VWR® PCR

01. PCR CYCLER XT^{96}: HIGH-TECH AT AN ATTRACTIVE PRICE

02. PCR WORKSTATION HEPA: NO ROOM FOR CONTAMINATION

03. VWR HIFI POLYMERASE: ULTRA-LOW ERROR RATE & HIGH PROCESSIVITY

Welcome to the VWR range for PCR

Who would have thought that a bacterium, discovered in 1966 in a hot spring in Yellowstone National Park, would become such a pivotal ingredient in the molecular biology revolution? From that gram-negative bacterium, *Thermus aquaticus*, came Taq, a thermostable DNA polymerase that survives the repeated melting and extension steps to enable the modern PCR reaction we know today.

Taq, with its great processivity, is still the most widely used polymerase, and you will find a variety of formulations optimised to specific applications within this catalogue, including both stand-alone enzymes and master mixes, hot start, glycerol-free, or red variants for direct gel loading. In case you need higher accuracy than Taq can provide, take the next step to high fidelity PCR using VWR® HiFi DNA polymerase, and benefit from its ultra-low error rate. Then, you know it from cooking, don't compromise on the basic ingredients, so also use VWR Collection dNTPs, which are both, purity checked by HPLC and functionally tested in PCR.

Provide your PCR reactions with the perfect housing, and take advantage of our huge choice of PCR consumables. Injection-moulded from virgin polypropylene, and quality tested thoroughly, VWR Collection PCR tubes, strips and plates come in all shapes and formats to fit your needs.

To avoid false-positive PCR, due to re-amplification of cross-contaminating DNA, what about adding the VWR® PCR Workstation HEPA to your lab? Ensuring both UV inactivation of unwanted DNA traces, and effective reduction of airborne particles, it will offer maximum protection during PCR sample preparation.

Finally, and this is where this catalogue starts, explore our range of the most advanced thermal cyclers. Developed and manufactured at our premises in southern Germany, following the world's most challenging quality standards, and being fully compliant to national and international regulations, these PCR machines represent the most reliable, comfortable and sustainable way of running a PCR.

Covering essentially all products needed within the PCR workflow, we understand your needs – this is a crucial step in satisfying them. In addition, it enables us to offer best value for money, helping you to save costs without compromising the quality of your PCR results. So, let us be your partner for PCR!

Your VWR Life Science Team

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VWR Collection
Thermal Cycler XT96

Inside the new VWR PCR Thermal Cycler XT96, a lot of new innovative features are in place.

DISCOVER THE NEW XT96 VIDEO

VWR® COLLECTION

PB19048-EN

Avantor Services

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Equipment Services

Keep your laboratory in compliance and in operation.

Providing a carefree equipment lifecycle with Avantor Services

- Installation
- Preventive maintenance
- Warranty and repair
- Calibration
- Qualification, validation and certification (IQ/OQ/PQ)
- Equipment management
- Training

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THERMAL CYCLERS XT^{96}

The VWR® PCR thermal cycler XT^{96} combines industry-inspired innovation with the reliable quality of German manufacturing – housing both in a compact, low noise ventilation design that fits on virtually any bench top. For optimising PCR's, the XT^{96} is also available with a gradient function.

The VWR® PCR thermal cycler XT^{96} offers a powerful, yet easy to use software interface, as well as a host of other innovative features.

- Flexible lid: Heated lid automatically adjusts to fit every PCR tube, creating pressure that prevents sample evaporation, to ensure reproducible results in every run
- Innovative block design with reduced mass allows highest temperature uniformity, and heating and cooling rates of up to max. 4 °C/s
- Precise temperature control for shortest run times, without over- and under-shoots, for best PCR results
- Gradient function (optional): Eight advanced control circuits and Peltier elements, providing an almost linear gradient – ideal for PCR optimisation
- Sharp, clear 7" TFT display, combined with intuitive software, simplifies use and suits all user expectations
- Intuitive programming: PCR-Wizard for convenient three-step, two-step, and gradient PCR programming
- Quick set-up: Select one of the 'Recently used methods' to accelerate your PCR run
- Data control: Up to 2× USB, 1× Ethernet (MS Windows®, Linux), remote control and monitoring of instruments via PC software, MP3 signal tones, and master/slave control
- System tools at the touch of a button: Graphical or tabular programming, 'Global Program Ramp', 'Tube Control', online help, 'Quick Start' function and 'Power Fail Denaturation' for auto-restart after power failure

Manufactured in Germany according to ISO 9001, calibrated and maintained according to NIST standards, and backed by 30 years of cycler technology expertise and experience.

All XT thermal cyclers include simple to use PC software for remote control and monitoring of instruments, as well as for creating PCR protocols on a PC.

Thermal cycler, XT^{96}

Model	XT^{96}	XT^{96} Gradient
Block format	96×0,2 ml tubes or 96-well PCR plates	
Block homogeneity (°C)	±0,35 °C (at 72 °C)	
Cooling	8 Peltier elements per block, with long-life technology, and 8 control circuits with PT1000 temperature sensors	
Gradient temperature range (°C)	-	+30...100 °C (±0,2 °C)
Heating and cooling rate (°C/sec)	Max. 4 °C/s	
Interfaces	2× USB, 1× Ethernet (MS Windows®, Linux), remote control and monitoring of instruments via PC software and master/slave control	
Lid	Automatic height adjustment	
Lid temperature range (°C)	+40...110 °C	
Max. gradient	-	30 °C (±15 °C)
No. of programs	500 000	
Software	Graphical or tabular programming; 'Global Program Ramp'; 'Tube Control'; online help; 'Quick Start' function and 'Power Fail Denaturation' for auto-restart after power failure; MP3 signal tones; master/slave control	
Temperature range	+4...105 °C	
Weight	8,9 kg (including block)	
W×D×H (mm)	220×330×190 mm	

Description	Pk	Cat. No.
Thermal cycler, XT^{96}, with 96-well block and standard lid, for 96×0,2 ml tubes or 96-well PCR plates	1	732-1359
Gradient thermal cycler, XT^{96} Gradient, with 96-well gradient block and standard lid, for 96×0,2 ml tubes or 96-well PCR plates	1	732-3428

Description	Pk	Cat. No.
Software upgrade		
Software upgrade XT^{96} to XT^{96} Gradient	1	732-3482

THERMAL CYCLERS

The VWR® thermal cycler family combines high quality engineering with a comprehensive range of block formats. The UNO cycler is designed around a powerful, yet easy to use, software interface, and uses the same platform for both 96-well and 384-well formats. The Doppio, with two independent high speed 48-well blocks in one system, offers the optimum solution for maximum flexibility within a minimum footprint. The Ristretto is a compact personal cycler with the highest flexibility, having a universal block that can be loaded with either 32×0,2 ml tubes or 16×0,5 ml tubes with flat caps. Because of the special design of the heated lid, the height adjusts automatically to the different tube sizes.

- Outstanding performance: Thermal plate with impressive thermal characteristics; powerful Peltier elements with Long Life Technology; heat sink with cooling fans with magnetic bearing enabling rapid temperature change control of up to 5 °C/s (3 °C/s for Ristretto)
- Reliable, reproducible results: 8, 2×8 or 16 Peltier elements control the temperature row by row, enabling an outstanding block homogeneity of ±0,2 °C and the choice of absolute linear gradients and independent lane control
- Simple to use: Sharp, clear TFT display and intuitive touch screen commands
- Data control: Up to 4× USB (1× USB Ristretto), 1× Ethernet (MS Windows®, Linux), remote control and monitoring of instruments via PC software, MP3 signal tones, user calls via email and master/slave control

UNO96/Doppio

Ristretto

All systems include simple to use PC software for remote control and monitoring of instruments, plus creating PCR protocols on the PC.

FlexGradient technology (option for UNO and Doppio only): With the temperature of the 8 rows each individually controlled, select between a perfectly linear temperature gradient (ideal for PCR optimisation), or independent lane control (ideal for the use of different primer pairs in the same run).

