



GUNSTER BIOTECH

~Best Choice for Life Sciences~

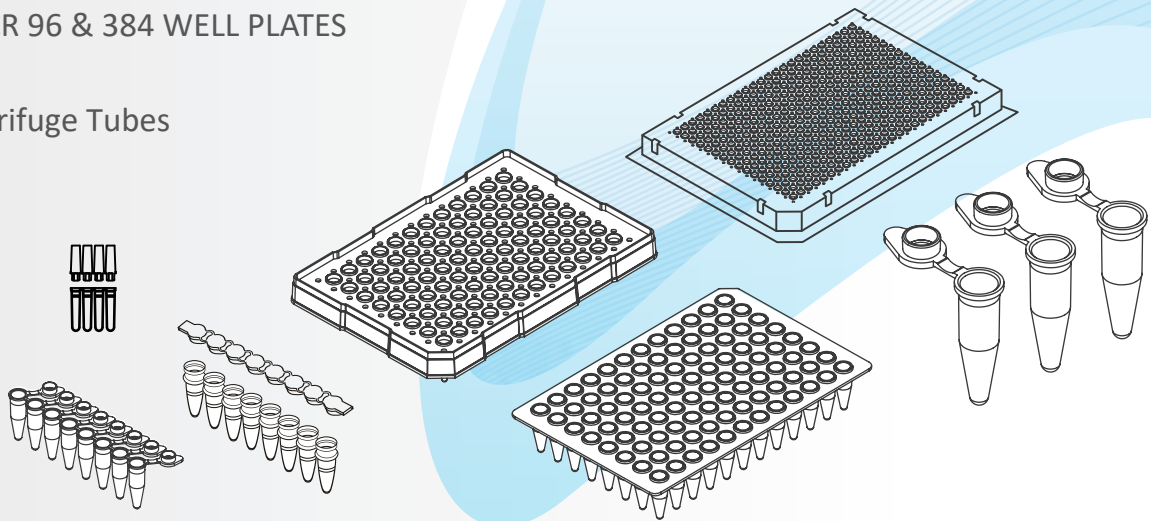


GUNSTER Website



Life science laboratory plastic products

- PCR SINGLE & 8-STRIP TUBES
- qPCR 8-STRIP TUBES
- PCR & qPCR 96 & 384 WELL PLATES
- SEALS
- Microcentrifuge Tubes



PROMISE TO QUALITY

Our products are manufactured in class 100,000 clean room with ISO 9001:2015 and ISO 13485:2016 certified facility. Gunster's advanced manufacturing process continually monitors the quality of products and individual batch testing ensures Gunster products are certified RNase, DNase, Human DNA and Endotoxin-free.

ITEM	DESCRIPTION
Material	The plastic resin in Gunster's products are certified in compliance with U.S. Pharmacopeia Plastic Class VI. Compliance with EU RoHS 2002/95/EC, REACH directive does not contain heavy metals and prohibited substances.
Nuclease	Gunster products are tested and certified to be free of detectable nucleases, with a test sensitivity level of less than $5 * 10^{-10}$ Kunitz units of RNase and $4 * 10^{-6}$ Kunitz units of DNase.
PCR inhibitor	Gunster products contain non-detectable levels of PCR inhibitors based on testing with qPCR test method.
Endotoxins/Pyrogens	Gunster products are tested and certified to be free of detectable endotoxins, with a test sensitivity level of less than 0.004EU/ml of endotoxins.
Sterility	Gunster pre-sterile products are gamma radiation and regularly tested to meet SAL 10^{-6} level.
Human DNA	Gunster products are tested and certified to be free of detectable human DNA, with a test sensitivity level of less than 5pg/ul of human DNA.
ATP	Gunster products are tested and certified to be free of detectable ATP, with a test sensitivity level of less than 10^{-13} mg/ul of ATP.
Evaporation Test	Gunster PCR&qPCR products are tested and certified the evaporation volume below 5% (Add 20ul water in tubes and put in 95°C for 1 hours without hot lid)



