

## **Instructions for Use**

Eppendorf twin.tec® PCR Plates  
English (EN)

## **1 About this manual**

### **1.1 About this manual**

Pay attention to the corresponding operating manuals when using this product in combination with other products or devices. This document does not replace the instructions for use provided with other products or devices.

1. Before using the product, read this document in full.
2. Please ensure that you have this document available when using the product.

## **2 Safety**

### **2.1 Intended use**

Eppendorf twin.tec PCR Plates have been designed for single use in PCR applications.

The product can be used for training, routine and research laboratories in the areas of life sciences, industry or chemistry. This product is intended for research purposes only. Eppendorf provides no guarantee for other applications. The product is not suitable for use in diagnostic or therapeutic applications. The product may only be used by specialists who have received training in the areas described above.

### **2.2 Personal protective equipment**

Personal protective equipment serves to ensure the safety and protection of the user when working with the product.

Personal protective equipment must comply with country-specific regulations and the regulations of the laboratory.

### **2.3 Residual risks when used as intended**

If the product is not used as intended, the installed safety devices may not function correctly. To reduce the risk of personal injury and material damage and to avoid dangerous situations, please observe the general safety instructions.

#### **2.3.1 Personal injury**

##### **2.3.1.1 Biological hazards**

Pathogenic biological agents can harm your health and the environment.

- Observe the national regulations and the biosafety level of your laboratory.
- Wear suitable personal protective equipment.

- Observe the Safety Data Sheets and instructions for use for the accessories.
- For instructions regarding the handling of germs and biological material in risk group II or above, please refer to the "Laboratory Biosafety Manual" (source: World Health Organization, Laboratory Biosafety Manual, check the most current edition).

### **2.3.1.2 Chemical hazards**

Leaking substances may present a risk to health.

- Only use the product in a visually perfect and undamaged condition from intact packing.
- Observe the maximum filling volume.
- Remove seals carefully. When removing the selected sealing system, liquid may squirt out.
- Seal the plates before centrifugation. Observe the information in the operating manual provided with the device.
- Store and transport the product in such a way that ensures substances do not leak from the product.
- Do not use liquid nitrogen in combination with this product. The product and the seals may become damaged during the thawing process and burst.
- Do not use the product as a cryogenic tube.

Samples may become contaminated if the plates are used multiple times.

- Only use the plates once.
- Dispose of the plates after using them just once. Comply with the corresponding disposal regulations for the substances and samples used.
- Pay attention to the rules applicable for your laboratory.

Risk of contamination from damaged plates during centrifugation.

During centrifugation, the plates are exposed to heavy loads. If used incorrectly, they may become damaged and release their substances.

- Observe the maximum permitted centrifugation forces.
- Close the plates carefully.
- Read the operating manual provided for the centrifuge used.
- Centrifuge stacked plates at a low speed only.
- Please note that organic solvents may reduce the mechanical strength of the plates. If in doubt, contact your contact person.
- Carry out a test run to determine maximum centrifugation stability. Reduce the centrifugation forces for the test run.

## 2.3.2 Material damage

### 2.3.2.1 Incorrect handling

#### Use in incorrect temperature range

Extreme temperatures (e.g. when deep-freezing or autoclaving) influence the material. Mechanical strength, dimensions and the shape of the consumable change.

- Only use consumables that are suitable for the temperature range and procedure selected.

#### Sample loss due to incorrect equipment

Please note that the use of plates in incorrect equipment (e.g. incorrect rotor/adaptor or mixer insert) may destroy the plates and lead to the plate contents leaking.

- Take note of the height and diameter of the plates. Only use suitable centrifuge inserts or mixer thermoblocks.
- Use the adapters intended for these plates.

## 3 Product description

The Eppendorf twin.tec PCR Plate is a polycarbonate/polypropylene single plate for PCR applications. Different sealing options ensure evaporation protection.

