The Perfect Fit

Reagents and Consumables for PCR & qPCR

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analytikjena
An Endress+Hauser Company

It's the Details That Matter

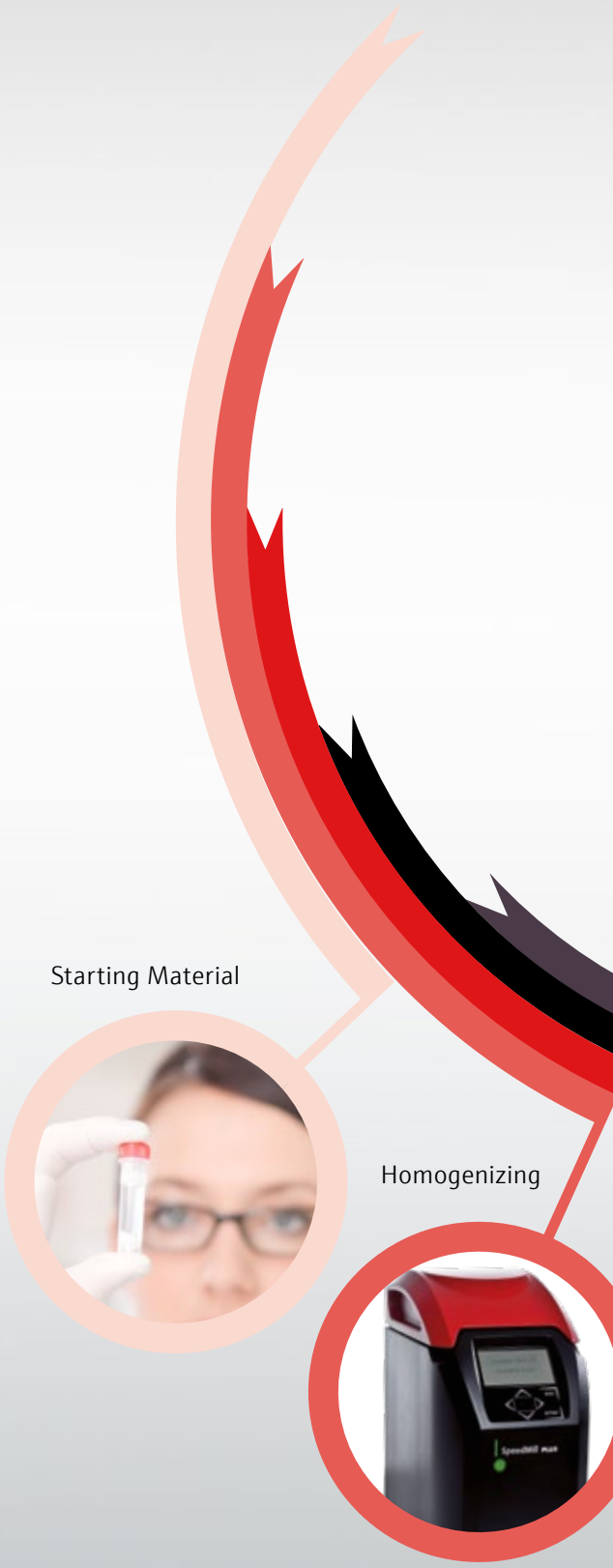
Analytik Jena provides a comprehensive range of consumables and instruments for PCR and qPCR. We aim to offer time-saving processes, long-lasting equipment, and an easy-to-use user interface.

Our thermal cycler portfolio fulfills these promises with its intuitive products that come with advanced extras as standard and are built with the highest-quality materials. PCR is one of the most established methods in molecular biology. qPCR offers the additional advantages of monitoring the amplification in real-time and the final quantitative evaluation of data. Even so, using the wrong consumable can limit the specificity and performance of your assay.

This is why Analytik Jena also offers a range of reagents and consumables to always ensure the best possible results. All plastic material, sealing films, polymerases, and master mixes are optimized to work with our thermal cyclers and real-time thermal cyclers. In addition, our expert teams provide excellent application and service support.

