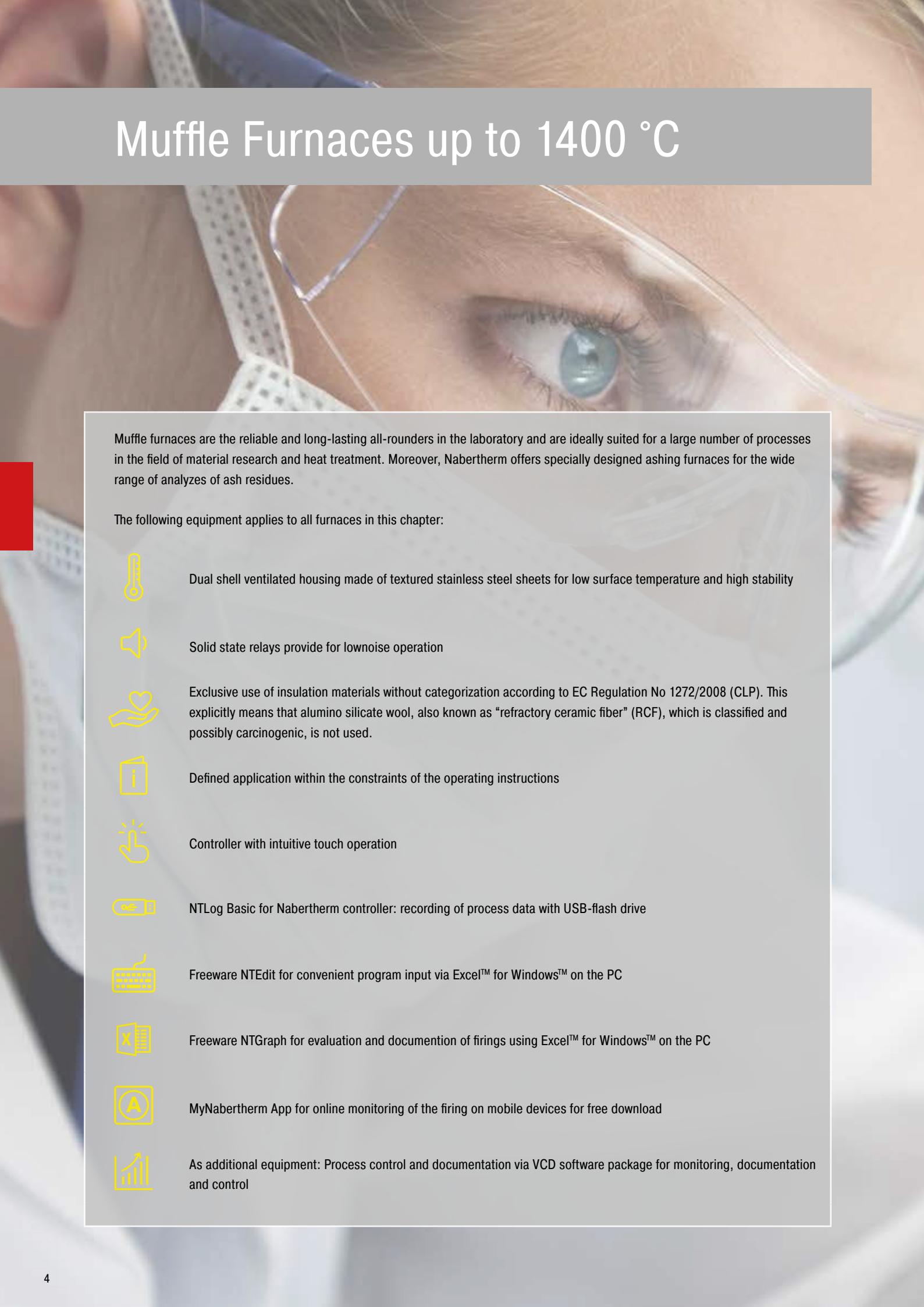
Furnaces for Special Applications

Fire assay/cupellation furnaces up to 1300 °C	72
Gradient or lab strand annealing furnaces up to 1300 °C	74
Fast-firing furnaces up to 1300 °C	75
Laboratory melting furnaces up to 1400 °C	76

Process Control and Documentation

Temperature uniformity and system accuracy	77
Nabertherm controller series 500	80
MyNabertherm app for mobile monitoring of process progress	82
Functions of the standard controllers	84
Process data storage and data input via PC	85
PLC controls - HiProSystems	87
Process data storage	88
Nabertherm control center NCC	89

Muffle Furnaces up to 1400 °C



Muffle furnaces are the reliable and long-lasting all-rounders in the laboratory and are ideally suited for a large number of processes in the field of material research and heat treatment. Moreover, Nabertherm offers specially designed ashing furnaces for the wide range of analyzes of ash residues.

The following equipment applies to all furnaces in this chapter:



Dual shell ventilated housing made of textured stainless steel sheets for low surface temperature and high stability



Solid state relays provide for low noise operation



Exclusive use of insulation materials without categorization according to EC Regulation No 1272/2008 (CLP). This explicitly means that alumino silicate wool, also known as "refractory ceramic fiber" (RCF), which is classified and possibly carcinogenic, is not used.



