Understanding the Differences in PCR Plastics Format

Publication Number MAN0025596 Revision A.0

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**
	
• 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.

Frame color

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

Well color[1]		
Clear or colored	**White**	**Frosted**
		
Recommended for end-point PCR applications.	• Ensures the highest level of sensitivity for qPCR reactions. • Recommended for low copy number samples.	Alternative to white plastic for qPCR if the fluorescence detector is oversaturated.

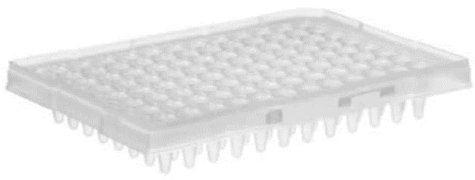
[1] Refer to qPCR instrument manufacturer for recommendations on well color for proper plate calibration.

Skirt type		
Skirted	**Semi-skirted**	**Non-skirted**
		
• 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.	• Short panel around the edge of the plate. • Adequate support during pipetting. • Mechanical strength for robotic handling.	• 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
• 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**
		
• Most commonly used. • 0.3 mL maximum well volume.	• Reduced height reduces evaporation and enhances thermal conductivity. • 0.2 mL maximum well volume.	• 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**
	
• Universal fit with most thermal cyclers. • Facilitates sealing and handling.	• 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)**
	
• Fits 0.1 mL thermal blocks. • Reduced height minimizes air space above the reaction to reduce evaporation and enhance thermal conductivity.	• 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**
	
• For end-point PCR applications. • May be required for instruments with concave lids.	• For qPCR applications, use optical or ultra-cear 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™