System tools at the touch of a button: Graphical or tabular programming, 'Global Program Ramp', 'Gradient Control', 'Tube Control', Emulation mode, online help, 'Quickstart' function and 'Power Fail Denaturation' for auto-restart after power failure.

High specification remote control: State of the art technology, with VWR 'PCR Cycler Master Software'; receive notifications via email, or use the system MP3 player.

Emulation mode (UNO and Doppio only): For easy transfer of PCR protocols.

Engineered and manufactured in Germany according to ISO 9001, calibrated and maintained according to NIST standards, and backed with more than 20 years of cycler expertise and experience.

Model	UNO96	UNO96 HPL	UNO96 HPL Gradient	UNO96 Gradient	UNO384	Doppio	Doppio Gradient	Ristretto
Block accuracy (°C)	±0,1 °C							
Block homogeneity (°C)	±0,2 °C at 72 °C							
Display	Touch-sensitive TFT display (800×480 pixels, 16:9, 65536 colours)							
Gradient temperature range (°C)	-		+35...105 °C		-		+35...105 °C	-
Heating and cooling rate (°C/sec)	Max. 5 °C							
Interfaces	4× USB, 1× Ethernet (MS Windows®, Linux)							1× USB, 1× Ethernet (MS Windows®, Linux)
Lid temperature range (°C)	+40...120 °C							
Programs	Unlimited number of programs via network PC or USB memory sticks: internal memory for 500000 typical PCR protocols							
Temperature range (°C)	+4...105 °C							

Description	Pk	Cat. No.
Thermal cycler, UNO96, with 96-well universal block and standard lid for 96×0,2 ml tubes, 96-well PCR plates or 48×0,5 ml tubes with flat caps	1	732-2548
Thermal cycler, UNO96 HPL, with 96-well universal block and high pressure lid (HPL, 100–250 N) for 96×0,2 ml tubes, 96-well PCR plates or 48×0,5 ml tubes with flat caps	1	732-2914
Gradient thermal cycler, UNO96 HPL Gradient, with 96-well universal gradient block and high pressure lid (HPL, 100–250 N) for 96×0,2 ml tubes, 96-well PCR plates or 48×0,5 ml tubes with flat caps	1	732-2915
Gradient thermal cycler, UNO96 Gradient, with 96-well universal gradient block and standard lid for 96×0,2 ml tubes, 96-well PCR plates or 48×0,5 ml tubes with flat caps	1	732-2549
Thermal cycler, UNO384, with 384-well block and high pressure lid for 384-well PCR plates	1	732-2550
Thermal cycler, Doppio, with 2×48-well universal blocks and standard lids for 48×0,2 ml tubes or 24×0,5 ml tubes with flat caps per block	1	732-2551
Gradient thermal cycler, Doppio Gradient, with 2×48-well universal gradient blocks and standard lids for 48×0,2 ml tubes or 24×0,5 ml tubes with flat caps per block	1	732-2552
Thermal cycler, Ristretto, with 32-well universal block and standard lid, for 32×0,2 ml tubes, 4×0,2 ml 8-strips, or 16×0,5 ml tubes with flat caps	1	732-2553

PCR WORKSTATION

The VWR® PCR Workstation offers dual decontamination action by UV inactivation of airborne and surface-bound contaminants and, therefore, represents an ideal environment for PCR sample preparation and other sensitive protocols. Stainless steel housing, front and side panels made of 8 mm Makrolon® protects from UV irradiation.

- Active decontamination of work surface during non working time by UV irradiation
- Additional inactivation of aerosol-bound contaminants by shielded UV Air Recirculator during operation
- Contaminant prevention thanks to antimicrobial stainless steel work surface
- Function indicator for UV Air Recirculator tube
- Displays operating time of UV tubes allowing timely replacement for constant UV intensity
- Removable shelves provide additional storage space for reaction tubes, pipettes or racks on the rear panel
- Four internal power outlets for operating laboratory equipment, such as mini centrifuges or vortexers, allow the combination of several working steps without interruption of the workflow
- Electromagnetic safety mechanism stops UV irradiation if front panel is opened

Large area for stress-free working: Provides ample space and the possibility to accommodate bench top equipment, the VWR® PCR Workstation allows the combination of several working steps without change of location, thereby minimising the risk of cross-contamination.

TÜV tested, safety certified. Made in Germany.

Model	PCR Workstation
Lighting	2 UV tubes internal (254 nm, 25 W each) 1 UV tube in UV Air Recirculator (254 nm, 8 W) 1 white light tube internal (15 W)
Shelves	Removable

Description	W×D×H ext. (mm)	Pk	Cat. No.
VWR® PCR Workstation, work surface (W×D): 720×540 mm, EU-plug	750×620×780	1	**732-2541**
VWR® PCR Workstation, work surface (W×D): 720×540 mm, UK-plug	750×620×780	1	**732-2542**

Description	Pk	Cat. No.
Accessories		
Light source, air recirculator or HEPA/UV system, white light, 15 W	1	**732-2543**
Light source, interior, UV light (254 nm), 25 W	2	**732-2544**
Light source, air recirculator or HEPA/UV system, UV light (254 nm), 8 W	1	**732-2545**
Dust filters for air recirculator	10	**732-2546**

PCR WORKSTATION PRO HEPA

The VWR® PCR Workstation offers dual decontamination action by UV inactivation of airborne and surface-bound contaminants, therefore representing an ideal environment for PCR sample preparation and other sensitive protocols. In addition, the HEPA filter (H14 Standard) with UV provides a barrier against dust, bacteria and mould, with a filtration efficiency of 99,995% down to 0,3 micron particles. The HEPA system facilitates an ultra-clean, particle-free working space, reducing the chance of contamination by air which may blow into the PCR chamber.

- Active decontamination of work surface during non working time by UV irradiation
- Additional inactivation of aerosol-bound contaminants by shielded UV Air Recirculator during operation
- Contaminant prevention thanks to antimicrobial stainless steel work surface
- Carbon filter to remove ozone and gases
- HEPA filter (H14 Standard) provides a barrier against dust, bacteria and mould, with a filtration efficiency of 99,995% down to 0,3 micron particles
- The HEPA system provides an ultra-clean, particle-free ISO Class 5 working space according to EN 1822-1 standards
- Function indicator for UV Air Recirculator and HEPA-UV tube
- Adjustable laminar airflow for effective protection against sample contamination from outside
- Displays operating time of UV tubes and filters allowing timely replacement for constant UV intensity and filter efficiency
- Removable shelves provide additional storage space for reaction tubes, pipettes or racks on the rear panel
- Four internal power outlets for operating laboratory equipment, such as mini centrifuges or vortexers, allow the combination of several working steps without interruption of the workflow
- Electromagnetic safety mechanism stops UV irradiation if front panel is opened
- Large area for stress-free working: Provides ample space and the possibility to accommodate bench top equipment, the VWR® PCR Workstation allows the combination of several working steps without change of location, thereby minimising the risk of cross-contamination

Construction: Stainless steel housing, front and side panels made of 8 mm Makrolon® protects from UV irradiation.

TÜV tested, safety certified. Made in Germany.

