

Understanding the Differences in PCR Plastics Format

Publication Number MAN0025596 Revision A.0



- Description 1
- PCR plate formats 1
- PCR tube formats 6
- PCR sealing closures 8
- How to use the PCR Plastics Selection Tool 9
- Quality 13



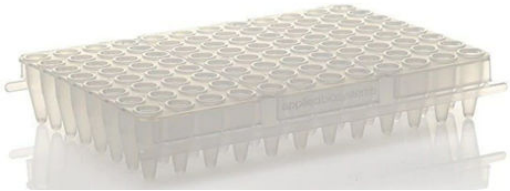

Description

The items listed throughout this user bulletin are representative of available plastics and other consumables. Choosing the correct plastic for your instrument is important for ensuring success. Use the qPCR and PCR Plastics Selection Tool to find the right plastic for you:

<http://www.thermofisher.com/findplastics>.



PCR plate formats

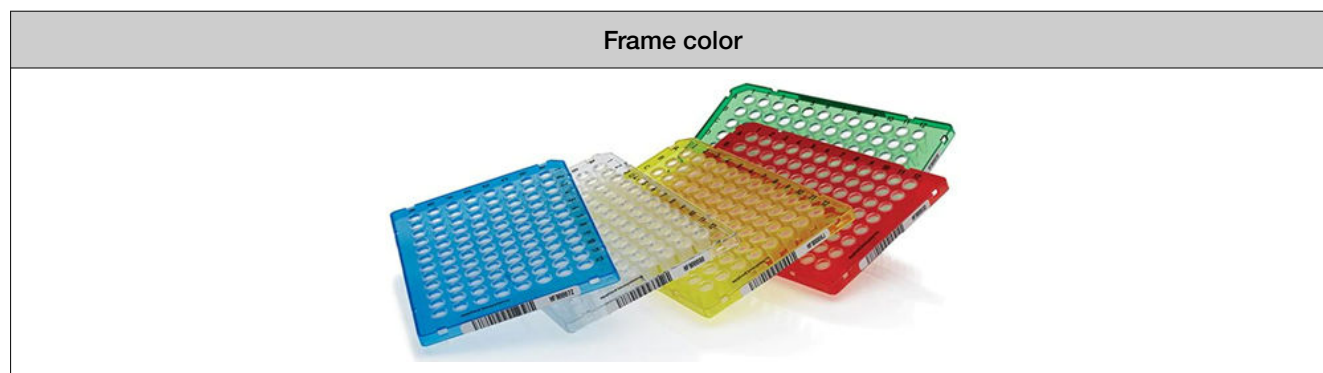
Number of wells	
96 wells	384 wells
	
Most commonly used.	For use with high-throughput automation platforms.

Number of wells, segmented ^[1,2]	
8 wells	24 wells
	
A segmented 96-well plate that can be broken into 8-tube strips.	A plate provided with 24 wells.
32 wells	48 wells
	
A segmented 96-well plate that can be broken into three 32-well plates.	A plate provided with 48 wells.




[1] 8 and 32-well PCR plates often come as segmented 96-well plates that can easily be broken apart.

[2] Convenient format allows for a lower number of samples.




Material	
Polypropylene frame and wells	Polycarbonate frame with polypropylene wells
	
<ul style="list-style-type: none"> • Can withstand rapid changes in temperature. • Minimizes absorption of reaction components. 	Same polypropylene features but also contains a rigid frame compatible with high-throughput robotic applications.






Available in various colors to provide visual organization and identification of samples.



Well color ^[1]		
Clear or colored	White	Frosted
		
<p>Recommended for end-point PCR applications.</p>	<ul style="list-style-type: none"> Ensures the highest level of sensitivity for qPCR reactions. Recommended for low copy number samples. 	<p>Alternative to white plastic for qPCR if the fluorescence detector is oversaturated.</p>


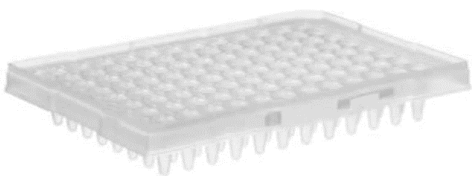
^[1] Refer to qPCR instrument manufacturer for recommendations on well color for proper plate calibration.