Take our word for it

- **Save time, costs, and hassle:**
  Ideally prepared enzymes, solutions, and additives
- **Find solutions that are a perfect fit for your application:**
  A wide range of single components or ready-to-use master mixes
- **Achieve reproducible results:**
  Perfectly optimized PCR and qPCR plastics as well as sealing foils



The Perfect Fit

Reagents and Consumables for PCR & qPCR

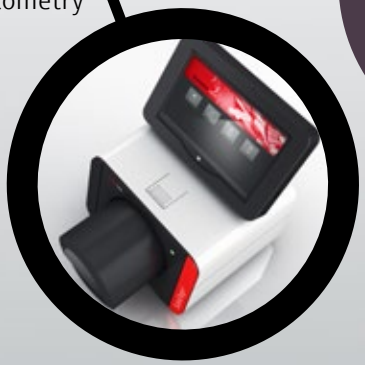
Don’t compromise when it comes to your data. Choose Analytik Jena consumables and see how small details make a huge difference.

Electrophoresis and BioImaging

Real-Time PCR and Target-Specific Assays

PCR Devices, Reagents and Consumables

Liquid Handling and Automation



UV/Vis Spectro-photometry

Manual or Automated Nucleic Acid Isolation

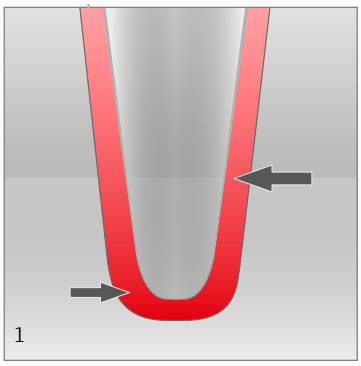
The Importance of Lab Plasticware

Lab plasticware may seem like it's a dime a dozen, but not all PCR consumables are created equal. Analytik Jena offers the perfect consumable for each individual block format of PCR or qPCR thermal cyclers. Benefit from our expert knowledge and optimize your data results.

An accurate fit is essential for performance

Consumables vary widely by dimension. This is a result of the production speed, the specifics of the tool used, and the quality of the basis material. If the plastic material does not fit the geometry of the thermal block exactly, air gaps between the plastic and the block occur. This negatively affects heat transfer and the sample's final temperature.

All plasticware provided by Analytik Jena is adapted to the thermal cyclers' blocks. In addition to exemplifying optimal geometry, our consumables also have particularly thin walls, which enhances the effect of quick temperature transfers and leads to 100 % reliable amplification results.



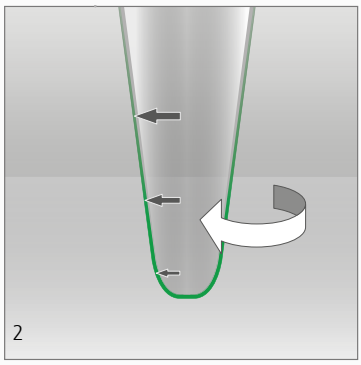
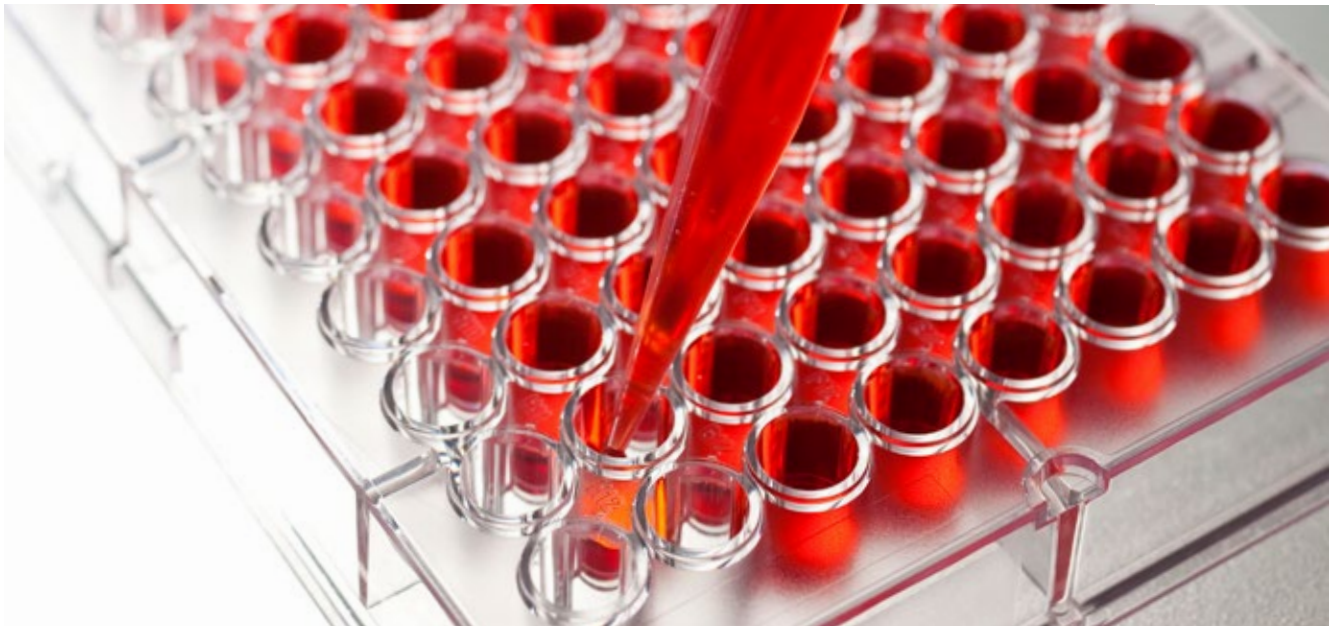