Model	PCR workstation Pro HEPA
Filters	HEPA filter (H14 Standard) with UV provides filtration efficiency of 99,995% down to 0,3 µ particles
Lighting	2 UV tubes internal (254 nm, 25 W each) 1 UV tube in UV Air Recirculator (254 nm, 8 W) 1 UV tube in UV HEPA System (254 nm, 8 W) 1 white light tube internal (15 W)
Shelves	Removable
Working area	720×540 mm

Description	W×D×H ext. (mm)	Pk	Cat. No.
PCR workstation Pro HEPA, PCR3 (EU-plug)	750×795×620	1	**732-3409**
PCR workstation Pro HEPA, PCR3 (UK-plug)	750×795×620	1	**732-3410**

Description	Pk	Cat. No.
Accessories		
Pre-filter for HEPA/UV system (1 filter)	1	**732-3411**
Carbon filter for HEPA/UV system (1 filter)	1	**732-3412**
HEPA filter for HEPA/UV system (1 filter)	1	**732-3413**

TAQ DNA POLYMERASE

VWR® *Taq* DNA Polymerase is an ultra-pure, thermostable, recombinant DNA polymerase, which provides robust PCR performance in a wide range of PCR applications, without time-consuming optimisation. The enzyme is isolated from *Thermus aquaticus*, and has a molecular weight of approximately 94 kDa. VWR® *Taq* DNA Polymerase has both a 5′ to 3′ DNA polymerase and a double strand 5′ to 3′ exonuclease activity. It leaves an A overhang, which makes the enzyme ideal for TA cloning. VWR® Red *Taq* DNA Polymerase is a blend of *Taq* DNA polymerase combined with an inert red dye. The dye enables quick visual recognition of reactions to which enzyme has been added, as well as confirmation of complete mixing. A glycerol-free *Taq* DNA Polymerase is also available for automation and freeze drying.

- Ideal choice for routine applications
- High performance, thermostable DNA polymerase
- Optimal for TA cloning

Taq DNA polymerase concentration: 5 Units/µl

10X Key Buffer: Tris-HCl pH 8,5; $(NH_4)_2SO_2$, 15 mM $MgCl_2$, 1% Tween® 20

10X Extra Buffer: Tris-HCl pH 8,3; KCl, 15 mM $MgCl_2$, 1% Triton™ X-100

10X Mg-Free Key Buffer: Tris-HCl pH 8,5; $(NH_4)_2SO_2$, 1% Tween® 20

10X Mg-Free Extra Buffer: Tris-HCl pH 8,3; KCl, 1% Triton™ X-100

EU = Units

VWR® *Taq* DNA Polymerase is usually supplied with either or both Key Buffer and Extra Buffer. Key Buffer (NH_4^+) gives a superior amplification signal (high yield) minimising the need for optimisation of the Mg^{2+} concentration, or the annealing temperature in most primer-template systems. Extra Buffer is a traditional potassium (K^+) buffer. Extra Buffer promotes high specificity, but careful optimisation of primer annealing temperatures and Mg^{2+} concentrations may be required.

Description	Pk	Cat. No.
Taq DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	250 EU	**733-1300**
Taq DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	500 EU	**733-1301**
Taq DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	1.000 EU	**733-1302**
Taq DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	2.500 EU	**733-1819**
Taq DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	5.000 EU	**733-1820**
Taq DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	10.000 EU	**733-1303**
Taq DNA Polymerase, 10X $MgCl_2$-free Key Buffer, 25 mM $MgCl_2$	500 EU	**733-1311**
Taq DNA Polymerase, 10X $MgCl_2$-free Key Buffer, 25 mM $MgCl_2$	1.000 EU	**733-1312**
Taq DNA Polymerase, 10X $MgCl_2$-free Key Buffer, 25 mM $MgCl_2$	2.500 EU	**733-1313**
Red *Taq* DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	500 EU	**733-2408**
Red *Taq* DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	1.000 EU	**733-2409**
Red *Taq* DNA Polymerase, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	2.500 EU	**733-1323**
Taq DNA Polymerase, glycerol-free, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	500 EU	**733-2410**
Taq DNA Polymerase, glycerol-free, 10X Key Buffer (15 mM $MgCl_2$), 10X Extra Buffer (15 mM $MgCl_2$), 25 mM $MgCl_2$	1.000 EU	**733-1817**

TAQ DNA POLYMERASE MASTER MIX

VWR® *Taq* DNA Polymerase Master Mix is a ready to use 1,1X or 2X reaction mix. Simply add primers, template and water to carry out primer extensions and other molecular biology applications.

VWR® Red *Taq* DNA Polymerase Master Mix, which also contains an inert red dye, can be directly loaded onto an agarose gel without addition of electrophoresis loading buffers.

Tests = Reactions

Description	Pk	Cat. No.
Taq DNA Polymerase 2X Master Mix, 1,5 mM $MgCl_2$	500 Tests	**733-2542**
Taq DNA Polymerase 2X Master Mix, 2,0 mM $MgCl_2$	500 Tests	**733-2543**
Red *Taq* DNA Polymerase 1,1X Master Mix, 1,5 mM $MgCl_2$	500 Tests	**733-2544**
Red *Taq* DNA Polymerase 1,1X Master Mix, 2,0 mM $MgCl_2$	500 Tests	**733-2545**
Red *Taq* DNA Polymerase 2X Master Mix, 1,5 mM $MgCl_2$	500 Tests	**733-2546**
Red *Taq* DNA Polymerase 2X Master Mix, 1,5 mM $MgCl_2$	2.500 Tests	**733-1320**
Red *Taq* DNA Polymerase 2X Master Mix, 1,5 mM $MgCl_2$	5.000 Tests	**733-2130**
Red *Taq* DNA Polymerase 2X Master Mix, 1,5 mM $MgCl_2$	10.000 Tests	**733-2131**
Red *Taq* DNA Polymerase 2X Master Mix, 2,0 mM $MgCl_2$	500 Tests	**733-2547**

TAQ PLUS 2X MASTER MIXES

VWR® *Taq* Plus is an optimised format of *Taq* DNA polymerase master mix and, therefore, is a good alternative to *Taq* DNA polymerase and *Taq* DNA polymerase master mix.

- Ready to use 2X master mix for greater convenience
- Significantly reduced set-up time
- Increased specificity compared to *Taq* DNA polymerase master mix
- Reduced risk of contamination

Ensures increased specificity and improved PCR performance, even on difficult templates. These reagents are suitable for standard PCR applications, screening and high throughput testing.

This PCR master mix is composed of *Taq* DNA polymerase and an optimised buffer system, including dNTPs and magnesium chloride (1,5 mM).

Description	Pk	Cat. No.
Taq Plus 2X master mix, 2×1,25 ml	100 Tests	**733-2597**
Taq Plus 2X master mix, 10×1,25 ml	500 Tests	**733-2598**
Taq Plus 2X master mix, 50×1,25 ml	2.500 Tests	**733-2599**
Taq Plus 2X master mix, 25×5 ml	5.000 Tests	**733-2600**

TEMPASE HOT START DNA POLYMERASE

VWR® TEMPase Hot Start DNA Polymerases are highly stable polymerases, featuring higher specificity, superior sensitivity and greater yields compared to standard DNA polymerases. These features make them well suited for the detection of low abundance targets. Other uses include screening, amplification of GC-rich sequences, multiplex PCR, direct PCR and qPCR. A glycerol-free TEMPase Hot Start DNA Polymerase is also available for automation and freeze drying.

The GC-Rich Template kit is specifically designed for difficult GC-rich sequences. Combined with TEMPase, GC buffers I and II promote excellent amplification. The kit is designed for initial testing before using one of the GC-TEMPase 2X Master Mixes.

VWR® TEMPase DNA polymerases generally include two different buffers, Key Buffer and Combination Buffer, which are each suited to different PCR requirements. Key Buffer (NH^{4+}) gives a superior amplification signal (high yield), and minimises the need for optimisation of the Mg^{2+} concentration or the annealing temperature in most primer-template systems. Combination Buffer is a mixture of K^{+} and NH^{4+}. It combines high specificity with good product yield and high tolerance to optimisation of primer annealing temperatures and Mg^{2+} concentrations, due to its balanced ammonium-potassium formulation. Each buffer contains 15 mM $MgCl_2$ (1,5 mM in final volume). Additional $MgCl_2$ for easy optimisation is included in a separate vial.