Skirt type		
Skirted	Semi-skirted	Non-skirted
		
<ul style="list-style-type: none"> Full height panel surrounding the edge of the plate. Fits securely over a thermal cycler with a raised block. Enhanced mechanical strength for use with robotic platforms. 	<ul style="list-style-type: none"> Short panel around the edge of the plate. Adequate support during pipetting. Mechanical strength for robotic handling. 	<ul style="list-style-type: none"> No panel surrounding the edge of the plate. Fits the block of most thermal cyclers and real-time PCR instruments. Not suitable for robotic applications.

Automation compatible
<ul style="list-style-type: none"> • Skirted and semi-skirted plates provide a necessary side surface for grippers to grasp. • Polycarbonate-framed plates are able to withstand the forces exerted by grippers.

Thermal block fit		
96-well 0.2 mL (standard profile)	96-well 0.1 mL (low profile/fast)	384-well
		
<ul style="list-style-type: none"> • Most commonly used. • 0.3 mL maximum well volume. 	<ul style="list-style-type: none"> • Reduced height reduces evaporation and enhances thermal conductivity. • 0.2 mL maximum well volume. 	<ul style="list-style-type: none"> • Ideal for high-throughput applications. • 40 μL maximum well volume.

Alphanumeric labeling	
Printed	Engraved/molded
	
High contrast, easy to read.	May improve sealing of the outer edges.

Deck type	
Flat	Raised
	
<ul style="list-style-type: none"> • Universal fit with most thermal cyclers. • Facilitates sealing and handling. 	<ul style="list-style-type: none"> • Required for some thermal cycler lids and instruments. • Balances lid pressure without the need for adapters.

Frame notch



A modified corner of a PCR plate that some instruments require for optimal fit.



Barcoding






Allows for easy recording and tracking of samples in high-throughput experiments.



PCR tube formats



To find the correct PCR plate or tube for your instrument use the qPCR and PCR Plastics Selection Tool: <http://www.thermofisher.com/findplastics>.

Tube format	
Single	Strip tubes
	
Individual PCR tubes with separate or attached caps provide the flexibility to set up the exact number of reactions to run.	Offered in 8 or 12 tube strips with separate or attached caps.

Well profile	
0.1 mL (low profile)	0.2 mL (standard profile)
	
<ul style="list-style-type: none"> Fits 0.1 mL thermal blocks. Reduced height minimizes air space above the reaction to reduce evaporation and enhance thermal conductivity. 	<ul style="list-style-type: none"> Fits 0.2 mL thermal blocks. Most commonly used.

Tube color

Available in various colors to provide visual organization and identification of samples.




Cap type	
Domed	Flat
	
<ul style="list-style-type: none"> • For end-point PCR applications. • May be required for instruments with concave lids. 	<ul style="list-style-type: none"> • For qPCR applications, use optical or ultra-clear caps. • May be required for instruments with flat lids.

Cap format ^[1]	
Separate	Attached
	
Strip caps can be used with standard or low profile PCR strip tubes and plates.	Can open and close tubes independently to prevent sample contamination.

^[1] To ensure compatibility select strip tubes and caps from the same brand, Applied Biosystems™ or Thermo Scientific™

PCR sealing closures


To find the correct PCR plate or tube for your instrument use the qPCR and PCR Plastics Selection Tool: <http://www.thermofisher.com/findplastics>.

Closure type		
Sealing films	Sealing foils	Strip caps
		
<p>Creates a tight seal over wells to prevent evaporation and cross-contamination.</p> <ul style="list-style-type: none"> • Clear adhesive films—For PCR, economical and sticky. • Optical sealing films—For qPCR applications, non-tacky pressure sensitive adhesive. 	<p>Creates a tight seal over wells to prevent evaporation and cross-contamination.</p> <ul style="list-style-type: none"> • For use with light-sensitive samples. • Pierceable with pipette tip for sample transfer. 	<p>Seals securely with minimal pressure. Can be used with strip tubes or PCR plates.</p> <ul style="list-style-type: none"> • Domed caps—For PCR. • Flat caps—For qPCR applications, maximizes the passage of fluorescence signals and minimize distortion.