Figure 1: If the plastic is not an exact fit, air gaps occur between the well and the sample block. This inhibits a quick temperature transfer to the sample, which results in non-uniform temperatures and decreasing specificities.

Figure 2: When the wells fit the geometry of the thermal block exactly and have thin walls, quick temperature changes can occur, resulting in specific PCR products accelerated processes.



Comparison of real-time signals using white or clear microplates

It might seem like the well color in qPCR plasticware is a trivial detail. This is not the case! Microplates are commonly available in standard clear, opaque black and white. Although clear plates are easier to use because the well walls offer better visibility of liquids and although black plates ensure the lowest background readings, white microplates provide the most outstanding performance. Clear plates create problems with light scattering through the plastic, which then results in a loss of intensity. Thanks to the light reflection that occurs in the wells of white plates, signal intensity is reinforced, and Ct values for real-time assays are enhanced.

Customer Benefits

- Optimally amplifies products and improves Ct values
- Enhances intensities for ideal end point analysis
- Offers best reproducibility of detected fluorescence
- Doesn't influence running costs
- Includes small changes that have a huge effect
- DNase-free and RNase-free plastics available

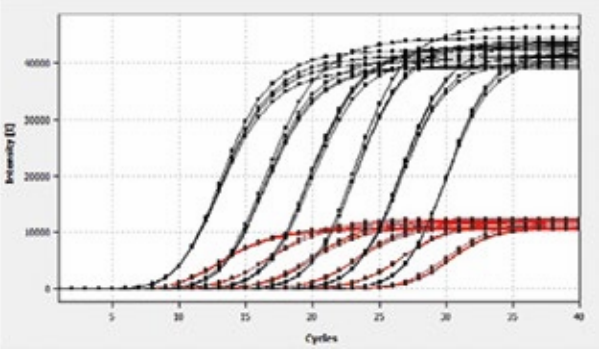


Figure 3: Comparison of white and clear microplates used in the amplification of the actin gene in a serial dilution (10x), from 10^6 to 10^1 of tobacco gDNA using innuMIX qPCR MasterMix SyGreen. The use of white microplates in real-time PCR experiments leads to total fluorescence intensities, which are more than four times higher than when using transparent plastic ware.