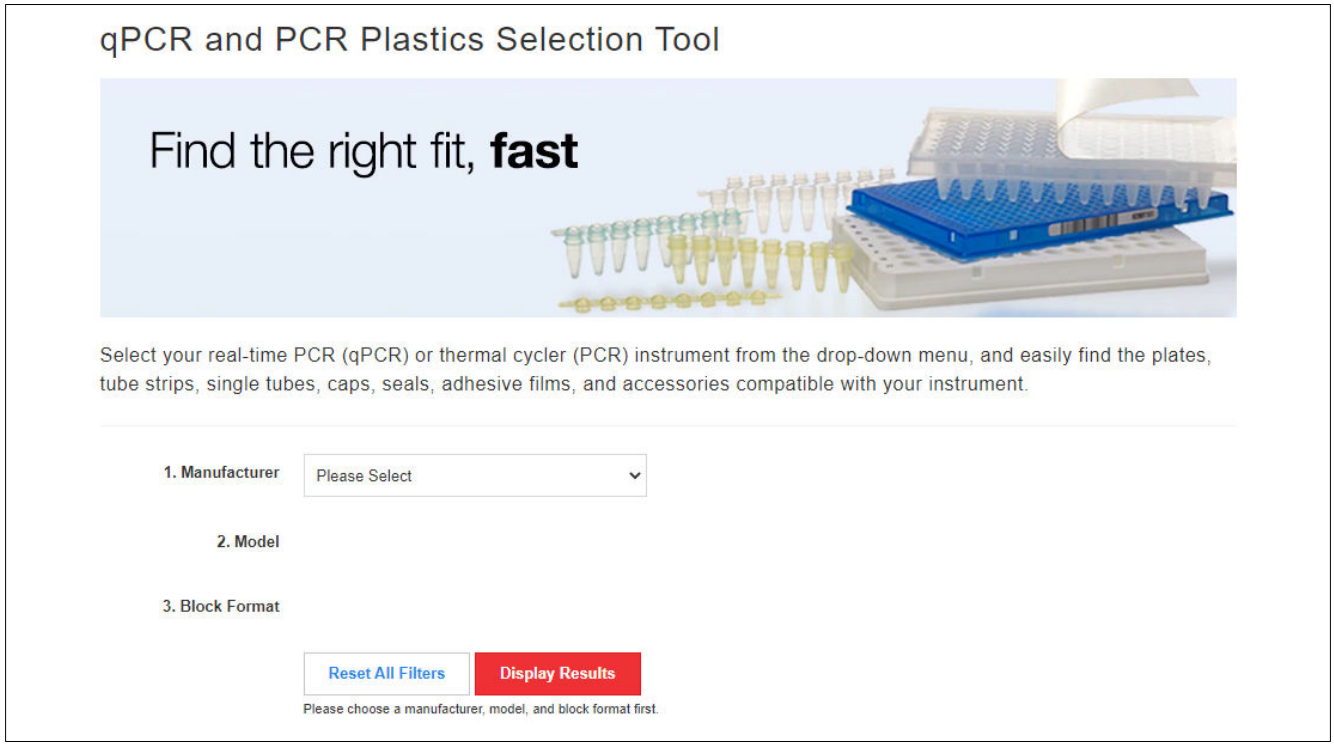
PCR sealing closures

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

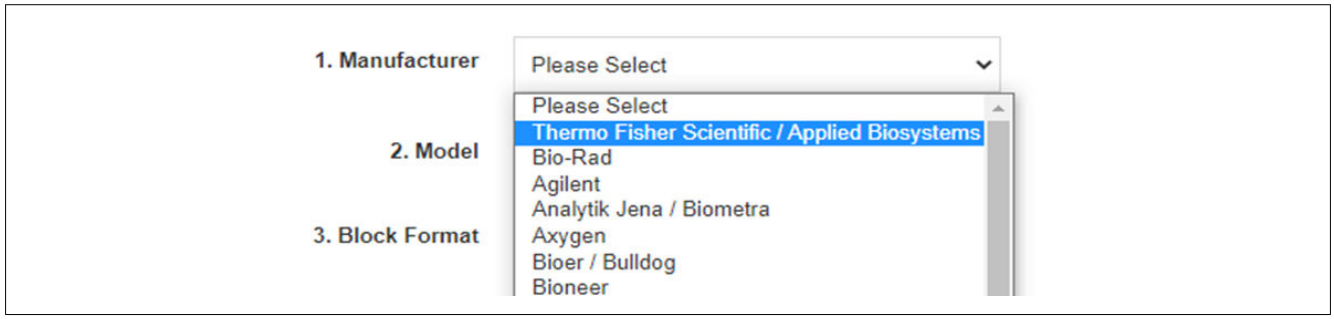
Closure type		
Sealing films	**Sealing foils**	**Strip caps**
		
Creates a tight seal over wells to prevent evaporation and cross-contamination. • Clear adhesive films—For PCR, economical and sticky. • Optical sealing films—For qPCR applications, non-tacky pressure sensitive adhesive.	Creates a tight seal over wells to prevent evaporation and cross-contamination. • For use with light-sensitive samples. • Pierceable with pipette tip for sample transfer.	Seals securely with minimal pressure. Can be used with strip tubes or PCR plates. • 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

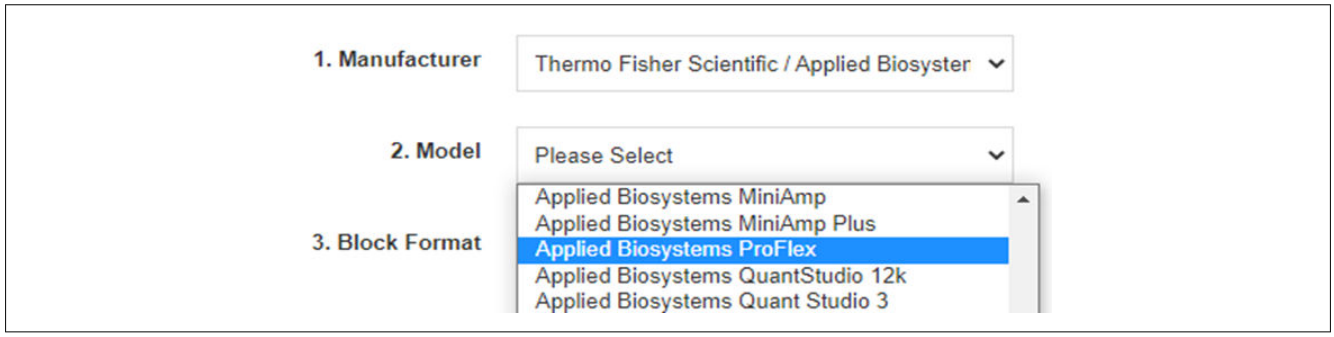
1. Go to **http://www.thermofisher.com/findplastics**.



