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Eppendorf PCR Consumables – Compatibility Guide for PCR and qPCR Cyclers

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Abstract

One of the key issues regarding PCR consumables performance (plates, stripes and respective sealing options) is their compatibility with several cycler systems available on the market. In this Application Note Eppendorf PCR/qPCR Consumables were tested on the main cycler brands and compared to consumable systems recommended by the cycler manufacturer. Physical thermo block compatibility (fitting) and PCR/qPCR assay parameters have been evaluated and these results show similar performance (sensitivity and efficiency) of Eppendorf consumables as compared to specific consumables of the competitor systems in most of the cycler platforms.

Introduction

PCR and qPCR consumables vary in numerous parameters. Among them material properties and quality, well/skirt dimensions, well surface characteristics play the most important role. These differences together with various sealing options lead to often substantial variances when changing from one consumable brand to another and can influence overall PCR/qPCR assay performance.

It is therefore of much importance to identify whether a given consumable is compatible with a given PCR/qPCR platform by comparing to the consumable system recommended by the manufacturer. Here we present a summary of extensive compatibility tests of Eppendorf PCR/qPCR Consumables on the major cycler brands currently on the market.

Materials and Methods

Compatibility with Standard PCR Devices
The following platforms were used in the PCR assay test: Applied Biosystems® (Life Technologies®), Analytic Jena®, Apollo®, Biometra®, Bio-Rad®, G-Storm®, peqLab®, Takara®, Techne®, VWR®. For the PCR assay a gDNA (Promega®) was used. After the PCR assay the samples were separated by agarose gel electrophoresis (E-Gel®, Invitrogen) and documented. Compatibility and assay performance was evaluated by presence and quality of PCR products on the gel (data not shown).

Compatibility with qPCR Devices
The following platforms were used in the qPCR assay test: Roche Applied Science®, Applied Biosystems® (Life Technologies®), Stratagene® (Agilent Technologies®), Bio-Rad®.

All cycler used were with valid calibration status. General check of the compatibility of Eppendorf real-time PCR consumables was first performed (block fit) and then a real-time PCR assay was performed with low profile twin.tec PCR Plate (assuming that the Eppendorf PCR plates and tubes have the same parameters and composition, the results obtained with the plate will be similar with the tubes).

For the qPCR assay performance a standard assay with lambda DNA (Promega) and Kapa SYBR® Fast qPCR Mastermix (Kapa Biosystems®) was used. Three independent qPCR assays over six concentration logs of the lambda DNA template (10^1-10^6) and 3 replicates for each concentration were performed. Compatibility was evaluated based on following qPCR reaction parameters: Ct Mean, Ct SD, CV, melting curves analysis (data not presented).

Results

Table 1: Compatibility with Standard PCR cyclers. (+): compatible, (-): not compatible

	twin.tec PCR Plate 96							Tube Strips		Cap Strips	
PCR Instrument	unskirted, divisible	unskirted	unskirted, low profile divisible	unskirted, low profile	semi-skirted	skirted	twin.tec PCR Plate 384	PCR Tube Strip 0.2 mL	PCR Tube Strip 0.1 mL	domed	flat
ABI 2720	–	–	–	–		–			–		
ABI 9600	–	–	–	–		–			–		
ABI 9700	–	–	–	–	+	–	+	+*	–	+	+
ABI 9800	–	–	+	+	–	–		–	+**	+	+
ABI Veriti®	+	+	–	–		–					
ABI Veriti Fast	–	–	+	+	–	–		–	+	+	+
Analytic Jena Alpha SC			+	+		+			+	+	+
Apollo ATC-201	+	+	+	+	+	+		+	+	+	+
Biometra Tpersonal		–		–	–	–	–				
Biometra 3000		–		–	–	–	–				
Biometra Tgradient	+	+	+	+	+	+		+	+	+	+
Biometra Tprofessional	+	+	+	+	+	+		+	+	+	+
Bio-Rad iCycler®	+	+	–	–	+	–		+	+	+	+
Bio-Rad myCycler™	+	+	–	–	+	–		+	+**	+	+
Bio-Rad C1000	+	+	+	+	+	+		+	+	+	+
Bio-Rad S1000	+	+	+	+	+	+	+	+	+	+	+
Bio-Rad PTC 200			+	+	+	+		+		–	+
G-Storm GS1	+	+	+	+	+	+	–	+	+	–	+
peqLab peqSTAR 96	+	+	+	+	+	+		–	+	+	+
Takara Dice TP600	+	+	+	+		–					
Techne Touchgene	+	+	+	+	+	+		+	+	+	+
Techne TC-412	+	+	+	+							
Techne TC-PLUS	+	+	–	–	+	+		–	+	–	+
VWR Uno Cycler	+	+	+	+	+	+		+	+	–	+