No.	Copies	Clear	Ct values	
			White	ΔCt
Std 1	10^6	10.74	8.77	1.97
Std 2	10^5	14.67	12.06	2.61
Std 3	10^4	17.59	15.30	2.29
Std 4	10^3	20.73	18.50	2.23
Std 5	10^2	24.13	21.95	2.18
Std 6	10^1	28.07	25.61	2.46

Amplification plots (black): White microplate, $R^2 = 0.99943$, efficiency = 0.99
Amplification plots (red): Transparent microplate, $R^2 = 0.99931$, efficiency = 0.98

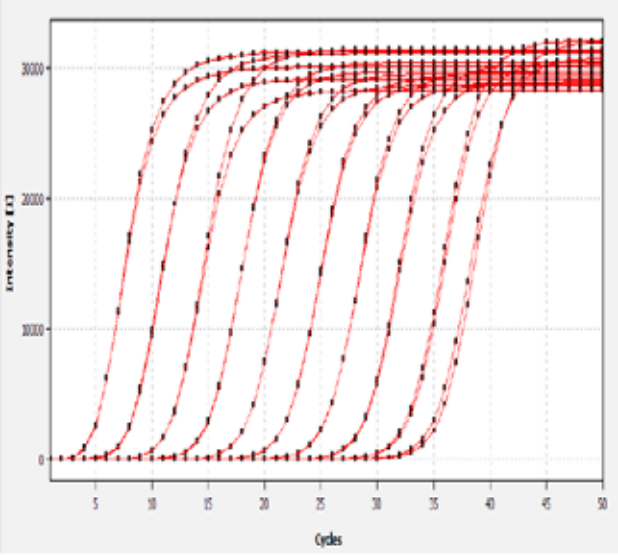
Enzymes and Master Mixes

Analytik Jena offers optimized solutions. Our reagents are ideally adapted to our corresponding technology. Combining the optimized device with the best-suited consumable ensures that data will be monitored under ideal conditions, which, in turn, promises a reliable basis for downstream analysis and result evaluation.

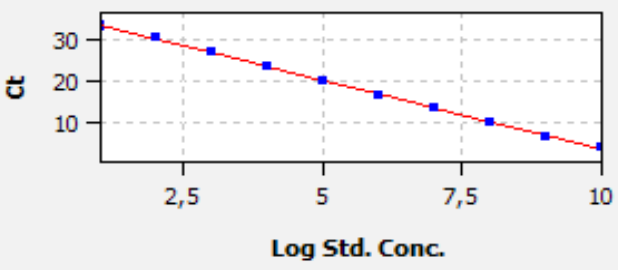
PCR and qPCR amplifications by using thermal and real-time thermal cyclers is state-of-the art and not a challenge in principle. Nevertheless applications down to the dectection limit as well as high concentrated samples can become difficult especially in case device and chemsitry are not ideal balanced. Analytik Jena reponse to the daily application requirements are optimized components and master mixes for PCR and real-time PCR, that exactly fits to the described needs.

Customer Benefits

- Creates ideal reaction conditions for usage with Analytik Jena thermal cycler and real-time thermal cycler
- Offers quick preparation and intuitive procedures
- Promises excellent result reproducibility
- Provides a wide choice of complementary systems



A: Amplification plot linear view



C: Amplification plot logarithmic view

No.	Mean Ct value	Δ Ct value
Standard 1	3.76	-
Standard 2	6.55	2.79
Standard 3	9.97	3.42
Standard 4	13.11	3.14
Standard 5	16.44	3.33
Standard 6	19.92	3.48
Standard 7	23.27	3.35
Standard 8	26.74	3.47
Standard 9	30.41	3.67
Standard 10	33.60	3.19

B: Determination of Ct values

Figure 4: The amplification in a high dynamic range was tested by 10 dilution steps in a serial dilution (10x) by using innuMIX qPCR SyGreen MasterMix. The difference determined between the single concentrations with approximately 3.33 cycles fits ideally with the target range of ΔCt 3.3 to 3.6 cycles. Additionally, all replicates were added to a standard line with the result of $R^2 = 0.999$ and a PCR efficiency of 1.

Polymerase for PCR and qPCR: innuTaq enzymes

When used in combination with innuTaq DNA polymerase, Analytik Jena's thermal cyclers demonstrate unrivaled amplification performance. Amplified products are free of unspecific products and primer dimers. This results in highly specific and clear bands.