Description	Pk	Cat. No.
TEMPase Hot Start DNA Polymerase, 5 U/µl, with 10X Key Buffer, 10X Combination Buffer and $MgCl_2$	500 EU	**733-1331**
TEMPase Hot Start DNA Polymerase, 5 U/µl, with 10X Key Buffer, 10X Combination Buffer and $MgCl_2$	2.500 EU	**733-1333**
TEMPase Hot Start DNA Polymerase, 5 U/µl, with 10X Key Buffer, 10X Combination Buffer and $MgCl_2$	10.000 EU	**733-1838**
TEMPase Hot Start DNA Polymerase, glycerol-free, 5 U/µl, without buffers	500 Tests	**733-2552**
GC-Rich DNA Target kit, with TEMPase Hot Start DNA Polymerase, 4X GC Buffers I and II, and 25 mM $MgCl_2$	500 Tests	**733-2567**

TEMPASE HOT START 2X MASTER MIX

TEMPase Hot Start DNA Polymerase Master Mix and Blue TEMPase Master Mix are good alternatives to TEMPase Hot Start DNA Polymerase. These master mixes offer easy reaction assembly at room temperature, reduced set-up time and fewer handling steps, which lead to increased reproducibility. As a consequence TEMPase Hot Start DNA Polymerase Master Mix is highly suited to standard tests.

The blue loading dye in Blue TEMPase Hot Start DNA Polymerase Master Mix facilitates direct gel loading, and eliminates the need for separate loading dye - no need for time-consuming sample preparation before electrophoresis.

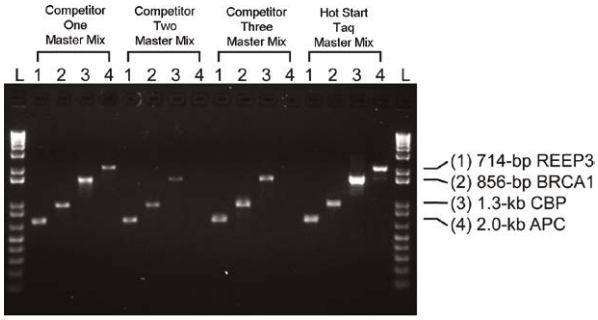
Ready to use GC TEMPase 2X Master Mixes I and II are designed for amplification of GC-rich sequences. Multiplex 2X Master Mix is composed of TEMPase Hot Start DNA Polymerase and a specialised buffer system designed for multiplex PCR.

TEMPase Hot Start DNA Polymerase Master Mix and Blue TEMPase Master Mix are available in two variations, either based on Key Buffer (Master Mix K) or Combination Buffer (Master Mix C) to suit different PCR requirements. Additional $MgCl_2$ is included in the kit to enable optimisation.

Description	Pk	Cat. No.
TEMPase Hot Start 2X Master Mix, with Master Mix K, 1,5 mM $MgCl_2$	500 Tests	**733-2581**
TEMPase Hot Start 2X Master Mix, with Master Mix K, 1,5 mM $MgCl_2$	2.500 Tests	**733-2582**
TEMPase Hot Start 2X Master Mix, with Master Mix C, 1,5 mM $MgCl_2$	2.500 Tests	**733-1840**
GC TEMPase Hot Start 2X Master Mix, with Master Mix I, 1,5 mM $MgCl_2$	500 Tests	**733-2561**

HOT START *TAQ* PCR MASTER MIX, 2X

Hot Start *Taq* Master Mix, 2X is a ready to use reaction cocktail that contains all required components, except primers and template DNA, for routine PCR amplification of DNA fragments up to 4 kb. The included *Taq* DNA polymerase is inactivated with proprietary monoclonal antibodies. Incubation at ≥94 °C during PCR thermal cycling irreversibly denatures the antibody and releases full *Taq* DNA polymerase activity.



Description	Pk	Cat. No.
Hot Start *Taq* PCR Master Mix, 2X, 500 reactions, 10×1,25 ml	1 KIT	**1B1408-500RXN**

HIFI DNA POLYMERASE

VWR® HiFi DNA polymerase sets new standards for high fidelity PCR with up to 50X *Taq* fidelity. This chimeric DNA polymerase features ultra-low error rate and robust performance. VWR® HiFi DNA polymerase offers excellent coverage on difficult amplicons with low to high GC content. The long range capacity of the polymerase is 8,5 kb for genomic DNA, and >12 kb for simple DNA targets.

- High fidelity enzyme: Measured up to 50X *Taq* fidelity
- Good coverage for amplification of DNA target with low to high GC %
- Long range capacity: 8,5 kb for genomic DNA and >12 kb for simple DNA targets
- Recommended for cloning, mutagenesis, SNP analysis, NGS applications and other applications requiring extremely high fidelity
- Convenient reaction set-up

Optimal PCR conditions for VWR® HiFi DNA polymerase are provided by the supplied 10X VWR HiFi Buffer. For DNA samples with high GC content addition of 2 M betaine enhancer solution is recommended. Also available as 2X master mix.

Description	Pk	Cat. No.
VWR® HiFi DNA polymerase, 1×50 µl	100 EU	**733-2617**
VWR® HiFi DNA polymerase, 1×250 µl	500 EU	**733-2618**
VWR® HiFi DNA polymerase, 2×250 µl	1.000 EU	**733-2619**
VWR® HiFi DNA polymerase, 5×250 µl	2.500 EU	**733-2620**

HIFI DNA POLYMERASE 2X MASTER MIX

VWR® HiFi DNA polymerase sets new standards for high fidelity PCR with up to 50X *Taq* fidelity. This chimeric DNA polymerase features ultra-low error rate and robust performance. VWR® HiFi DNA polymerase 2X master mix offers excellent coverage on difficult amplicons with low to high GC content. The long range capacity of the polymerase is 8,5 kb for genomic DNA and >12 kb for simple DNA targets.

- High fidelity enzyme: Measured up to 50X *Taq* fidelity
- Good coverage for amplification of DNA target with low to high GC %
- Long range capacity: 8,5 kb for genomic DNA and >12 kb for simple DNA targets
- Recommended for cloning, mutagenesis, SNP analysis, NGS application and other applications requiring extremely high fidelity
- Convenient reaction set-up

Optimal PCR conditions are supported by the innovative buffer conditions of the VWR® HiFi 2X master mix. For DNA samples with high GC content addition of 1 to 2 M betaine enhancer solution is recommended.

Description	Pk	Cat. No.
VWR® HiFi DNA polymerase 2X master mix, 2×1,25 ml	1 KIT	**733-2621**
VWR® HiFi DNA polymerase 2X master mix, 10×1,25 ml	1 KIT	**733-2622**
VWR® HiFi DNA polymerase 2X master mix, 50×1,25 ml	1 KIT	**733-2623**
VWR® HiFi DNA polymerase 2X master mix, 25×5 ml	1 KIT	**733-2624**

DNTPS

Ready to use molecular biology grade dNTP mixes and dNTP sets. The dNTP mix is designed to save hands-on time for researchers, and reduce the possibility of contamination by reducing pipetting. dNTP solutions are also available in sets of four individual dNTPs, each 100 mM. Both are convenient for use in DNA polymerisation reactions, DNA labelling and sequencing processes.

- Available as pre-mixed 10 or 25 mM solutions, or as sets of individual 100 mM dNTP solutions
- Both pre-mixed and sets have been functionally tested in PCR
- Purity >99% by HPLC
- Supplied in solution at pH 7,3 to 7,5

Description	Pk	Cat. No.
dNTP mix, 10 mM of each dA, dC, dG, and dT, 2×500 µl	1.000 µl	**733-1363**
dNTP set, separate vials of dA, dC, dG, dT, each 100 mM, 4×250 µl	1 SET	**733-1364**
dNTP mix, 25 mM of each dA, dC, dG, and dT, 2×1 ml	2.000 µl	**733-1854**
dNTP set, separate vials of dA, dC, dG, dT, each 100 mM, 16×250 µl	1 SET	**733-1855**

BETAINE ENHANCER, 5 M (5X)

Betaine enhancer is especially effective when used with high GC-rich regions or templates with a high degree of secondary structures. It has a decreasing effect on the primer melting temperature.