Defined application within the constraints of the operating instructions



Controller with intuitive touch operation



NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive



Freeware NTEdit for convenient program input via Excel™ for Windows™ on the PC



Freeware NTGraph for evaluation and documentation of firings using Excel™ for Windows™ on the PC



MyNabertherm App for online monitoring of the firing on mobile devices for free download



As additional equipment: Process control and documentation via VCD software package for monitoring, documentation and control



Furnace Group	Model	Page
Muffle furnaces up to 1100 °C or 1200 °C	L(T)	6
Economy muffle furnaces up to 1100 °C	LE	8
Muffle furnaces with brick insulation up to 1300 °C	L(T) .. 13	9
Muffle furnaces up to 1400 °C	L(T) .. 14	10
Muffle furnaces with embedded heating elements in the ceramic muffle up to 1100 °C	L(T) .. SKM	11
Ashing furnaces up to 1100 °C	LV(T)	12
Ashing furnaces up to 1100 °C with integrated exhaust gas cleaning	L .. BO	14
Weighing furnaces up to 1200 °C	L(T) .. SW	15
Exhaust systems/accessories for muffle furnaces		16

Muffle Furnaces up to 1100 °C or 1200 °C

The muffle furnaces L 3/11 - LT 60/12 have been proven for daily laboratory use. These models stand out for their excellent workmanship, advanced and attractive design, and high level of reliability. The muffle furnaces come equipped with either a flap door or lift door at no extra charge.



Muffle furnace LT 5/12 with lift door

Standard Equipment

- Tmax 1100 °C or 1200 °C
- Heating from two sides by ceramic heating plates (heating from three sides for muffle furnaces L 24/11 - LT 60/12) for an optimal temperature uniformity
- Thermocouple type N (1100 °C) or type S (1200 °C)
- Ceramic heating plates with integral heating element which is safeguarded and easy to replace
- Optional flap door (L) which can be used as work platform or lift door (LT) with hot surface facing away from the operator
- Adjustable air inlet integrated in door (see illustration)
- Exhaust air outlet in rear wall of furnace
- Controller with touch operation B510 (5 programs with each 4 segments) resp. controller R7 for L 1/12 (adjustable for one temperature), alternative controllers see page 84



Muffle furnace L 3/11 with flap door

Additional Equipment

- Chimney, chimney with fan or catalytic converter (not for L 1 and L 15) see page 16
- Over-temperature limiter with adjustable cutout temperature as temperature limiter to protect the furnace and load
- Protective gas connection to purge with non-flammable process gases (not available in combination with chimney, chimney with fan or catalytic converter) not gas tight
- Manual or automatic gas supply system
- Port for thermocouple in the rear wall or in the furnace door
- Charging rack with closed or perforated trays for loading the furnace in two levels incl. holder for inserting/removing the trays up to a max. temperature of 800 °C and a max. loading weight per layer of 2 kg for the L(T) 9/11 respectively 3 kg for the L(T) 15/11 respectively 3,5 kg for the L(T) 24/11 and L(T) 40/11 see page 17
- Please see page 17 for more accessories



Muffle furnace L 3/12



Muffle furnace L 3/11 with flap door

Model	Tmax in °C ¹	Inner dimensions in mm			Volume in l	Outer dimensions ² in mm			Temperature uniformity of +/- 5K in the empty workspace ⁵			Max. connected load in kW	Electrical connection*	Weight in kg	Heating time in min ⁴
		w	d	h		W	D	H ³	w	d	h				
L(T) 3/11	1100	160	140	100	3	385	330	405+155	110	50	50	1.3	1-phase	21	41
L(T) 5/11	1100	205	170	130	5	385	390	460+205	170	80	80	2.6	1-phase	27	47
L(T) 9/11	1100	235	240	170	9	415	455	515+240	180	150	120	3.3	1-phase	35	63
L(T) 15/11	1100	230	340	170	15	415	555	515+240	180	250	120	3.5	1-phase	43	74
L(T) 24/11	1100	280	340	250	24	490	555	580+320	230	250	200	4.9	3-phase	52	69
L(T) 40/11	1100	320	490	250	40	530	705	580+320	270	400	200	6.5	3-phase	70	80
LT 60/11	1100	380	490	330	60	610	705	660+385	290	360	240	9.8	3-phase	83	150
L 1/12	1200	90	115	110	1	290	280	410	40	45	60	1.6	1-phase	15	25
L(T) 3/12	1200	160	140	100	3	385	330	405+155	110	50	50	1.3	1-phase	21	48
L(T) 5/12	1200	205	170	130	5	385	390	460+205	170	80	80	2.6	1-phase	27	59
L(T) 9/12	1200	235	240	170	9	415	455	515+240	180	150	120	3.3	1-phase	35	78
L(T) 15/12	1200	230	340	170	15	415	555	515+240	180	250	120	3.5	1-phase	43	99
L(T) 24/12	1200	280	340	250	24	490	555	580+320	230	250	200	4.9	3-phase	52	82
L(T) 40/12	1200	320	490	250	40	530	705	580+320	270	400	200	6.5	3-phase	70	97
LT 60/12	1200	380	490	330	60	610	705	660+385	290	360	240	9.8	3-phase	83	160

¹Recommended working temperature for processes with longer dwell times is 1000 °C (L../11) resp. 1100 °C (L../12)

*Please see page 84 for more information about supply voltage

²External dimensions vary when furnace is equipped with additional equipment. Dimensions on request.

³Including opened lift door (LT models)

⁴Heating time of the empty and closed furnace up to Tmax – 100 K (connected to 230 V 1/N/PE resp. 400 V 3/N/PE)

⁵Temperature uniformity of +/- 5 K with closed fresh-air inlet in empty work space according to DIN 17052-1 at working temperatures above 800 °C see page 77



Chimney with fan



Adjustable air inlet integrated in the door



Gas supply system for non-flammable process gas