How to use the PCR Plastics Selection Tool

1. Go to <http://www.thermofisher.com/findplastics>.

qPCR and PCR Plastics Selection Tool



Find the right fit, **fast**

Select your real-time PCR (qPCR) or thermal cycler (PCR) instrument from the drop-down menu, and easily find the plates, tube strips, single tubes, caps, seals, adhesive films, and accessories compatible with your instrument.

1. Manufacturer

2. Model

3. Block Format

Please choose a manufacturer, model, and block format first.

2. Select the instrument manufacturer.

1. Manufacturer

2. Model

3. Block Format

Thermo Fisher Scientific / Applied Biosystems
Bio-Rad
Agilent
Analytik Jena / Biometra
Axygen
Bioer / Bulldog
Bioneer

3. Select the instrument model.

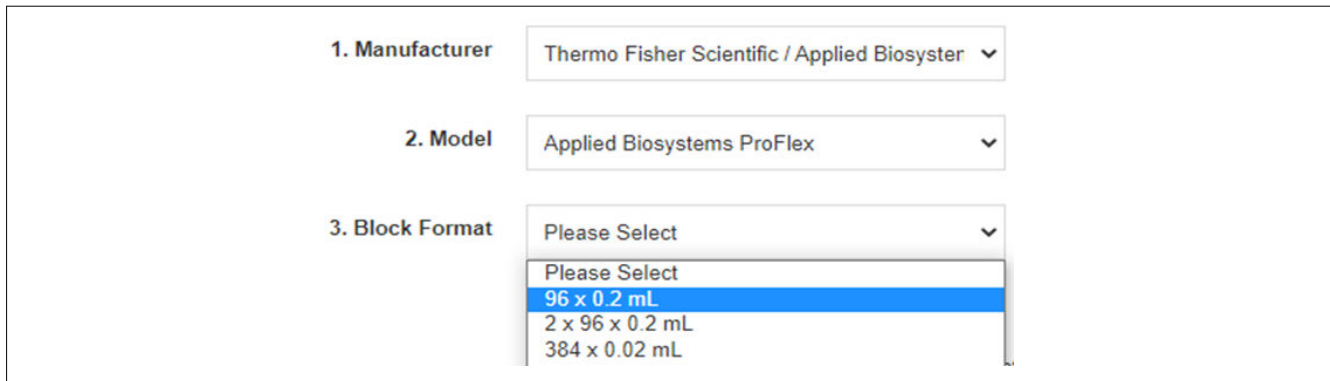
1. Manufacturer

2. Model

3. Block Format

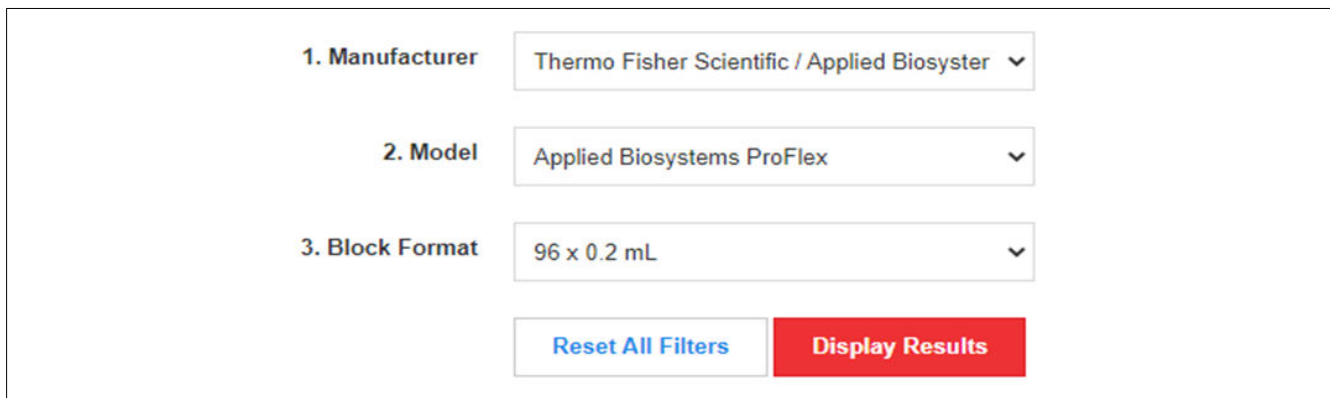
Applied Biosystems MiniAmp
Applied Biosystems MiniAmp Plus
Applied Biosystems ProFlex
Applied Biosystems QuantStudio 12k
Applied Biosystems Quant Studio 3