ISO9001:2015



ISO13485:2016

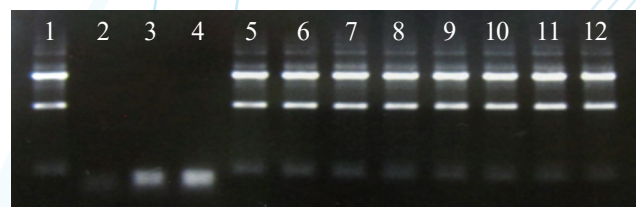


CERTIFICATE OF COMPLIANCE

Contaminants tested	Testing detection levels
RNase	< 5×10^{-10} Kunitz units/ μ l
DNase	< 4×10^{-6} Kunitz units/ μ l
DNA	< 5 pg/ μ l
Pyrogens	< 0.004 EU/ml

RNase tested by the following protocol :

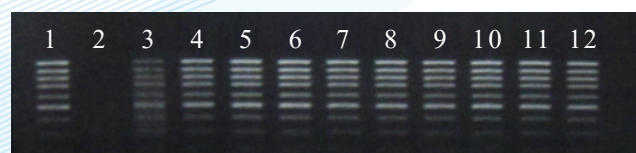
Products were rinsed in nuclease free water, then product extract were exposed to a RNA standard in a fixed volume of buffer. The RNA standard was incubated at 37°C for 1 hour, then heated to 55 °C for 1 hour. RNA sample were then run on an RNA denaturing gel, photographed and evaluated for degradation.



Lane 1 : Negative Control 1.2 ug total RNA
 Lane 2 : Positive Control 1.2 ug total RNA + 5×10^{-8} RNase I
 Lane 3 : Positive Control 1.2 ug total RNA + 5×10^{-9} RNase I
 Lane 4 : Positive Control 1.2 ug total RNA + 5×10^{-10} RNase I
 Lane 5~12 : Gunster Tubes

DNase tested by the following protocol :

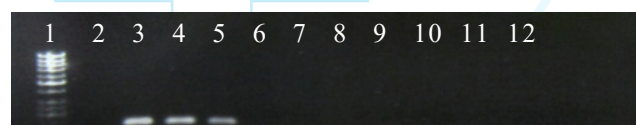
Products were rinsed in nuclease free water, then product extract were exposed to a DNA standard in a fixed volume of buffer. The DNA standard was incubated at 37°C for 1 hour. DNA sample were then run on an agarose gel, photographed, and evaluated for degradation.



Lane 1 : Negative Control 200 ng DNA ladder
 Lane 2 : Positive Control 200 ng DNA ladder + 4×10^{-5} DNase I
 Lane 3 : Positive Control 200 ng DNA ladder + 4×10^{-6} DNase I
 Lane 4 : Positive Control 200 ng DNA ladder + 4×10^{-7} DNase I
 Lane 5~12: Gunster Tubes

DNA tested by the following protocol :

Products were rinsed in nuclease free water, then product extract were exposed to PCR reaction reagents containing Alu specific primer DNA. The reaction was allowed to proceed for 35 cycles. Products were evaluated for detectable human DNA via PCR amplification.



Lane 1 : 50bp DNA ladder marker
 Lane 2 : Negative Control
 Lane 3 : Positive Control 20 pg/ul DNA
 Lane 4 : Positive Control 10 pg/ul DNA
 Lane 5 : Positive Control 5 pg/ul DNA
 Lane 6~12 : Gunster Tubes

Pyrogens tested by the following protocol :

Our LAL test according to USP33 <85>,<161>, and the guideline provided by FDA of the United States. The result showed that endotoxin concentration of Gunster's products were lower than 0.004 EU/ml.