### 3.1 Plate variant

#### BioBased Consumables

BioBased Consumables are single-use vessels made of bio-based raw materials. The polypropylene comes from renewable sources (e.g. waste or residues of vegetable oils) that are reprocessed and put to new use.

These products have the same quality and performance features as Eppendorf single-use vessels made of fossil raw materials. The processed quantities of bio-based raw materials are declared and subjected to inspection by an independent system. As a participant in this system, Eppendorf is certified.

You can find information on the bio-based raw material content according to the mass balance approach on the label of the direct packing. For further information, refer to the respective product pages at [www.eppendorf.com](http://www.eppendorf.com).

The BioBased Consumables are biodegradable and non-compostable. Please comply with the official disposal regulations in your laboratory.

#### LoBind

The LoBind Plates have been developed to facilitate a better recovery rate. The material used for this purpose can reduce target molecule loss and increase yield in PCR and other molecular analyses. The performance of the LoBind effect may vary considerably depending on the specific application.

**Trace**

The Trace Plates additionally have a lot number and expiry date lasered on to the polycarbonate frame of the plate. With this information, the plate batch can be traced quickly and easily, even at later times. With the standard plates, the expiry date and lot number are only found on the packing and not the plates themselves. The Trace Plates are also the only plates to have additional orientation lines which considerably simplify orientation on the plate and the identification of individual Wells. This leads to more ergonomic handling and thus accelerates work and reduces pipetting errors.

**real-time PCR**

Unlike standard plates, the real-time PCR Plates have white Wells. They are intended for the real-time PCR. The use of plates with white Wells may increase the signal output for the real-time PCR and therefore improve the detection limit. This is the case with dyes in low concentrations or with low fluorescence intensity. In general, over-radiation may occur depending on the device if plates with white, signal-amplifying Wells are used and the concentration of dyes is too high. In this case, reduce the concentration of the probe or the dye.

**Forensic DNA Grade**

The Forensic DNA Grade Plates have been designed to meet the strict requirements of forensic applications. They comply with ISO 18385. Testing is carried out by an external test laboratory (accredited according to ISO 17025). Lot-specific certificates record the purity criteria.

**3.2 Barcoded plates**

The Eppendorf twin.tec PCR Plates are also available with barcodes. Eppendorf SafeCode Plates are provided with barcodes and are available from stock. There is also the option of applying a customer-specific barcode.

<b>Pre-barcoded plates (SafeCode)</b>	<b>Customer-specific barcoded plates</b>
Pre-barcoded	Customer-specific barcodes
Available from stock	Production on request
Print	Label
ep-unique ID (serial number); unique for all Eppendorf SafeCode Consumable	Customer-specific ID (serial number)
Code 128 (2 letters + 10 digits)	Customer-specific choice of code 128 (8 or 10 digits), code 39, or Interleaved 2 of 5
	Optional prefix

Pre-barcoded plates (SafeCode)	Customer-specific barcoded plates
2D DataMatrix Code on front side	1D barcode and plain text as specified by customer possible on all four sides.
1D barcode on both short sides and front side	
Plain text on front side	
SafeCode Feature	No SafeCode Feature

### 3.3 SafeCode plates

The SafeCode plates comes with a code in the form of an ID. This ID corresponds to a serial number and is unique across all Eppendorf SafeCode Consumables, lots, Vials, tubes and plates. This facilitates a precise tracking of samples in the laboratory.

This ID links all the relevant production data and product-specific documents, such as lot number, technical data and certificate of conformity. This data can be accessed via the Eppendorf webpage at <https://www.eppendorf.com/safecode-data> (Service&Support > Quality and Certificates > Certificates).

#### Codes

The serial number is coded on the front with a 2D DataMatrix code and a 1D code. The 1D code is also located on the two short sides. The code is printed in black on a white background to ensure legibility and suitability for use in machinery, and is particularly resistant to scratching.

Eppendorf uses the Reed Solomon algorithm (ECC200 -Error Correcting Code) for the error correction of the DataMatrix code. The ECC200 DataMatrix symbology ensures that DataMatrix codes are still legible with surface damage of up to 25%. This code is unique within the Eppendorf SafeCode-Consumables portfolio and allows for the clear identification of samples. Use of the SafeCode-Consumables is also facilitated by the plain text (human readable code).