Description	Pk	Cat. No.
5X Betaine enhancer solution, 5 M, 5×1 ml	5 ml	733-1361

WATER FOR PCR

Long-term storage at –20 °C. Product expiry at –20 °C is stated on the label.

Description	Pack type	Pk Info	Pk	Cat. No.
Water for PCR	Plastic tube	6×5 ml	1 KIT	733-2573

ONE-STEP PCR CLEAN-UP, EXOCLEANUP FAST

VWR ExoCleanUp FAST PCR reagent is a one-step PCR clean-up reagent for optimal sequencing results, consisting of a balanced combination of a heat-labile exonuclease I (HL-ExoI) and a recombinant shrimp alkaline phosphatase (rSAP).

- Designed to clean-up PCR products in 5 minutes
- No need for spin columns or magnetic beads
- Treatment improves downstream applications, such as DNA sequencing and SNP analysis

Treatment of amplified PCR products with this reagent helps to remove residual primers and single-stranded DNA, and inactivates excess dNTPs by dephosphorylation. After enzymatic treatment at 37 °C for a minimum of 2 minutes, this reagent is completely inactivated by heating at 80 °C for a minimum of 3 minutes.

Description	Sample size	Pk	Cat. No.
ExoCleanUp FAST PCR clean-up reagent	1×0,2 ml	100 Tests	733-2592
ExoCleanUp FAST PCR clean-up reagent	1×1 ml	500 Tests	733-2593
ExoCleanUp FAST PCR clean-up reagent	10×1 ml	5.000 Tests	733-2594

PCR TUBES, 0,2 ML

PP, 0,2 ml. Designed to fit most popular brands of thermal cycler.

- Certified free from DNase, RNase and human DNA
- Available with domed or flat caps

Description	Colour	Capacity (ml)	Pk	Cat. No.
Individual PCR tubes, with attached flat caps	Clear	0,2	1.000	**732-0548**
Individual PCR tubes, with attached domed caps	Clear	0,2	1.000	**732-0547**

STRIPS OF PCR TUBES AND CAPS

PP. Designed to fit most popular brands of thermal cycler.

- Certified free from DNase, RNase and human DNA
- Autoclavable
- Available with domed or flat caps
- Sustainable design based on virgin resins

Description	Colour	Capacity (ml)	Pk	Cat. No.
PCR tubes				
8-tube strips for PCR, without caps	Clear	0,2	125	**732-1517**
8-tube strips for PCR, with detached flat cap strips	Clear	0,2	250	**732-1520**
8-tube strips for PCR, with detached domed cap strips	Clear	0,2	250	**732-1521**
8-tube strips for PCR, with individually attached domed caps	Clear	0,2	120	**732-0545**
qPCR tubes				
8-tube strips for qPCR, with individually attached, optically clear, flat caps	Clear	0,2	120	**211-0338**
8-tube strips for qPCR, without caps	White	0,2	125	**732-3391**

Description	Colour	Pk	Cat. No.
Cap strips for 0,2 ml PCR tube strips			
8-cap strips for 0,2 ml tube strips, domed	Clear	125	**732-1518**
8-cap strips for 0,2 ml tube strips, flat	Clear	125	**732-1519**

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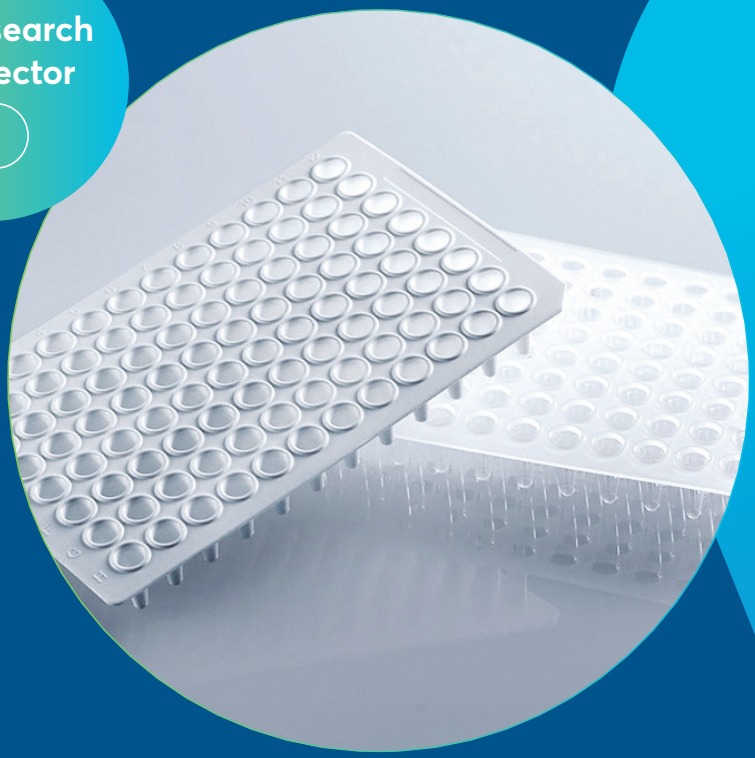


PB19049-EN

PCR REACTION STRIPS AND CAPS

PP. These 4-well ultra-clear reaction strips fit the Qiagen® RotorGene®.

- Free from RNase and DNase
- Sustainable design based on virgin resins

Description	Colour	Packed	Pk	Cat. No.
Strips of 4 PCR reaction wells, PP, for Qiagen® RotorGene®, with cap strips	Natural	250×4 well strips and 250 cap strips per pack	250	**732-1506**

732-2387

732-2386

732-2388

PCR PLATES, 96-WELL

PP. These PCR plates are compatible with most thermal cyclers.

- Smooth, thin, uniform well walls ensure accurate thermal transfer
- Plates are thin, flexible and easy to cut
- Certified free from DNase, RNase and human genomic DNA
- Printed alphanumeric labelling and cut corner simplifies plate orientation and sample identification

Working capacity: 200 µl

Description	Well colour	Well volume (ml)	Coloured lettering	Barcoded	Pk	Cat. No.
Standard profile, non skirted	Clear	0,20	Yes	No	100	**732-2387**
Standard profile, raised well	Clear	0,20	No	No	100	**211-0269**
Standard profile, half skirted	Clear	0,20	Yes	Yes	100	**732-2390**
Low profile, non skirted	Clear	0,15	Yes	No	100	**732-2386**
Low profile, fully skirted	Clear	0,10	No	No	100	**211-0297**
Low profile, half skirted	Clear	0,15	Yes	Yes	100	**732-2388**
Low profile, raised half skirted	Clear	0,15	Yes	Yes	100	**732-2389**
Standard profile, non skirted	White	0,20	Yes	No	100	**732-3388**
Low profile, non skirted	White	0,15	Yes	No	100	**732-3387**
Low profile, half skirted	White	0,15	Yes	Yes	100	**732-3389**
Low profile, raised half skirt	White	0,15	Yes	Yes	100	**732-3390**

Description	Colour	Pk	Cat. No.
Cap strips for 0,2 ml PCR tube strips			
8-cap strips for 0,2 ml tube strips, domed	Clear	125	**732-1518**
8-cap strips for 0,2 ml tube strips, flat	Clear	125	**732-1519**

PCR PLATES, 384-WELL

PP. These PCR plates are compatible with most thermal cyclers, and are ideal for high throughput screening thermal cycler applications.