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PCR SINGLE & 8-STRIP TUBES

FEATURES:

- Thin wall tube for best heat transfer
- Made of USP VI Polypropylene
- Free of DNase, RNase, hDNA, PCR Inhibitor, ATP, Endotoxin. All products are ready to use in PCR
- Autoclavable
- Evaporation rate below 5%, minimum interfere PCR experiment
- Fit almost all thermal cycler
- Small package can avoid contamination by different researcher
- All items contain tubes and caps

Small Package (avoid contamination)



Item Picture	Product No	Description	Features / Functions
	MB-P02-A	0.2 ml PCR Tubes with Flat Cap	1. Easy labelling on frosted flat cap
	MB-P02D	0.2 ml PCR Tubes with Domed Cap	1. Dome cap can match hollow hot lid thermal cycler
	MB-P08-A	0.2 ml PCR 8-Strip Tube with Attached Flat Cap	1. Easy labelling on frosted flat cap 2. Attached cap help avoid cross-contamination between different tubes 3. Good for storage
	MB-P08-AD	0.2 ml PCR 8-Strip Tube with Attached Domed Cap	1. Dome cap can match hollow hot lid thermal cycler 2. Attached cap help avoid cross-contamination between different tubes 3. Good for storage
	MB-P08-B	0.2 ml PCR 8-Strip Tube & Separate Flat Cap	1. Easy labelling on frosted flat cap 2. Traditional separate cap decrease operating time
	MB-P08-D	0.2 ml PCR 8-Strip Tube & Separate Domed Cap	1. Dome cap can match hollow hot lid thermal cycler 2. Traditional separate cap decrease operation time

Ordering details :

Product Number	Description	Bag Pack	Box Pack
MB-P02-A	0.2 ml PCR Tubes with Flat Cap	500 Tubes	6 Bags (3000 Tubes)
MB-P02D	0.2 ml PCR Tubes with Domed Cap	500 Tubes	6 Bags (3000 Tubes)
MB-P08-A	0.2 ml PCR 8-Strip Tube with Attached Flat Cap	12 Strip Tubes	10 Bags (120 Strips)
MB-P08-AD	0.2 ml PCR 8-Strip Tube with Attached Domed Cap	12 Strip Tubes	10 Bags (120 Strips)
MB-P08-B	0.2 ml PCR 8-Strip Tube & Separate Flat Cap	12 Strip Tubes 120 Strip Caps	10 Bags (120 Strip Tubes) 1 Bag (120 Strip Caps)
MB-P08-D	0.2 ml PCR 8-Strip Tube & Separate Domed Cap	12 Strip Tubes 120 Strip Caps	10 Bags (120 Strip Tubes) 1 Bag (120 Strip Caps)

8 - Strip Capping Gadget

FEATURES:

- Made of Polystyrene.
- Operating temperature range : -30°C to 70 °C
- Multiple functions design for decapping, capping, film scraping
- Multiple decapping functions could use in attached (MB-P08-A), separate (MB-P08-B) 8-Strip tubes, single tube (MB-P02-A), microcentrifuge tube (MB-E17-A)
- Transparent design helps observation and operation
- A smooth surface in film scraping side avoid causing damage on any adhesive film (MB-PSM, MB-QSM, MB-BQSM, MB-ASM)
- Non-autoclavable, using ethanol spray to sterilization



MB-OPENER
operation video website

Item Picture	Product No	Description	Features / Functions
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MB-OPENER 8 - Strip Capping Gadget

1. Decapping functions for MB-P08-A, MB-P08-B, MB-P08-D, MB-Q200(W), MB-Q100(W/C), MB-P02-A, MB-E17-A.
2. Capping function for MB-P08B, MB-P08-D, MB-Q200(W), MB-Q100(W/C).
3. Film Scraping for MB-PSM, MB-QSM, MB-BQSM, MB-ASM.
4. The MB-OPENER operation video, please scan upper right 2D barcode.