*with adapter, **without adapter
Standard accessory included with the respective cycler unit

Table 2: Compatibility with qPCR cyclers. (+): compatible, (-): not compatible

Consumable	qPCR Instrument			
	Roche LightCycler 480	**Stratagene Mx3005P**	**Bio-Rad CFX96/384**	**ABI StepOnePlus**
twin.tec PCR Plates 96, skirted	–	–	+	–
twin.tec PCR Plates 96, semi-skirted	–	+	–	–
twin.tec PCR Plates 96, unskirted	+*	+	–	–
twin.tec PCR Plates 96, unskirted, divisible	–	+	–	–
twin.tec PCR Plates 96, unskirted, low profile	+*	+	+	+
twin.tec PCR Plates 96, unskirted, low profile, divisible	–	+	+	+
twin.tec *real-time* PCR Plates 96, skirted	–	–	+	–
twin.tec *real-time* PCR Plates 96, semi-skirted	–	+	_	–
twin.tec *real-time* PCR Plates 96, unskirted, low profile	+*	+	+	+
twin.tec *microbiology* PCR Plates 96, skirted	–	–	+	–
twin.tec *microbiology* PCR Plates 96, semi-skirted	–	+	–	–
twin.tec *real-time* PCR Plates 384	+	–	+	–
PCR Tubes Strips 0.1 mL without caps	–	+**	+	+
real-time PCR Tubes Strips 0.1 mL without caps	–	+**	+	+
Cap Strips, flat	–	+	+	+
Masterclear® Cap Strips	–	+	+	+
Masterclear® *real-time* PCR Film, adhesive	+	+	+	+
Heat Sealing Film	+	+	+	+

Note: order numbers for twin.tec PCR Plates and twin.tec real-time PCR Plates correspond to colorless and white skirts respectively. For other skirt colors please refer to the order information in the Eppendorf Catalog or at www.eppendorf.com

*With Eppendorf Twin.tec Adapter for LC480: Cat.#0030 133.412

**With Mx3005P Perfect fit frame (provided with the cycler or can be ordered: Cat.#401421)

Conclusion

We present here a comprehensive compatibility test of Eppendorf PCR/qPCR Consumables on the major cycler brands currently on the market. Both the thermo block compatibility (fitting) and PCR/qPCR assay parameters were evaluated and summarized in a table as overall positive or negative result respectively as compared to the consumable system recommended by the specific cycler manufacturer. The results show broad range of compatibility of Eppendorf consumables on the main cycler platforms.

Order information

Description	Order No. International	Order No. North America
twin.tec PCR Plates 96, skirted	0030 128.648	951020401
twin.tec PCR Plates 96, semi-skirted	0030 128.575	951020303
twin.tec PCR Plates 96, unskirted	0030 133.366	0030133366
twin.tec PCR Plates 96, unskirted, divisible	0030 133.374	0030133374
twin.tec PCR Plates 96, unskirted, low profile	0030 133.307	0030133307
twin.tec PCR Plates 96, unskirted, low profile, divisible	0030 133.358	0030133358
twin.tec PCR Plate 384	0030 128.508	951020702
twin.tec *real-time* PCR Plates 96, skirted	0030 132.513	951022015
twin.tec *real-time* PCR Plates 96, semi-skirted	0030 132.548	951022055
twin.tec *real-time* PCR Plates 96, unskirted, low profile	0030 132.700	0030132700
twin.tec *microbiology* PCR Plates 96, skirted	0030 129.300	000129300
twin.tec *microbiology* PCR Plates 96, semi-skirted	0030 129.326	0030129326
twin.tec *real-time* PCR Plates 384	0030 132.734	951020702
PCR Tubes Strips 0.1 mL without caps	0030 124.804	0030124804
PCR Tubes Strips 0.2 mL	0030 124.359	951010022
real-time PCR Tubes Strips 0.1 mL without caps	0030 132.882	951022102
Cap Strips, flat	0030 124.847	0030124847
Cap Strips, domed	0030 124.839	0030124839
Masterclear Cap Strips	0030 132.874	951022089
Masterclear *real-time* PCR Film, adhesive	0030 132.947	0030132904
Heat Sealing Film	0030 127.838	0030127838

Your local distributor: www.eppendorf.com/contact
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