- Smooth, thin, uniform well walls ensure accurate thermal transfer
- Wells are slightly raised to accommodate sealing mats, films or foils
- Plates are skirted to allow barcoding, and include a frosted labelling area
- Lot tested and certified free from DNase, RNase and human genomic DNA
- Printed alphanumeric labelling simplifies plate and sample identification

Working capacity: 25 µl

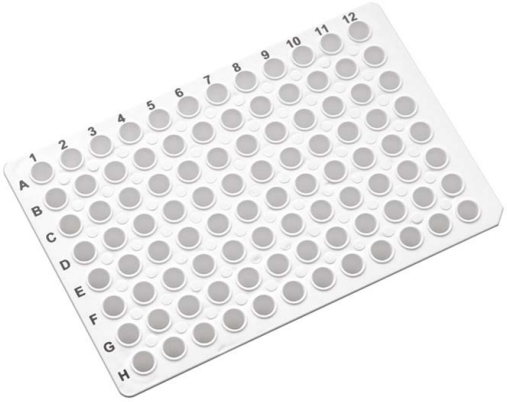
Description	Frame colour	Pk	Cat. No.
PCR plates, 384-well	Clear	100	**211-0305**

QPCR PLATES, 96-WELL

PP. These white qPCR plates and optically-clear cap closures are suitable for Real-Time qPCR applications. White qPCR plates are designed to enable sensitive and accurate fluorescence detection. When used together with ultra-clear caps or optical seals, these products will increase sensitivity and reduce variablility in qPCR assays.

- Smooth, thin, uniform well walls ensure accurate thermal transfer
- Wells are slightly raised to accept optically-clear strip caps or sealing film
- Certified free from DNase, RNase and human genomic DNA

Working capacity: 200 µl



Description	Frame colour	Well volume (ml)	Pk	Cat. No.
Fully skirted 96-well qPCR plates	White	0,2	100	**211-0315**

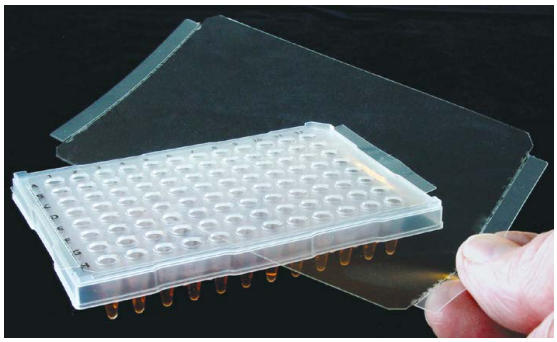
ULTRA-CLEAR FILMS FOR QPCR

Transparent polyester films with strong, non absorbing, non fluorescing, medical grade adhesive for superior performance in qPCR applications. Supplied non sterile.

- Recommended for temperatures from –40 to +120 °C
- Ultra-high optical clarity
- Certified free from DNase, RNase and nuclease

Each film L×D: 142,9×79,4 mm

Length with end tabs removed: 121,9 mm



Description	Pk	Cat. No.
Optically-clear, 50 µm thick films	100	**391-1258**
Optically-clear, 50 µm thick films for raised rim plates	100	**391-1295**

ADHESIVE PCR FILM SEALS

These heat resistant 50 µm thick films are designed for thermal cycling applications. Polypropylene films are not pierceable. For PCR applications, where piercing with pipette tips or robotic probes is required for product recovery, use aluminium foil films. For Real-Time PCR applications, where maximum optical clarity is required, use optically-clear polyester films.

- Recommended for temperatures from –40 to +120 °C
- Certified free from DNase, RNase and nuclease

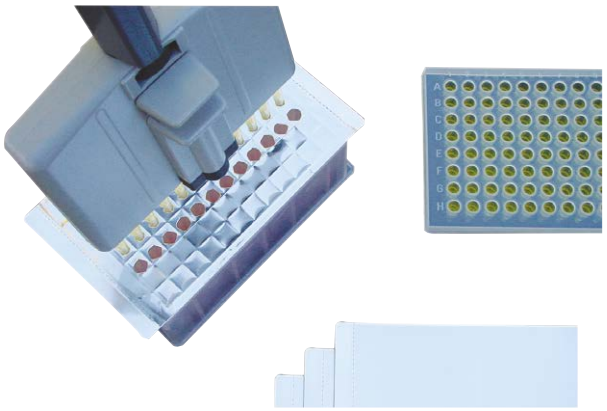
Each film L×D: 135,1×79,4 mm with sufficient sealing area for all PCR plates.

Length with end tabs removed: 123,1 mm

* stronger, thicker adhesive and cut to fit raised-rim plates

Description	Pk	Cat. No.
PP, non sterile	100	**391-1254**
PP, sterile	100	**391-1255**
PP, non sterile, strips to seal 2×8 wells	200	**731-0321**
Advanced PP films, non sterile*	100	**391-1294**

ADHESIVE PCR FOIL SEALS



These soft, non permeable 38 µm thick aluminium foils, with strong medical grade adhesive, eliminate the need for heat sealing devices or mats during thermal cycling. Compared to other aluminium foils, these foils have less tendency to roll back on themselves when removing the backing paper, and fit well to the plate during application. Sterile product is packed in tamper-evident bags of 25/bag.

- Recommended for temperatures from –80 to +120 °C
- Easily pierceable with pipette tips and robotic probes
- Excellent vapour barrier, virtually no sample evaporation
- Certified free from DNase, RNase and nuclease

Each foil L×D: 142,9×82,6 mm with sufficient sealing area for all PCR plates.

Length with end tabs removed: 125,4 mm

Description	Pk	Cat. No.
Aluminium foils, sterile	50	**391-1257**
Aluminium foils, non sterile	100	**391-1256**

ALUMINIUM FOIL SEALS FOR PCR AND STORAGE (96-WELL PLATES)

Aluminium foils, 38 µm thick, for use with 96-well plates. Fit inside the rim of raised rim plates. These foils have one partial-width end tab. Available non sterile only.

- Recommended for temperatures from –40 to +150 °C
- Certified free from DNase, RNase and nucleic acids

Each foil L×D: 127,0×77,8 mm, including single 9,5 mm end tab.

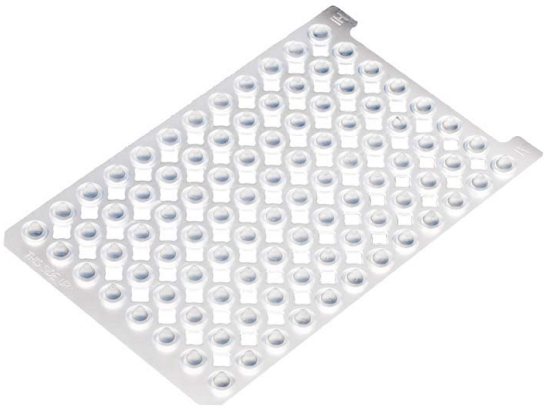
Description	Pk	Cat. No.
Aluminium foils for 96-well plates, non sterile	100	391-1282

SEALING FILM AND SEALING MATS FOR PCR PLATES

Transparent silicone mats fit most brands of 96-well PCR plates.

- Sustainable design based on virgin resins
- Can be cleaned and reused
- Autoclavable at 121 °C

Designed to reduce evaporation when cycling 96-well plates.



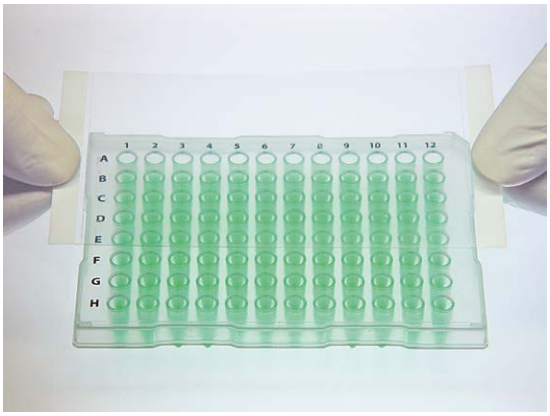
Description	Pk	Cat. No.
Sealing mats, silicone, round wells	5	732-0589

SEALING FILMS FOR QPCR, STORAGE AND CRYSTALLISATION, THERMALSEAL RTS™

50 µm polyolefin films with 50 µm inert encapsulated silicone adhesive. Especially suited for qPCR, storage and protein crystallisation applications. The encapsulated silicone adhesive is non tacky until pressed against the sealing surface, at which time adhesive is released only in sealing areas to form the strongest available heat resistant seal around each well on the plate.