For MB-P08A
Decapping
8 tubes

Decapping
1 tubes

MB-Q200
For MB-P08B
8 tubes
Decapping

Capping
8 tubes

For MB-E17
Decapping

For MB-QSM
MB-PSM
MB-ASM
MB-ESM
Film scraping

Ordering details :

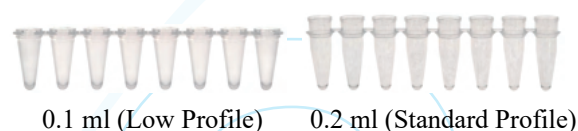
Product Number	Description	Bag Pack	Box Pack
MB-OPENER	8 - Strip Capping Gadget	1 PCS/Bag	15 Bags/box







qPCR 8-STRIP AND 4-STRIP TUBES

FEATURES:

- Thin wall tube for best heat transfer
- Made of USP VI Polypropylene
- Free of DNase, RNase, DNA, hPCR Inhibitor, ATP, Endotoxin. All products are ready to use in qPCR
- Evaporation rate below 5%, minimum interfere qPCR signal, during therme cycle.
- Two kind of 8-Strip could fit almost all Real-Time PCR machine
- Small package can avoid contamination by different researchers
- Ultra clear cap show consistant light transmitting rate provid stable data than other brand
- All items contain tubes and caps

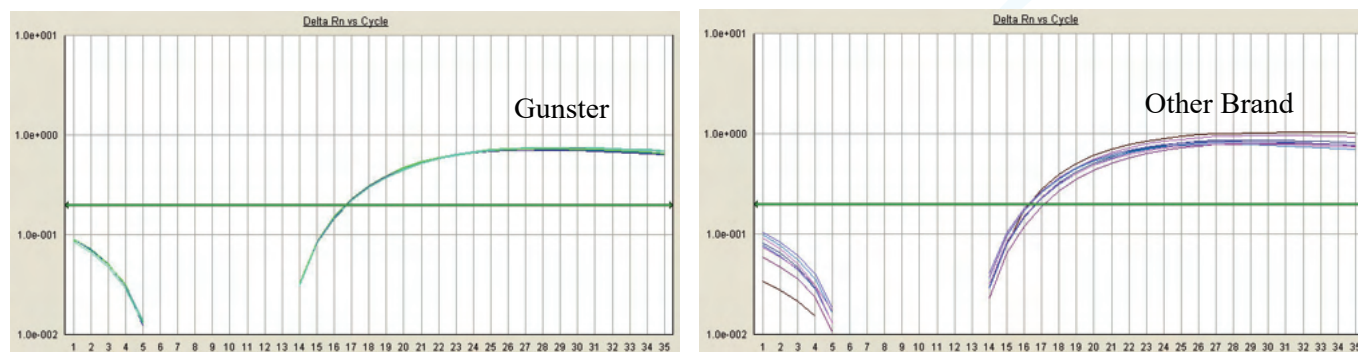
Difference height of qPCR 8-Strip



Item Picture	Product No	Description	Features / Functions
	MB-Q100	0.1 ml qPCR 8-Strip Tubes (With Optical Caps)	<ol style="list-style-type: none"> 1. Low profile 2. Tube height 16 mm 3. Frosted tubes
	MB-Q100W	0.1 ml qPCR 8-Strip White Tubes (With Optical Caps)	<ol style="list-style-type: none"> 1. Low profile 2. Tube height 16 mm 3. White tubes
	MB-Q100C	0.1 ml qPCR 8-Strip Clear Tubes (With Optical Caps)	<ol style="list-style-type: none"> 1. Low profile 2. Tube height 16 mm 3. Ultra clear tubes designed for bottom detection machine such as Roche LC Nano machine
	MB-Q200	0.2 ml qPCR 8-Strip Tubes (With Optical Caps)	<ol style="list-style-type: none"> 1. Standard profile 2. Tube height 21 mm 3. Clear tubes
	MB-Q200W	0.2 ml qPCR 8-Strip White Tubes (With Optical Caps)	<ol style="list-style-type: none"> 1. Standard profile 2. Tube height 21 mm 3. White tubes
	MB-QR4	4 strips tube (with cap)	<ol style="list-style-type: none"> 1. ultra clear tubes for Rotor-GeneQ

qPCR 8-STRIP TUBES

Gunster's qPCR strip's performance



8 same samples in 8-strip to do qPCR experiment, the result shows Gunster's 8-strip fluorescence signal has better consistent than other brand.