Customer Benefits

- Offers extreme thermal stability of enzymes
- Provides products for standard, hot start, real-time, and *rapid*PCR
- Delivers optimized 10x PCR buffers and $MgCl_2$ solution
- Works with a high amplification speed of up to 200 bp/sec

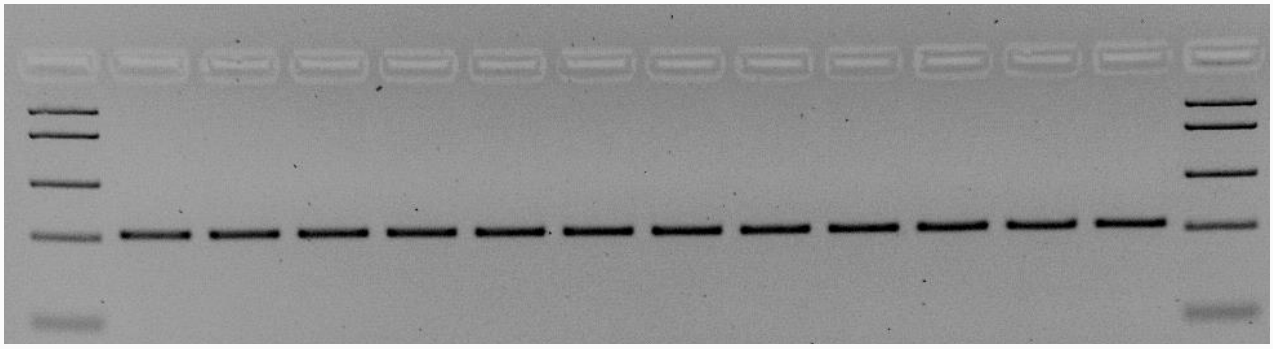


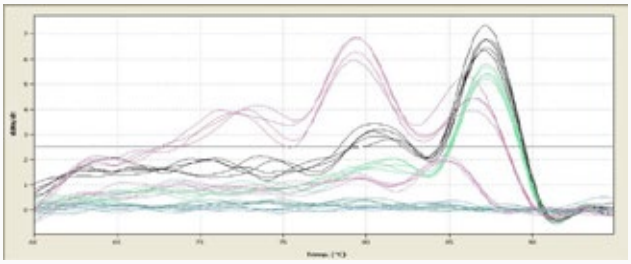
Figure 5: A 210-bp fragment of the β-Globin gene was amplified using innuTaq Hot-A DNA polymerase. All bands showed identical intensity over 12 technical replicates. This stems from the perfect alignment between thermal block, plasticware, and chemistry. Lane 1 and 14: DNA ladder; Lane 2–13: 210 bp fragment of β-Globin

Ready-to-Use master mixes for PCR & qPCR: innuMIX and innuDRY kits

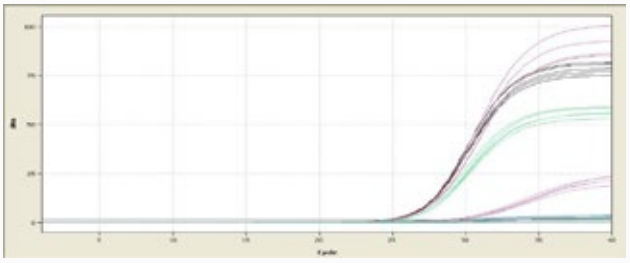
Whether you're working with intercalating dyes or probe assays, innuMIX master mixes are the ideal amplification reagents for a variety of real-time PCR applications. The concentration of these mixes has doubled. This simplifies setup enormously, reduces hands-on steps significantly, and minimizes sources of error. In addition, the innuDRY mixes come lyophilized, which means they can be delivered and stored at room temperature – an added bonus for the environment.

Customer Benefits

- 2x master mixes, including a specific Taq DNA polymerase, high-quality dNTPs, and an optimized buffer system
- Also available with gel loading and intercalating dyes
- Promises high reproducibility and PCR efficiency
- Is easy to use for fast qPCR or PCR preparation
- Added bonus: innuDRY Mixes are lyophilized, utilizing environmentally friendly delivery at room temperature



A: Melting curves



B: Amplification plots

PCR UV Cabinets and Workstations

For reliable and reproducible results when working with and handling DNA, a contamination-free environment is essential. Especially for master mix preparation in PCR or real-time qPCR, it is vital to strictly avoid any possible influence of unwanted nucleic acids.