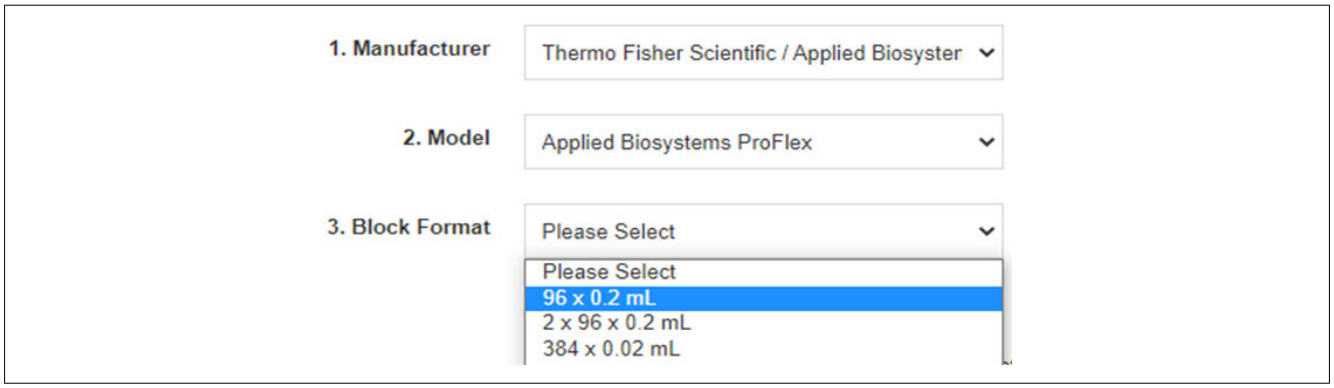
2. Select the instrument manufacturer.



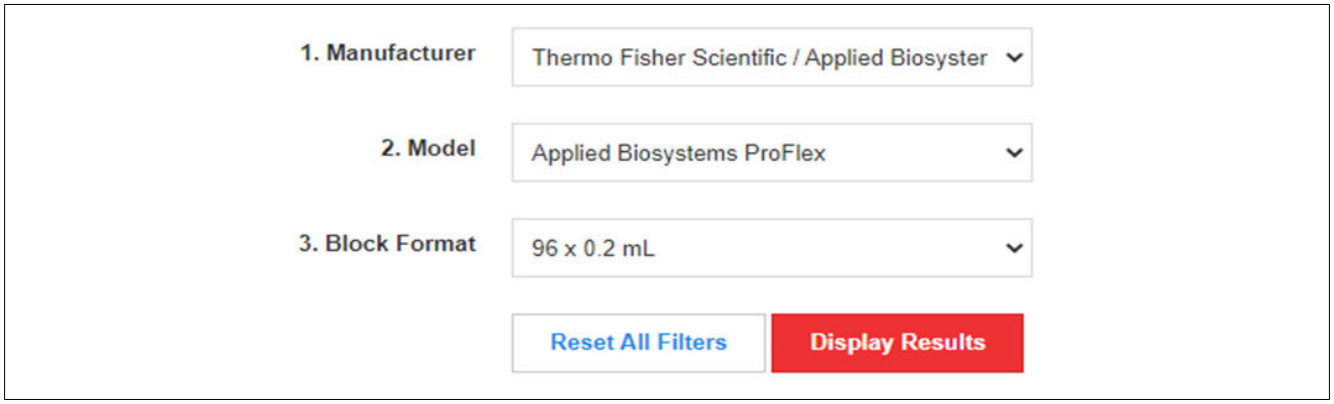
3. Select the instrument model.