Ordering details :

Product Number	Description	Bag Pack	Box Pack
MB-Q100	0.1ml qPCR 8-Strip Tubes (With Optical Caps)	12 Strip Tubes 12 Strip Caps	10 Bags Each (120 Strips)
MB-Q100W	0.1ml qPCR 8-Strip White Tubes (With Optical Caps)	12 Strip Tubes 12 Strip Caps	10 Bags Each (120 Strips)
MB-Q100C	0.1ml qPCR 8-Strip Clear Tubes (With Optical Caps)	12 Strip Tubes 12 Strip Caps	10 Bags Each (120 Strips)
MB-Q200	0.2ml qPCR 8-Strip Tubes (With Optical Caps)	12 Strip Tubes 12 Strip Caps	10 Bags Each (120 Strips)
MB-Q200W	0.2ml qPCR 8-Strip White Tubes (With Optical Caps)	12 Strip Tubes 12 Strip Caps	10 Bags Each (120 Strips)
MB-QR4	qPCR 4 well qPCR Tube Strips	18 Strip Tubes 18 Strip Caps	14 Bags Each (252 Strips)

Compatibility qPCR machine please refer to page 26 "[qPCR 8-Strip compatibility chart](#)"

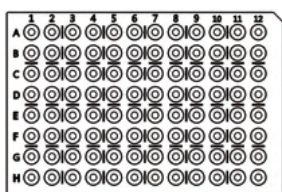
PCR & qPCR 96 & 384 WELL PLATES

FEATURES:

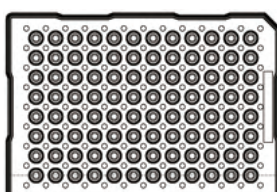
- Thin wall tube for best heat transfer
- Made of USP VI Polypropylene
- Free of DNase, RNase, hDNA, PCR Inhibitor, ATP, Endotoxin. All products are ready to use in qPCR
- Low and standard profile with 3 skirted format for almost all qPCR and sequencer machine
- Small package can avoid contamination by different researcher

Skirted Format

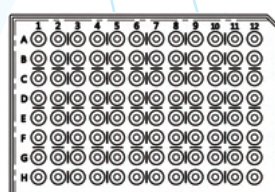
• Standard Profile (21mm)



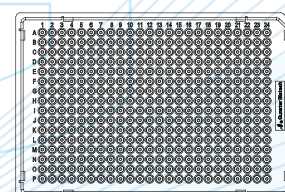
MB-P96
Non-Skirted



MB-Q96
Sub-Semi Skirted

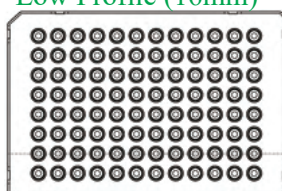


MB-Q96-S
Semi Skirted

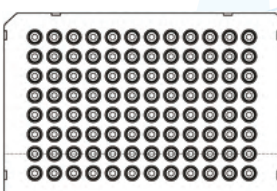


MB-384
Full Skirted

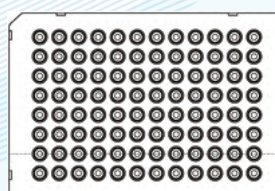
• Low Profile (16mm)