#### SafeCodes

The ep-unique ID SafeCode is a serial number issued by Eppendorf that is unique to every Eppendorf SafeCode Consumable. This also prevents any mix-up across lots or products (Eppendorf Vials, vessels and plates).

Characteristic	ep-unique ID SafeCode
DataMatrix format	14 × 14
Structure	<div> <div>ep-unique ID</div> <div>ep1234567890</div> </div> <p>ep + 10 digits</p>
Availability	From stock
Code type	2D: Data Matrix, ECC200 1D: Code 128
Uniqueness	Unique for every Eppendorf SafeCode Consumable
ISO standard	Codes: ISO/IEC 16022, ISO/IEC 15417 Printed material: ISO/IEC 15416, ISO/IEC 29158

- i** SafeCodes may become damaged and illegible due to scratching, fading, autoclaving and other influences.

SafeCode Consumables are not suitable for autoclaving. Autoclaving damages the SafeCode and can result in a loss of information.

## Use


Check the compatibility of your system (reading device and software) before using the various SafeCode Consumables. Also check whether data is transmitted without error in your systems.

- i** Multiple use of SafeCode Consumables can generate inconsistent data. This can lead to a loss of information and a mix-up of samples. Consider the consequences of losing information or mixing up the samples. Implement measures to reduce this risk where appropriate.

## 4 Application

For the PCR procedure, refer to the working instructions of the reagent manufacturers or the lab protocols.

## 4.1 Removing the plates from the packing

-  Be aware of the risk of contamination when removing the plates.

### Separating the plates

The plates must not be removed diagonally.

The semi-skirted and unskirted plates are stacked during delivery. The Wells of the upper plates fit into the Wells of the lower plates. In order to achieve the best possible temperature transfer during the PCR, the Wells of the Eppendorf twin.tec PCR Plates have very thin walls. During removal, the outer Wells could get jammed, which may result in weaknesses or damage.

1. Remove the upper plates vertically.
2. If you are met with resistance when removing the upper plates, check the plates for signs of weakness or damage.

### Avoid contamination

1. Remove the required number of plates.
2. Carefully seal the bag with the remaining plates.

This will prevent any contamination during storage.

## 4.2 Filling the plates

Fill the twin.tec PCR Plates directly or in a suitable rack.

## 4.3 Sealing the plates

Seal the plates with Cap Strips, adhesive PCR foil or film, or Heat Sealing foil or film. For the best possible evaporation protection, we recommend Heat Sealing with Eppendorf Heat Sealing Foil or Eppendorf Heat Sealing Film.

## 5 Technical data

	<b>PCR Plate 96</b>			
	<b>skirted</b>	<b>semi-skirted</b>	<b>unskirted</b>	<b>divisible</b>
Material	Polycarbonate (frame), polypropylene (wells)			
Chemical resistance	Refer to Application No. 56: The best material for original Eppendorf Tubes® and Plates in our download center.			
Dimensions	According to ANSI/SLAS 1-2004 to ANSI/SLAS 4-2004 (SLAS: Society for Laboratory Automation and Screening)			
Max. filling volume	150 µL	250 µL	250 µL	250 µL
Autoclavability	121 °C, 20 min, unsealed.  The stability of the single-use items may be compromised. Autoclaving is not recommended for the SafeCode Consumables and customer-specific barcoded plates, as this process may affect the resilience of the marking.			
Storage before use	Protect from direct sunlight and UV light.  Store in a cool and dry place.			
Sample storage	Store plates containing samples in an upright position. The maximum filling volume at low temperatures must not exceed 80 % of the nominal volume.			
	120 µL	200 µL	200 µL	200 µL
Operational temperature	-80 °C- 120 °C			