4. Select the block format.



The screenshot shows a web interface with three dropdown menus. The first menu, labeled '1. Manufacturer', is set to 'Thermo Fisher Scientific / Applied Biosystemer'. The second menu, labeled '2. Model', is set to 'Applied Biosystems ProFlex'. The third menu, labeled '3. Block Format', is currently open, showing a list of options: 'Please Select', '96 x 0.2 mL', '2 x 96 x 0.2 mL', and '384 x 0.02 mL'. The '96 x 0.2 mL' option is highlighted in blue.

5. Click **Display Results**.



The screenshot shows the same web interface as the previous step, but now the '3. Block Format' dropdown menu is closed and displays '96 x 0.2 mL'. Below the dropdown menus are two buttons: a white button with blue text labeled 'Reset All Filters' and a red button with white text labeled 'Display Results'.

6. Filter results using features in left-hand column.

<p>Consumable Type Please Select ▾</p> <p>Number of Wells Please Select ▾</p> <p>Plate Skirt Type Please Select ▾</p> <p>Well Profile Please Select ▾</p> <p>Color Please Select ▾</p> <p>Well Color Please Select ▾</p> <p>Barcoded Please Select ▾</p> <p>Automation Compatible Please Select ▾</p> <p>Reset filters</p>	<p>132 results found</p> <table border="1"> <thead> <tr> <th>Catalog #</th> <th>Product Name</th> <th>Product Size</th> </tr> </thead> <tbody> <tr> <td>403012</td> <td>MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Caps</td> <td>20 plates</td> </tr> <tr> <td>4306311</td> <td>MicroAmp™ Clear Adhesive Film</td> <td>100 seals</td> </tr> <tr> <td>4306737</td> <td>MicroAmp™ Optical 96-Well Reaction Plate with Barcode</td> <td>20 plates</td> </tr> <tr> <td>4311971</td> <td>MicroAmp™ Optical Adhesive Film</td> <td>100 seals</td> </tr> <tr> <td>4312063</td> <td>MicroAmp™ Splash-Free 96-Well Base</td> <td>10 bases</td> </tr> <tr> <td>4313950</td> <td>MicroAmp™ Multi Removal Tool</td> <td>1 tool</td> </tr> <tr> <td>4314320</td> <td>MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Adhesive Films</td> <td>100 plates</td> </tr> <tr> <td>4316567</td> <td>MicroAmp™ Optical 8-Tube Strip, 0.2 mL</td> <td>125 strips</td> </tr> <tr> <td>4316813</td> <td>MicroAmp™ Optical 96-Well Reaction Plate</td> <td>500 plates</td> </tr> <tr> <td>4323032</td> <td>MicroAmp™ Optical 8-Cap Strips</td> <td>300 strips</td> </tr> <tr> <td>4326659</td> <td>MicroAmp™ Optical 96-Well Reaction Plate with Barcode</td> <td>500 plates</td> </tr> <tr> <td>4333183</td> <td>MicroAmp™ Adhesive Film Applicator</td> <td>5 applicators</td> </tr> <tr> <td>4360954</td> <td>MicroAmp™ Optical Adhesive Film</td> <td>25 seals</td> </tr> </tbody> </table>	Catalog #	Product Name	Product Size	403012	MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Caps	20 plates	4306311	MicroAmp™ Clear Adhesive Film	100 seals	4306737	MicroAmp™ Optical 96-Well Reaction Plate with Barcode	20 plates	4311971	MicroAmp™ Optical Adhesive Film	100 seals	4312063	MicroAmp™ Splash-Free 96-Well Base	10 bases	4313950	MicroAmp™ Multi Removal Tool	1 tool	4314320	MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Adhesive Films	100 plates	4316567	MicroAmp™ Optical 8-Tube Strip, 0.2 mL	125 strips	4316813	MicroAmp™ Optical 96-Well Reaction Plate	500 plates	4323032	MicroAmp™ Optical 8-Cap Strips	300 strips	4326659	MicroAmp™ Optical 96-Well Reaction Plate with Barcode	500 plates	4333183	MicroAmp™ Adhesive Film Applicator	5 applicators	4360954	MicroAmp™ Optical Adhesive Film	25 seals
Catalog #	Product Name	Product Size																																									
403012	MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Caps	20 plates																																									
4306311	MicroAmp™ Clear Adhesive Film	100 seals																																									
4306737	MicroAmp™ Optical 96-Well Reaction Plate with Barcode	20 plates																																									
4311971	MicroAmp™ Optical Adhesive Film	100 seals																																									
4312063	MicroAmp™ Splash-Free 96-Well Base	10 bases																																									
4313950	MicroAmp™ Multi Removal Tool	1 tool																																									
4314320	MicroAmp™ Optical 96-Well Reaction Plate with Barcode & Optical Adhesive Films	100 plates																																									
4316567	MicroAmp™ Optical 8-Tube Strip, 0.2 mL	125 strips																																									
4316813	MicroAmp™ Optical 96-Well Reaction Plate	500 plates																																									
4323032	MicroAmp™ Optical 8-Cap Strips	300 strips																																									
4326659	MicroAmp™ Optical 96-Well Reaction Plate with Barcode	500 plates																																									
4333183	MicroAmp™ Adhesive Film Applicator	5 applicators																																									
4360954	MicroAmp™ Optical Adhesive Film	25 seals																																									