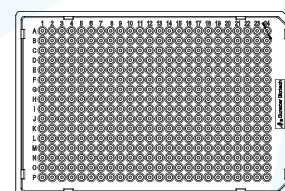
MB-Q96-LP
Sub-Semi Skirted



MB-Q96-LBR
Semi Skirted




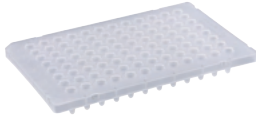

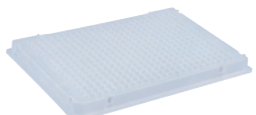

MB-Q96-LBR-W
White Semi Skirted
(Roche/BioRad)



MB-384-W
Full Skirted

Item Picture	Product No	Description	Features / Functions
	MB-P96	0.2ml Standard Profile PCR 96 Well Plate (Non Skirted)	<ol style="list-style-type: none"> 1. Non-Skirted 2. Standard Profile : Tube height 21 mm 3. Clear Tubes
	MB-Q96	0.2ml Standard Profile qPCR 96 Well Plate (Sub-Semi Skirted)	<ol style="list-style-type: none"> 1. Sub-Semi Skirted 2. Standard Profile : Tube height 21 mm 3. Clear Tubes
	MB-Q96-S	0.2ml Standard Profile qPCR 96 Well Plate (Semi Skirted)	<ol style="list-style-type: none"> 1. Semi Skirted 2. Standard Profile : Tube height 21 mm 3. Clear Tubes

PCR & qPCR 96 & 384 WELL PLATES

Item Picture	Product No	Description	Features / Functions
	MB-Q96-LP	0.1ml Low Profile qPCR 96 Well Plate (Sub-Semi Skirted)	<ol style="list-style-type: none"> 1. Sub-Semi Skirted 2. Low Profile : Tube height 16 mm 3. Frosted Tubes
	MB-Q96-LBR	0.1ml Low Profile qPCR 96 well Plate (Semi Skirted)	<ol style="list-style-type: none"> 1. Semi Skirted 2. Low Profile : Tube height 16 mm 3. Frosted Tubes
	MB-Q96-LBR-W	0.1ml Low Profile qPCR 96 well White Plate (Semi Skirted)	<ol style="list-style-type: none"> 1. Semi Skirted 2. Low Profile : Tube height 16 mm 3. White Tubes
	MB-384	qPCR 384 plate (ABI & Bio-Rad type)	<ol style="list-style-type: none"> 1. Full Skirted 2. Thin walled tube for best heat transfer 3. Made of USP VI Polypropylene
	MB-384-W	qPCR 384 white plate (Roche & Bio-Rad type)	<ol style="list-style-type: none"> 1. Full Skirted 2. White color for enhance fluorescence signal 3. Thin walled tube for best heat transfer

Ordering details :





Product Number	Description	Bag Pack	Box Pack
MB-P96	0.2ml Standard Profile PCR 96 Well Plate (Non Skirted)	10 Plates	5 Bags (50 Plates)
MB-Q96	0.2ml Standard Profile qPCR 96 Well Plate (Sub-Semi Skirted)	10 Plates	5 Bags (50 Plates)
MB-Q96-S	0.2ml Standard Profile qPCR 96 Well Plate (Semi Skirted)	10 Plates	5 Bags (50 Plates)
MB-Q96-LP	0.1ml Low Profile qPCR 96 Well Plate (Sub-Semi Skirted)	10 Plates	5 Bags (50 Plates)
MB-Q96-LBR	0.1ml Low Profile qPCR 96 well Plate (Semi Skirted)	10 Plates	5 Bags (50 Plates)
MB-Q96-LBR-W	0.1ml Low Profile qPCR 96 well White Plate (Semi Skirted)	10 Plates	5 Bags (50 Plates)
MB-384	qPCR 384 plate(ABI & Bio-Rad type)	10 Plates	5 Bags (50 Plates)
MB-384-W	qPCR 384 white plate (Roche & Bio-Rad type)	10 Plates	5 Bags (50 Plates)