	<b>PCR Plate 96 low profile</b>		<b>PCR Plate 384</b>
	<b>unskirted</b>	<b>divisible</b>	<b>skirted</b>
Material	Polycarbonate (frame), polypropylene (wells)		
Chemical resistance	Refer to Application No. 56: The best material for original Eppendorf Tubes® and Plates in our download center.		
Dimensions	According to ANSI/SLAS 1-2004 to ANSI/SLAS 4-2004 (SLAS: Society for Laboratory Automation and Screening)		
Max. filling volume	150 µL	150 µL	45 µL



	PCR Plate 96 low profile		PCR Plate 384
	unskirted	divisible	skirted
Autoclavability	<p>121 °C, 20 min, unsealed.</p> <p>The stability of the single-use items may be compromised. Autoclaving is not recommended for the SafeCode Consumables and customer-specific barcoded plates, as this process may affect the resilience of the marking.</p>		
Storage before use	<p>Protect from direct sunlight and UV light.</p> <p>Store in a cool and dry place.</p>		
Sample storage	<p>Store plates containing samples in an upright position. The maximum filling volume at low temperatures must not exceed 80 % of the nominal volume.</p>		
	120 µL	120 µL	36 µL
Operational temperature	-80 °C- 120 °C		

Drawings with the product dimensions can be found in the download area of the respective Eppendorf product page at [www.eppendorf.com](http://www.eppendorf.com).

## 5.1 Centrifugation stability

The centrifugation stability of consumables generally depends on the following conditions:

- Properties of the consumable (e.g. material, shape)
- Combination of centrifuge, rotor and, if applicable, adapter
- Accuracy of fit of the consumable in the rotor bore or adapter
- Centrifugation parameters (speed/g-force, temperature, centrifugation time)
- Overall weight of consumable and contents
- Physical and chemical properties of the centrifuged liquid

After centrifugation, check the integrity of the consumable.

**i** In non-refrigerated centrifuges, the temperature in the rotor chamber, rotor and sample may increase to over 40°C, depending on the run time, g-force (rcf)/speed and ambient temperature.

- Please note that this will reduce the centrifugation stability of the micro test tubes and plates.
- Please note the temperature resistance of the samples.

- i** The use of organic solvents reduces the mechanical resistance of the tubes.
- To determine the maximum centrifugation stability for your applications, perform a test run at a lower g-force.



The Eppendorf twin.tec PCR Plates can be centrifuged at max. 2250 xg in a suitable plate carrier in the swing-bucket rotor. Check that the plate is positioned correctly in the adapter and rotor.

Applied testing conditions:

- Centrifuge 5920R; rotor S-4 x 750
- Centrifugation with a suitable plate carrier
- Centrifugation temperature: 4 °C – 40 °C
- Centrifugation time: 90 min
- Sample: aqueous solutions and suspensions (density ≤ 1.0 g/mL)
- Filling quantity: maximum filling volume

For the rotor and bucket to be used, including the corresponding removal tool, please refer to the operating manual of the corresponding centrifuge.

## 5.2 Eppendorf purity grade

	PCR clean	Forensic DNA Grade
		

Batch testing (certified) for the following purity criteria:

Human-DNA-free	■	■
DNase-free	■	■
RNase-free	■	■
PCR-Inhibitoren-free	■	■

The Eppendorf twin.tec PCR Plates microbiology have additional purity characteristics. In addition to the PCR clean purity criterion, these plates are free of bacterial DNA. They are produced under strictly controlled conditions according to ISO 9001 and ISO 13485. Additionally, gassing with ethylene oxide is performed.

In addition to internal process controls, each batch of products with the Steril, Protein-free, PCR clean or Biopur purity grades is tested and certified by an accredited external lab. Batch-related certificates can be found online at [www.eppendorf.com/certificates](http://www.eppendorf.com/certificates).

## 6 Ordering information

The ordering information for Eppendorf PCR Film & Foil, PCR Tubes, PCR Tube Strips, PCR Cap Strips (real-time PCR and standard PCR, as well as customer-specific barcoded twin.tec PCR Plates, can be found at [www.eppendorf.com](http://www.eppendorf.com).