Analytik Jenas UVP PCR UV Cabinets and Workstations offer ideal conditions to control potential PCR contamination with built-in 254 nm UV tubes for inactivation of DNA and RNA between experiments. UV irradiation acts as a genotoxic agent and generates DNA photoproducts like dimeric pyrimidine.Because its native structure is destroyed, DNA consisting of photoproducts cannot be amplified. Using UV irradiation as a standard laboratory practice will help reduce surface and airborne contaminants in the chamber, as well as maintaining a clean work area to save time and reduce unnecessary repeat experiments.

Customer Benefits

- Safe decontamination without additional reagents
- Integrated timer for defined, measured irradiation treatment
- Up to three short-wave UV light sources included
- Three-stage filter available consisting of pre-filter, activated carbon filter and HEPA filter
- UV air circulator and chamber UV lamps for additional decontamination

Application

254 nm UV light was irradiated to human DNA (0.1 ng/ml on parafoil) for 0 min, 30 min and 60 min. After, a real-time PCR system was used to determine the SRY-gene of human DNA and monitor the influence on the amplification. Only 60 minutes of UV irradiation is needed to destroy the native structure of human DNA with a spot concentration of 0.1 ng/ml. The outstanding performance of the UVP PCR Cabinets and Workstations makes contamination-free work between different experiments both simple and very reliable. No additional reagents and thus costs are necessary, as UV light at 254 nm offers a perfect solution for ideal decontamination.

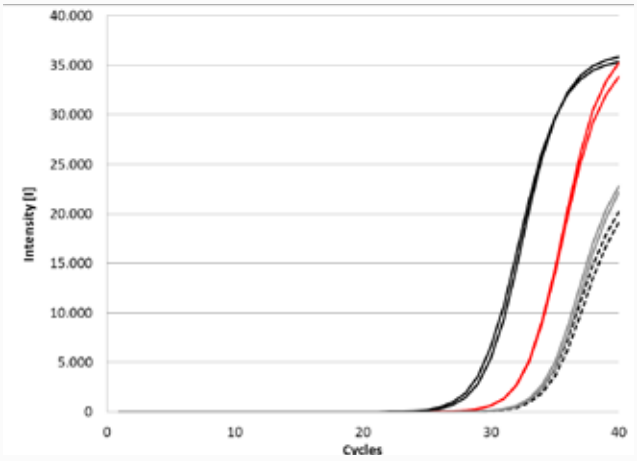


Fig.10: The amplification plots show a shift of mean Ct values from 25.9 before UV to 29.3 after 30 min UV and to 30.9 after 60 min UV. The Ct value of NTC's is 31.4.
Black: 0 min irradiation;
Red: 30 min irradiation;
Grey: 60 min irradiation;
Black (scattered): NTC

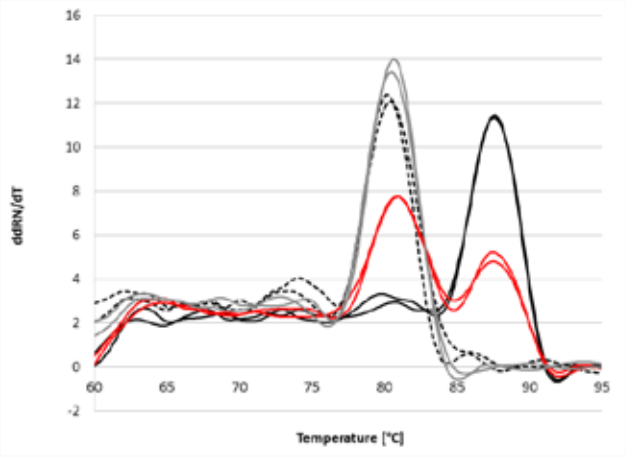


Fig. 11: Melting temperatures of the PCR products differ significantly between the different UV irradiation times. Without UV treatment, the Tm is 87.6 °C, the specific Tm of the PCR product. After 30 min UV irradiation, the melting curve shows two peaks at 87.6 °C and 80.4 °C. The Tm of NTC's and PCR products after 60 min decontamination is shifted to 80.4 °C. This peak results from the generation of unspecific primer dimers.