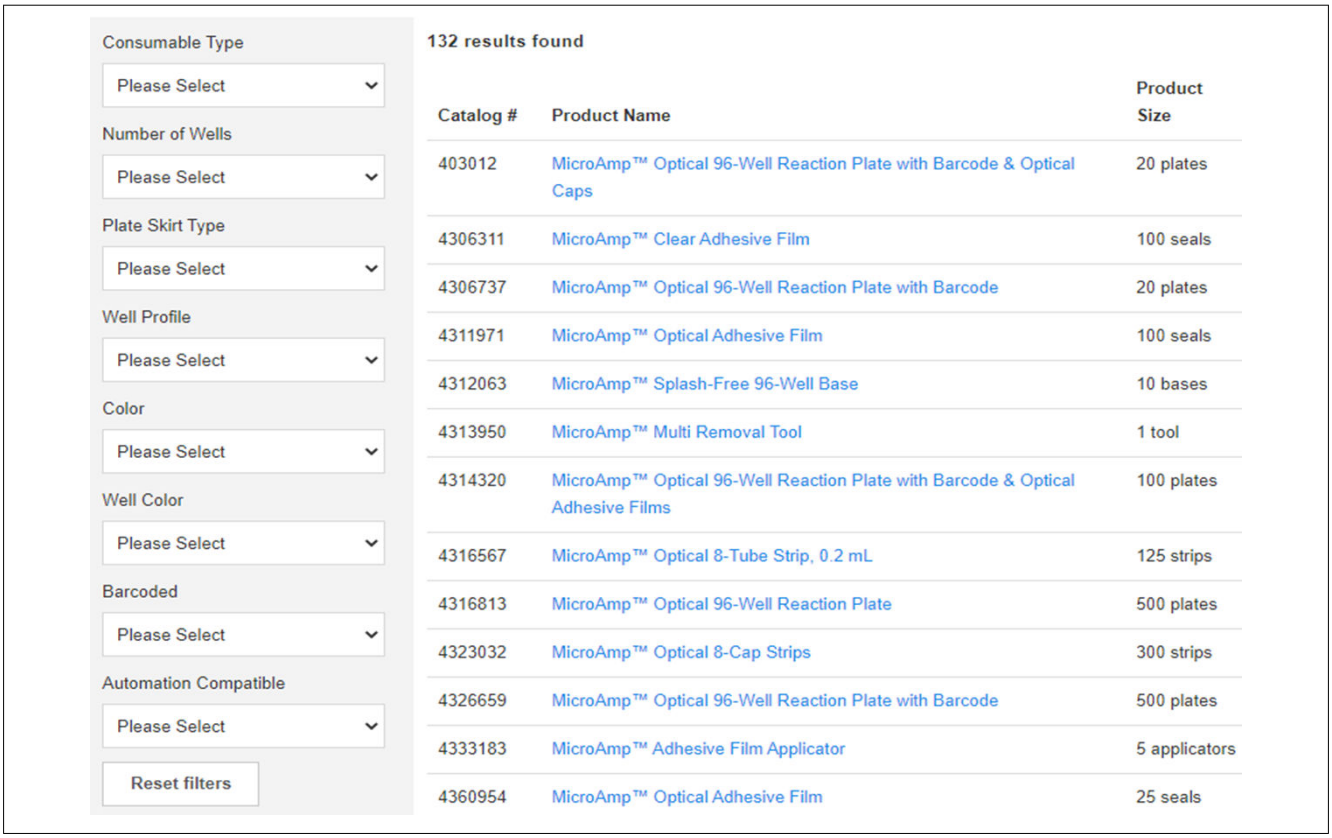
4. Select the block format.



5. Click **Display Results**.



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



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.

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Revision history: Pub. No. MAN0025596

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