- High optical clarity, minimal to no autofluorescence
- Chemically inert; no extractables except at extreme pH; DMSO resistant for HTS
- Heat resistant, recommended for temperatures from –70 to +100 °C
- Certified free from DNase, RNase, and nucleic acid

Sized to fit within the edges of raised-rim 96-well plates (76,2×133,4 mm). Two end tabs assist in positioning the film on the plate.



Description	Pk	Cat. No.
ThermaSeal RTS, non sterile	100	391-0189

PCR RACKS, REVERSIBLE

PP.

- PCR side of the rack has 168 wells that can hold 8-well or 12-well tube strips, or one 0,2 ml tube per well
- Opposite side of the rack has 40 wells that can hold 0,5 ml tubes
- Both sides of the rack have 12 wells that can hold 1,5 ml tubes
- Simple to use, removable hinged lid snaps in place on either side of the rack

Designed to hold 0,2; 0,5 or 1,5 ml tubes.

Assorted pack includes one each of blue, green, purple, yellow and orange.

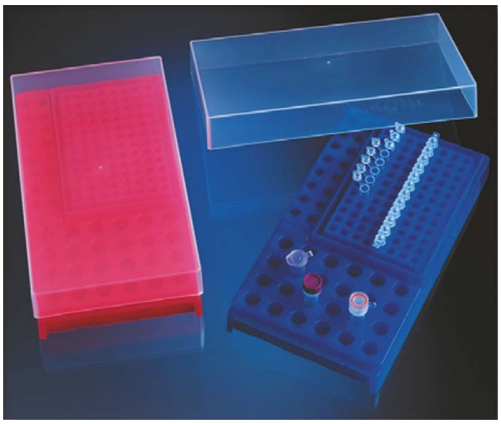
Description	Colour	Pk	Cat. No.
PCR racks	Assorted colours	5	211-0198

PCR TUBE RACK

PP.

- Separate removable 96-well rack holds a plate, 0,2 ml tubes or 0,2 ml tube strips
- Additional wells on the workstation accommodate 0,5; 1,5 or 2,0 ml tubes
- Autoclavable and freezable
- Sustainable design based on virgin resins

Suitable for preparing samples for cycling, or working with completed procedures.



Description	Colour	Pk	Cat. No.
PCR tube racks	Assorted colours	5	732-0810

MICROVOLUME SPECTROPHOTOMETERS, MYSPEC

mySPEC allows you to perform nucleic acid and protein microvolume concentration plus purity measurements.

- Large dynamic range (2 ng/µl to 15 µg/µl (dsDNA)) eliminates error-prone dilutions and calculations
- Stand-alone 8,4" touch screen versions are also available
- Automated data analysis after user-defined purity setting

mySPEC Twin has a cuvette port so that cell density or enzymatic measurements can be performed. It combines microvolume and cuvette functions with temperature control (30 to 40 °C) and stirrer (0; 50; 1000 min^{-1}).

Pre-configured modules allow for rapid, fully automated data analysis, including concentration and purity of RNA and DNA, protein measurements (A280, Bradford, Lowry, BCA, Pierce 660), determination of labelling efficiencies, colorimetric assays on enzymatic activities and cell density measurements.

Light source	Pulsed xenon
Detector	Charged-couple device (CCD) array
Absorbance range	0,02 – 300 A
Absorbance accuracy	±2% @ 0,76 A @ 257 nm
Output	USB
Sample size	1 µl
Electrical	12 V/30 W
Wavelength range	190 - 840 nm
Weight	2 kg

Description	Model	Pk	Cat. No.
Microvolume spectrophotometer with USB cable and software	mySPEC	1	**732-2533**
Stand-alone microvolume spectrophotometer	mySPEC Touch	1 SET	**732-2534**
Microvolume spectrophotometer with cuvette housing, USB cable and software	mySPEC Twin	1	**732-2535**
Stand-alone microvolume spectrophotometer with cuvette housing	mySPEC Twin Touch	1 SET	**732-2536**

THERMOSHAKER, THERMAL SHAKE TOUCH

The Thermal Shake Touch is designed for applications that require consistent, precise results. With heating and shaking capabilities, this low profile unit uses interchangeable blocks to accommodate a wide variety of tubes and microplates. The LCD touch screen enables faster setting of temperature, speed and time, which can all be viewed at once. Display features on-screen help topics with operational tips. Touch screen is compatible with rubber gloves used in laboratories.

- Easy to use 4,3» colour LCD touch screen allows the user to save, and visibly track progress through the live status bar, for five user-defined programs, each with five individual steps
- Suitable for rapid heating, high speed shaking and a pulse mode feature, ideal for quick vortex applications
- Timer with audible alarm, 1 minute to 99 hours, 59 minutes, heat function will automatically shut off if the unit recognises an internal issue
- USB port can transfer information to a flash drive for data logging, program storage and software updates

Program control capabilities allow user-programmable operation for automated use and memory for five separate, five-step programs. Adjustable temperature ramp rate feature separately defines the heating rates in increments of 0,5 °C/min. Single-point calibration mode for maximum temperature accuracy, the single-point calibration procedure allows the user to calibrate up to six different defined temperatures. Constructed from a high quality heat and chemically resistant polymer, so the housing remains cool to the touch throughout normal operating temperatures. Maximum temperature-limiting function ensures the temperature will not exceed user-defined limits, allowing control of temperature-sensitive samples. A hot top warning illuminates when the temperature reaches 40 °C, and remains on until the unit is cooled below 40 °C.

The unit's enhanced electronics and temperature sensor provide accurate, dependable temperature settings across the operating range of 5 to 35 °C, (maximum 80% relative humidity, non condensing). Applications include cell cultures, DNA, RNA and protein studies.

Supplied with 1,5 ml block (460-0210), rack and cover, additional blocks must be ordered separately. Note that Eppendorf Thermomixer R® blocks are compatible with the VWR® Thermal Shake Touch. Model with NIST traceable certificate is also available, this includes a 3-point NIST traceable calibration. The traceable certificate includes actual calibration measurement data and uncertainty. The calibration laboratory is ISO/IEC 17025 compliant.

*RT = Ambient

** Microtube blocks include a removable rack and cover

Model	Thermal Shake Touch
Heating speed (°C/min)	5 °C/min
Orbit (mm)	3 mm
Speed accuracy (%)	±2%
Speed range (min^{-1})	300 - 3000 min^{-1}
Temperature accuracy (°C)	±1 °C (between 20 and 45 °C) ±2 °C (above 45 °C)
Temperature control range (°C)	RT* +4...100 °C
Weight (kg)	4,4 kg
W×D×H (mm)	248×260×132 mm

Description	Pk	Cat. No.
Thermal Shake Touch, EU-plug	1	**460-0202**
Thermal Shake Touch, UK-plug	1	**460-0204**
Thermal Shake Touch, CH-plug	1	**460-0206**
Thermal Shake Touch, NIST certificate, EU-plug	1	**460-0203**
Thermal Shake Touch, NIST certificate, UK-plug	1	**460-0205**
Thermal Shake Touch, NIST certificate, CH-plug	1	**460-0207**