Order Information

PCR

Polymerases and master mixes

Order number	Description/Quantity	
845-EZ-1000500	innuTaq DNA Polymerase - 500 Units	Thermostable DNA Polymerase
845-EZ-3000500	innuTaq HOT-A DNA Polymerase - 500 Units	Hot-start DNA Polymerase
845-AS-1400100	innuMIX Green PCR MasterMiX – 100 reactions	Ready-to-use master mix including loading dye
845-AS-1400200	innuMIX Green PCR MasterMiX – 200 reactions	Ready-to-use master mix including loading dye
845-AS-1700100	innuMIX Standard PCR MasterMix – 100 reactions	Ready-to-use master mix
845-AS-1700200	innuMIX Standard PCR MasterMix – 200 reactions	Ready-to-use master mix
845-AS-2100100	innuDRY Standard PCR MasterMix - 100 reactions	Lyophilized master mix for PCR
845-AS-2100200	innuDRY Standard PCR MasterMix - 200 reactions	Lyophilized master mix for PCR

dNTP's, DNA ladders, buffers and additives

Order number	Description/Quantity	
845-AS-1100250	inNucleotide Set (100 mM), - 4x 0.25 ml	Ready-to-use nucleotide mix
845-AS-9000100	50x inNucleotide Mix (12.5 mM) - 2x 0.5 ml	Set of 4 separate dNTP solutions
845-ST-1010100	innuSTAR 100 bp DNA Ladder Express - 500 µl	DNA ladder from 100- 1000 bp
845-ST-1010500	innuSTAR 100 bp DNA Ladder Express – 5x 500 µl	DNA ladder from 100- 1000 bp
845-ST-1020100	innuSTAR 1 kb DNA Ladder Express - 500 µl	DNA ladder from 300-10,000 bp
845-ST-1020500	innuSTAR 1 kb DNA Ladder Express – 5x 500 µl	DNA ladder from 300-10,000 bp
845-ST-3010006	6x Loading Dye Bromphenolblue - 6 x 1.0 ml	Ready-to-use loading dye
845-ST-4010006	6x Loading Dye Orange G - 6 x 1.0 ml	Ready-to-use loading dye

Selection Chart - Plastic ware PCR

Order number	Description/Quantity	Biometra TOne	Biometra TAdvanced		Biometra TRIO			FlexCycler²				SpeedCycler²	
		96 / 96 G	60 / 60 G	96 / 96 G / 96 SG	30	48	Combi	96 / 96 G	Twin 48 / 48 G	Twin 30	Twin Combi	96 LPR	96 SP / SPR
Plastic ware (Single tubes)													
844-70016-0	0.2ml thin-walled tube, clear - 1,000 pieces	✔	✔	✔		✔	✔	✔	✔		✔		✔
844-70017-0	0.5 ml thin-walled tube, clear - 1,000 pieces		✔		✔		✔			✔	✔		
844-70084-0	8 Well Strip (0.2 ml; High Profile), transparent with lid (flat) - 120 pieces	✔				✔	✔	✔	✔		✔		✔
844-70085-0	8 Well Strip (0.2 ml; Low Profile), transparent with lid (flat) - 120 pieces	✔		✔		✔	✔	✔	✔		✔		✔
844-70033-0	96 Well PCR Plate (0.2 ml; High Profile), non-skirted, clear - 100 pieces	✔		✔				✔					✔
844-70034-0	96 Well PCR Plate (0.2 ml; High Profile), half-skirted, clear - 100 pieces	✔		✔				✔					✔
844-70035-0	96 Well PCR Plate (0.2 ml; Low Profile), full-skirted, clear - 100 pieces	✔		✔				✔					✔
844-70043-0	Sealing foil (77 x 140 mm), adhesive, transparent, peeling - 100 pieces	✔		✔				✔					✔
844-70044-0	Sealing foil (77 x 140 mm), adhesive, aluminum, piercing and peeling - 100 pieces	✔		✔				✔					✔
844-70050-0	96 Well Microplate LP (20 µl), clear - 25 pieces											✔	
844-70070-0	Sealing foil (74 x 40 mm), adhesive, Aluminium, piercing and peeling - 25 pieces											✔	
844-70075-0	Sealing folie (74 x 40 mm), adhesive, transparent, peeling - 25 pieces											✔	
Laboratory notebook													
844-MA205-2	Laboratory Notebook												
844-MA205-4	Laboratory Notebook - 12 pieces												