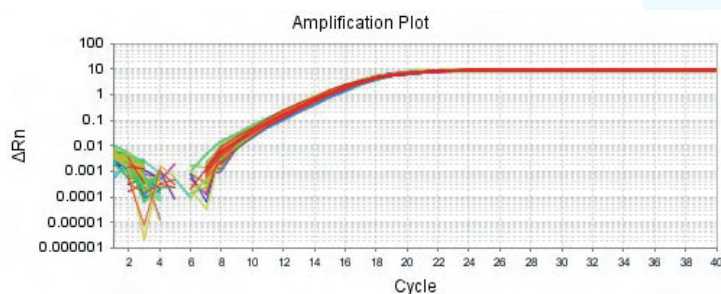
Compatibility qPCR machine please refer to Page 28 " [qPCR 96 & 384 Well Plate compatibility chart](#) "

SEALS

FEATURES:

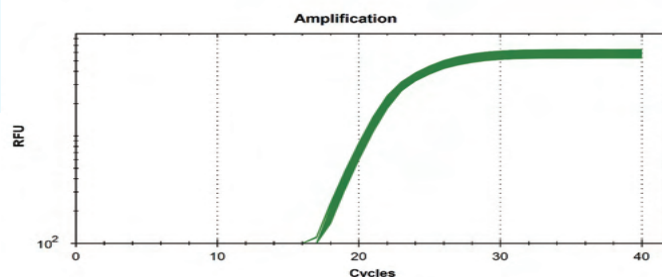
- Free of DNase, RNase, DNA, PCR Inhibitor, ATP, Endotoxin. All products are ready to use in qPCR
- Small package can avoid contamination by different researcher

Item Picture	Product No	Description	Features / Functions
	MB-PSM	PCR 96 Well Plate Sealing Membrane	<ol style="list-style-type: none"> 1. Operating Temperature -40 ~ 120°C 2. PCR use 3. Strong adhesive
	MB-QSM	qPCR 96 Well Plate Optical Sealing Membrane (pressure-sensitive adhesive film)	<ol style="list-style-type: none"> 1. Operating Temperature -40 ~ 120 °C 2. Real-Time PCR(qPCR) use 3. Pressure sensitive adhesive design 4. Ultra clear membrane show consistant and high light transmitting rate provid stable data than other brands
	MB-BQSM	qPCR 96 Well Plate Optical Sealing Membrane (stick adhesive film)	<ol style="list-style-type: none"> 1. Operating Temperature -40 ~ 120°C 2. Real-Time PCR(qPCR) use 3. Stick adhesive film design 4. Ultra clear membrane show consistant and high light transmitting rate provide stable data than brands
	MB-ASM	Aluminum Membrane	<ol style="list-style-type: none"> 1. Operating Temperature -80 ~ 120°C 2. PCR or Storage use 3. Strong adhesive film 4. MB-ASM is piercable



Gunster MB-QSM

96 same samples in 96 well plate to do qPCR experiment (In ABI StepOne Plus), the result shows Gunster's qPCR sealing membrane (MB-QSM) fluorescence signal has highly consistent.



Gunster MB-BQSM

96 same samples in 96 well plate to do qPCR experiment (In Bio-Rad CFX96), the result shows Gunster's qPCR sealing membrane (MB-BQSM) fluorescence signal has highly consistent.

Ordering details :

Product Number	Description	Bag Pack	Box Pack
MB-PSM	PCR 96 Well Plate Sealing Membrane	10 Membranes	10 Bags (100 Membranes)
MB-QSM	qPCR 96 Well Plate Optical Sealing Membrane (pressure-sensitive adhesive film)	10 Membranes	10 Bags (100 Membranes)
MB-BQSM	qPCR 96 Well Plate Optical Sealing Membrane (stick adhesive film)	10 Membranes	10 Bags (100 Membranes)
MB-ASM	Aluminum Membrane	10 Membranes	10 Bags (100 Membranes)


CENTRIFUGE TUBES

1.7 ml Microcentrifuge Tubes

The 1.7ml flat-cap tubes are frosted on the top and sides for convenient sample labeling. Scale mark from 0.1 ml to 1.5 ml make them ideal for many uses.