**U.S. Patents and U.S. Design Patents are listed on** [www.eppendorf.com/ip](http://www.eppendorf.com/ip).

Description	Order no.
<b>Adapter</b>	
for 1 PCR plate (96 wells), for 96-well PCR plates, used in A-4-81-MTP/Flex, A-4-62-MTP, A-2-DWP-AT and A-2-DWP 2 pcs.	5825 711 009
for 1 PCR plate (384 wells), for 384-well PCR plates, used in A-4-81-MTP/Flex, A-4-62-MTP, A-2-DWP-AT and A-2-DWP 2 pcs.	5825 713 001
<b>Eppendorf twin.tec® 96 real-time PCR Plate</b>	
skirted, 150 µL	
Forensic DNA Grade, white, wells white, 10 plates, individually wrapped	0030 129 636
PCR clean, blue, wells white, 25 plates	0030 132 505
PCR clean, white, wells white, 25 plates	0030 132 513
semi-skirted, 250 µL	
Forensic DNA Grade, white, wells white, 10 plates, individually wrapped	0030 129 644
PCR clean, blue, 25 plates	0030 132 530
PCR clean, white, 25 plates	0030 132 548
unskirted, low profile, 150 µL	
PCR clean, white, 20 plates	0030 132 700
PCR clean, blue, 20 plates	0030 132 718
<b>Eppendorf twin.tec® PCR Plate 384</b>	
skirted, wells colorless, 2D SafeCode	
PCR clean, colorless, 25 plates	0030 113 578

Description	Order no.
skirted, 45 µL	
PCR clean, colorless, 25 plates	0030 128 508
PCR clean, yellow, 25 plates	0030 128 516
PCR clean, green, 25 plates	0030 128 524
PCR clean, blue, 25 plates	0030 128 532
PCR clean, red, 25 plates	0030 128 540
Forensic DNA Grade, colorless, 10 plates, individually wrapped	0030 129 628
45 µL	
PCR clean, colorless, 300 plates	0030 128 931
PCR clean, yellow, 300 plates	0030 128 940
PCR clean, green, 300 plates	0030 128 958
PCR clean, blue, 300 plates	0030 128 966
PCR clean, red, 300 plates	0030 128 974
<b>Eppendorf twin.tec® PCR Plate 384 LoBind®</b>	
skirted, 45 µL	
PCR clean, colorless, 25 plates	0030 129 547
<b>Eppendorf twin.tec® PCR Plate 96</b>	
skirted, wells colorless, 2D SafeCode	
PCR clean, colorless, 25 plates	0030 113 560
semi-skirted, 250 µL	
PCR clean, colorless, 25 plates	0030 128 575
PCR clean, yellow, 25 plates	0030 128 583
PCR clean, green, 25 plates	0030 128 591
PCR clean, blue, 25 plates	0030 128 605
PCR clean, red, 25 plates	0030 128 613
PCR clean, colorless, 300 plates	0030 128 869
Forensic DNA Grade, colorless, 10 plates, individually wrapped	0030 129 610
skirted, 150 µL	
PCR clean, colorless, 25 plates	0030 128 648
PCR clean, yellow, 25 plates	0030 128 656
PCR clean, green, 25 plates	0030 128 664