Order Information

Real-time PCR

Master mixes

Order number	Description/Quantity	
845-AS-1900100	innuDRY qPCR MasterMix Probe - 100 reactions	Lyophilized master mix for real-time PCR
845-AS-1900200	innuDRY qPCR MasterMix Probe - 200 reactions	Lyophilized master mix for real-time PCR
845-AS-1200100	innuMIX qPCR MasterMix Probe - 100 reactions	Master mix for real-time PCR
845-AS-1200200	innuMIX qPCR MasterMix Probe - 200 reactions	Master mix for real-time PCR
845-AS-1201000	innuMIX qPCR MasterMix Probe - 1000 reactions	Master mix for real-time PCR
845-AS-1320100	innuMIX qPCR DSGreen Standard - 100 reactions	Master mix for real-time PCR including intercalating dye
845-AS-1320200	innuMIX qPCR DSGreen Standard - 200 reactions	Master mix for real-time PCR including intercalating dye
845-AS-1320500	innuMIX qPCR DSGreen Standard - 500 reactions	Master mix for real-time PCR including intercalating dye
845-AS-1310100	innuMIX qPCR SyGreen Sensitive - 100 reactions	Master mix for real-time PCR including intercalating dye
845-AS-1310200	innuMIX qPCR SyGreen Sensitive - 200 reactions	Master mix for real-time PCR including intercalating dye
845-AS-1310500	innuMIX qPCR SyGreen Sensitive - 500 reactions	Master mix for real-time PCR including intercalating dye

Selection Chart - Plastic ware real-time PCR

Order number	Description/Quantity	qTOWER³ Family 96 / 96 G
Plastic ware		
847-0501000602	RoboStrip® 8 well strip low profile (0.1 ml) polypropylene white - 125 Strips	✔
847-0501001102	RoboStrip® 8 well strip low profile (0.1 ml) polypropylene white incl. sealing foil - 125 Strips	✔
844-70086-0	8 Well Strip (0.2 ml; High Profile), white without lid - 120 pieces	✔
844-70087-0	Optical 8 Well Lid Chain, transparent, flat - 120 pieces	✔
844-70036-0	96 Well PCR Plate (0.2 ml; High Profile), non-skirted, white - 100 pieces	✔
844-70037-0	96 Well PCR Plate (0.2 ml; High Profile), half-skirted, white - 100 pieces	✔
844-70038-0	96 Well PCR Plate (0.2 ml; Low Profile), full-skirted, white - 100 pieces	✔
844-70045-0	Optical sealing foil (77 x 140 mm), transparent, peeling - 100 pieces	✔
846-050-258	Optical sealing foil (77 x 140 mm), adhesive, transparent, peeling able - 100 pieces	✔
Laboratory notebook		
844-MA205-2	Laboratory Notebook	
844-MA205-4	Laboratory Notebook - 12 pieces	


qTOWER3

Overall Support

A global network of product, application and service specialists work hand-in-hand to help you fulfill your daily demands.

We support you with:

- Choosing the best technique and instrumental configuration for your application
- Setting up instruments, accessories and methods to meet your individual needs
- Offering ongoing support, trainingand service worldwide

Analytik Jena

Your Partner in Life Science

Headquarters

Analytik Jena AG
Konrad-Zuse-Str. 1
07745 Jena · Germany

Phone +49 3641 77 70
Fax +49 3641 77 9279
info@analytik-jena.com
www.analytik-jena.com

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