Note: To return to the full list of result, click **Reset Filters**.

Understanding the filter options

Consumable Type

- Choose between plate, tube strip, individual tube, cap strip, seal, and accessory.

Number of Wells

- Choose 8 or 12 for strip tubes and caps.
- Choose 8, 24, 32, 48, 96, or 384 for plates.

Plate Skirt Type

- Choose skirted, semi-skirted, or non-skirted.

Well Profile

- Choose between standard or low profile/fast.

Color

- Choose from the available plate colors. Common options include clear, white, black, and single or assorted colors.

Well Color

- Choose from the available colors. Common options include clear, white, black, single and assorted colors.

Barcoded

- Narrow options based on whether or not they have a barcode.

Automation Compatible

- Narrow options based on whether or not they are designed for use with automated robotic applications.

Quality

Production

- The production process is carried out in a Class 100,000 cleanroom under ISO 13485 or ISO 9001 guidelines.

Materials

- All PCR plastics are manufactured using medical-grade virgin polypropylene.

Design

- Made with polished tools designed to produce chemical-free and ultra-smooth well surfaces that help prevent inhibition and binding.

QC testing

- Each well is visually inspected and electrostatically tested for defects; samples of each lot are run through a PCR cycling test to check for sealing and contaminants.



For descriptions of symbols on product labels or product documents, go to thermofisher.com/symbols-definition.

The information in this guide is subject to change without notice.

DISCLAIMER: TO THE EXTENT ALLOWED BY LAW, THERMO FISHER SCIENTIFIC INC. AND/OR ITS AFFILIATE(S) WILL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, INDIRECT, PUNITIVE, MULTIPLE, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM THIS DOCUMENT, INCLUDING YOUR USE OF IT.

Revision history: Pub. No. MAN0025596

Revision	Date	Description
A.0	7 September 2021	Baseline for this revision history.

Important Licensing Information: This product may be covered by one or more Limited Use Label Licenses. By use of this product, you accept the terms and conditions of all applicable Limited Use Label Licenses.

TRADEMARKS: All trademarks are the property of Thermo Fisher Scientific and its subsidiaries unless otherwise specified.

©2021 Thermo Fisher Scientific Inc. All rights reserved.