Description	Order no.
PCR clean, blue, 25 plates	0030 128 672
PCR clean, red, 25 plates	0030 128 680
PCR clean, colorless, 300 plates	0030 128 770
PCR clean, yellow, 300 plates	0030 128 788
PCR clean, green, 300 plates	0030 128 796
PCR clean, blue, 300 plates	0030 128 842
PCR clean, red, 300 plates	0030 128 850
Forensic DNA Grade, colorless, 10 plates, individually wrapped unskirted, 150 µL	0030 129 601
PCR clean, yellow, 20 plates	0030 133 315
PCR clean, green, 20 plates	0030 133 323
PCR clean, red, 20 plates	0030 133 340
unskirted, 250 µL	
PCR clean, colorless, 20 plates	0030 133 366
PCR clean, blue, 20 plates	0030 133 390
<b>Eppendorf twin.tec® PCR Plate 96 LoBind®</b>	
semi-skirted, 250 µL	
PCR clean, colorless, 25 plates	0030 129 504
skirted, 150 µL	
PCR clean, colorless, 25 plates	0030 129 512
PCR clean, blue, 25 plates	0030 129 580
PCR clean, red, 25 plates	0030 129 598
PCR clean, green, 25 plates	0030 129 660
PCR clean, yellow, 25 plates	0030 129 679
skirted	
PCR clean, green, 300 plates	0030 129 555
PCR clean, yellow, 300 plates	0030 129 563
PCR clean, orange, 300 plates	0030 129 571
<b>Eppendorf twin.tec® PCR Plate 96, divisible</b>	
unskirted, divisible, 150 µL	
PCR clean, colorless, 20 plates	0030 133 358

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Eppendorf twin.tec® PCR Plates  
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<b>Description</b>	<b>Order no.</b>
PCR clean, blue, 20 plates	0030 133 382
unskirted, divisible, 250 µL	
PCR clean, colorless, 20 plates	0030 133 374
PCR clean, blue, 20 plates	0030 133 404
<b>Eppendorf twin.tec® PCR Plate 96, low profile</b>	
unskirted, 150 µL	
PCR clean, colorless, 20 plates	0030 133 307
PCR clean, blue, 20 plates	0030 133 331
<b>Eppendorf twin.tec® Trace PCR Plate 384</b>	
skirted, 45 µL	
PCR clean, colorless, 25 plates	0030 129 792
<b>Eppendorf twin.tec® Trace PCR Plate 96</b>	
skirted, 150 µL	
PCR clean, colorless, 25 plates	0030 129 768
PCR clean, crystal blue, 25 plates	0030 129 776
PCR clean, fuchsia, 25 plates	0030 129 784
PCR clean, colorless, 25 plates	0030 129 822
<b>Eppendorf twin.tec® Trace PCR Plates 384 BioBased</b>	
skirted, 45 µL	
PCR clean, colorless, ACT, 25 plates	0030 531 051
<b>Eppendorf twin.tec® Trace PCR Plates 384 BioBased LoBind</b>	
skirted, 45 µL	
PCR clean, colorless, ACT, 25 plates	0030 531 078
<b>Eppendorf twin.tec® Trace PCR Plates 96 BioBased</b>	
skirted, 150 µL	
PCR clean, colorless, ACT, 25 plates	0030 129 849
PCR clean, spring green, ACT, 25 plates	0030 129 857
semi-skirted, 250 µL	
PCR clean, colorless, ACT, 25 plates	0030 531 043

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Eppendorf twin.tec® PCR Plates

English (EN)

Description	Order no.
<b>Eppendorf twin.tec® Trace PCR Plates 96 BioBased LoBind</b>	
semi-skirted, 250 µL	
PCR clean, colorless, ACT, 25 plates	0030 531 060
skirted, 150 µL	
PCR clean, colorless, ACT, 25 plates	0030 531 086
<b>Eppendorf twin.tec® microbiology PCR Plate 384</b>	
skirted, 45 µL	
PCR clean, colorless, 10 plates	0030 129 342
PCR clean, blue, 10 plates	0030 129 350
<b>Eppendorf twin.tec® microbiology PCR Plate 96</b>	
skirted, 150 µL	
PCR clean, colorless, 10 plates	0030 129 300
PCR clean, blue, 10 plates	0030 129 318
semi-skirted, 250 µL	
PCR clean, colorless, 10 plates	0030 129 326
PCR clean, blue, 10 plates	0030 129 334
<b>twin.tec adapter for LC 480</b>	
for PCR plate 96, unskirted	0030 133 412

Your local distributor: [www.eppendorf.com/contact](http://www.eppendorf.com/contact)

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