Description	Well size (mm)	For	No. of holes	Depth (mm)	Pk	Cat. No.
Interchangeable blocks for Thermal Shake Touch and Cooling Thermal Shake Touch						
Interchangeable tube block	Ø 7,9	30×0,5 ml tubes**	30	24,6	1	**460-0209**
Interchangeable tube block	Ø 11,1	24×1,5 ml tubes**	24	35,3	1	**460-0210**
Interchangeable tube block	Ø 11,5	24×2,0 ml tubes**	24	35,3	1	**460-0211**
Interchangeable tube block	Ø 12,3	24×12 mm tubes	24	35,3	1	**460-0212**
Interchangeable tube block	Ø 12,6	24×2,0 ml cryotubes	24	30,5	1	**460-0213**
Interchangeable tube block	Ø 16,8	9×5 ml Eppendorf tubes	9	49	1	**460-0329**
Interchangeable tube block	Ø 30,0	4×50 ml conical tubes	4	100,9	1	**460-0215**
Interchangeable tube block	Ø 17,3	9×15 ml conical tubes	9	104,4	1	**460-0214**
Interchangeable PCR plate thermal block with lid	Ø 6,4	96×0,2 ml PCR tubes	96	12,7	1	**460-0330**
Interchangeable 384 well plate thermal block with lid	Ø 4,0	1×384-well microplate	384	8,1	1	**460-0331**
Interchangeable thermal microplate block with lid	129,5×78,7	1×96-well microplate	1	23	1	**460-0208**

THERMOSHAKER, COOLING THERMAL SHAKE TOUCH

The Cooling Thermal Shake Touch is designed for applications that require consistent, precise results. With heating, cooling and shaking capabilities, this low profile unit uses interchangeable blocks to accommodate a wide variety of tubes and microplates. The LCD touch screen enables faster setting of temperature, speed and time, which can all be viewed at once. Display features on-screen help topics with operational tips. Touch screen is compatible with rubber gloves used in laboratories.

- Easy to use 4,3» colour LCD touch screen allows the user to save and visibly track progress through the live status bar for five user-defined programs, each with five individual steps
- Suitable for rapid heating, cooling and high speed shaking and a pulse mode feature, ideal for quick vortex applications
- Timer with audible alarm, 1 minute to 99 hours, 59 minutes, heat function will automatically shut off if the unit recognises an internal issue
- USB port can transfer information to a flash drive for data logging, program storage and software updates

Program control capabilities allow user-programmable operation for automated use and memory for five separate, five-step programs. Adjustable temperature ramp rate feature separately defines the heating and cooling rates in increments of 0,5 °C/min. Single-point calibration mode for maximum temperature accuracy, the single-point calibration procedure allows the user to calibrate up to six different defined temperatures. Constructed from a high quality heat and chemical resistant polymer, so the housing remains cool to the touch throughout normal operating temperatures. Maximum temperature-limiting function ensures the temperature will not exceed user-defined limits, allowing control of temperature-sensitive samples. A hot top warning illuminates when the temperature reaches 40 °C, and remains on until the unit is cooled below 40 °C.

The unit's enhanced electronics and dual-temperature sensors provide accurate, dependable temperature settings across the operating range of 5 to 35 °C, (maximum 80% relative humidity, non condensing). Applications include cell cultures, DNA, RNA, hybridisation and protein studies.

Supplied without blocks, blocks must be ordered separately. Note that Eppendorf Thermomixer R® blocks are compatible with the VWR® Cooling Thermal Shake Touch. Model with NIST traceable certificate is also available, this includes a 3-point NIST traceable calibration. The traceable certificate includes actual calibration measurement data and uncertainty. The calibration laboratory is ISO/IEC 17025 compliant.

** Microtube blocks include a removable rack and cover

Description	Pk	Cat. No.
Cooling Thermal Shake Touch, EU-plug	1	**460-0196**
Cooling Thermal Shake Touch, UK-plug	1	**460-0198**
Cooling Thermal Shake Touch, CH-plug	1	**460-0200**
Cooling Thermal Shake Touch, NIST certificate, EU-plug	1	**460-0197**
Cooling Thermal Shake Touch, NIST certificate, UK-plug	1	**460-0199**
Cooling Thermal Shake Touch, NIST certificate, CH-plug	1	**460-0201**

Model	Cooling Thermal Shake Touch
Cooling rate (°C/min)	Above ambient: 2 - 3 °C/min Below ambient: 0,5 - 1,0 °C/min
Heating speed (°C/min)	5 °C/min
Orbit (mm)	3 mm
Speed accuracy (%)	±2%
Speed range (min^{-1})	300 - 3000 min^{-1}
Temperature accuracy (°C)	±0,5 °C (between 20 and 45 °C) ±2 °C (below 20 °C and above 45 °C)
Temperature control range (°C)	From 17 below ambient to 100
Weight (kg)	4,4 kg
W×D×H (mm)	248×260×132 mm

Description	Well size	For	No. of holes	Depth	Pk	Cat. No.
Interchangeable blocks for Thermal Shake Touch and Cooling Thermal Shake Touch						
Interchangeable tube block	Ø 7,9 mm	30×0,5 ml tubes**	30	24,6 mm	1	**460-0209**
Interchangeable tube block	Ø 11,1 mm	24×1,5 ml tubes**	24	35,3 mm	1	**460-0210**
Interchangeable tube block	Ø 11,5 mm	24×2,0 ml tubes**	24	35,3 mm	1	**460-0211**
Interchangeable tube block	Ø 12,3 mm	24×12 mm tubes	24	35,3 mm	1	**460-0212**
Interchangeable tube block	Ø 12,6 mm	24×2,0 ml cryotubes	24	30,5 mm	1	**460-0213**
Interchangeable tube block	Ø 16,8 mm	9×5 ml Eppendorf tubes	9	49 mm	1	**460-0329**
Interchangeable tube block	Ø 30,0 mm	4×50 ml conical tubes	4	100,9 mm	1	**460-0215**
Interchangeable tube block	Ø 17,3 mm	9×15 ml conical tubes	9	104,4 mm	1	**460-0214**
Interchangeable PCR plate thermal block with lid	Ø 6,4 mm	96×0,2 ml PCR tubes	96	12,7 mm	1	**460-0330**
Interchangeable 384 well plate thermal block with lid	Ø 4,0 mm	1×384-well microplate	384	8,1 mm	1	**460-0331**
Interchangeable thermal microplate block with lid	129,5×78,7 mm	1×96-well microplate	1	23 mm	1	**460-0208**

THERMOSHAKER, THERMAL SHAKE *LITE*

The combination of heating/cooling and shaking makes the Thermal Shake *lite* microtube shaking incubator ideal for many life science research applications in molecular biology, biochemistry and clinical chemistry. Its compact footprint incorporates an intuitive control panel with large multicolour display, allowing users to easily program and view temperature, time and speed settings.

- Choice of eight interchangeable aluminium blocks accommodate PCR plates and tubes ranging from 0,2 to 15 ml
- Fine tune speed control
- Rapid heating and cooling
- Compact footprint

Supplied without blocks, blocks must be ordered separately.

Model	Thermal Shake *lite*
Heating speed (°C/min)	6,5 °C/min
Orbit (mm)	3 mm
Speed range (min^{-1})	300 - 1500 min^{-1}
Temperature accuracy (°C)	±0,5 °C
Temperature control range (°C)	14 °C below ambient to 100 °C
Weight (kg)	8,5 kg
W×D×H (mm)	330×166×240 mm

Description	Pk	Cat. No.
Thermal Shake *lite*	1	**460-0249**

Description	For	No. of holes	Pk	Cat. No.
Accessories				
Aluminium block	0,5 ml tubes	54	1	**460-0251**
Aluminium block	1,5 ml tubes	40	1	**460-0250**
Aluminium block	0,5 and 1,5 ml tubes	26 + 24	1	**460-0255**
Aluminium block	2,0 ml tubes	40	1	**460-0256**
Aluminium block	15 mm tubes	24	1	**460-0253**
Aluminium block	0,2 ml PCR tubes or plates	96	1	**460-0252**
Aluminium block	Water bath block (115×73×38 mm)	-	1	**460-0254**
Aluminium block	96-well ELISA plate	-	1	**460-0257**

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