FEATURES:

- Labeled graduations at 100 μ l
- Spin: 20,000 RCF
- Frosted side & cap for sample labeling
- Made of USP VI virgin polypropylene
- Flat Cap
- Free of DNase, RNase, DNA, PCR Inhibitor, ATP, Endotoxin.
- Autoclavable (121°C, 15 psi, 15 minutes)

Item Picture	Product No	Description	Features / Functions
	MB-E17-A	1.7 (1.5) ml Microcentrifuge Tubes	<ol style="list-style-type: none"> 1. Bulk packing 2. Large cap

Ordering details :

Product Number	Description	Bag Pack	Box Pack
MB-E17-A	1.7 (1.5) ml Microcentrifuge Tubes	500 Tubes	10 Bags (5000 Tubes)

ORDER INFORMATION

Gunster Biotech

E-mail : gunster@gunster.com.tw

Phone : +886-2-2677-2332

Fax : +886-2-2677-2339

Address : 4F., No. 208, Sec. 3, Datong Rd., Xizhi Dist., New Taipei

Cat. No.	Description	Packing
PCR SINGLE & 8-STRIP TUBES		
MB-P02-A	0.2ml PCR Tubes with Flat Cap	500 pcs/bag, 6 bags/box
MB-P02D	0.2ml PCR Tubes with Domed Cap	500 pcs/bag, 6 bags/box
MB-P08-A	0.2ml PCR 8-Strip Tube with Attached Flat Cap	12 strips/bag, 10 bags/box
MB-P08-AD	0.2ml PCR 8-Strip Tube with Attached Domed Cap	12 strips/bag, 10 bags/box
MB-P08-B	0.2ml PCR 8-Strip Tube & Separate Flat Cap	120 sets/box
MB-P08-D	0.2ml PCR 8-Strip Tube & Separate Domed Cap	120 sets/box
MB-OPENER	8 - Strip Capping Gadget	1pcs/bag, 15 bags/box
qPCR 8-STRIP & 4-STRIP TUBES		
MB-Q100	0.1ml qPCR 8-Strip Tubes (With Optical Caps)	120 sets/box
MB-Q100W	0.1ml qPCR 8-Strip White Tubes (With Optical Caps)	120 sets/box
MB-Q100C	0.1ml qPCR 8-Strip Clear Tubes (With Optical Caps)	120 sets/box
MB-Q200	0.2ml qPCR 8-Strip Tubes (With Optical Caps)	120 sets/box
MB-Q200W	0.2ml qPCR 8-Strip White Tubes (With Optical Caps)	120 sets/box
MB-QR4	qPCR 4 well qPCR Tube Strips	252 sets/box
PCR & qPCR 96 & 384 WELL PLATES		
MB-P96	0.2ml Standard Profile PCR 96 Well Plate (Non Skirted)	10 plate / bag, 5 bags / box
MB-Q96	0.2ml Standard Profile qPCR 96 Well Plate (Sub-Semi Skirted)	10 plate / bag, 5 bags / box
MB-Q96-S	0.2ml Standard Profile qPCR 96 Well Plate (Semi Skirted)	10 plate / bag, 5 bags / box
MB-Q96-LP	0.1ml Low Profile qPCR 96 Well Plate (Sub-Semi Skirted)	10 plate / bag, 5 bags / box
MB-Q96-LBR	0.1ml Low Profile qPCR 96 well Plate (Semi Skirted)	10 plate / bag, 5 bags / box
MB-Q96-LBR-W	0.1ml Low Profile qPCR 96 well White Plate (Semi Skirted)	10 plate / bag, 5 bags / box
MB-384	qPCR 384 plate (ABI & Bio-Rad type)	10 plate / bag, 5 bags / box
MB-384-W	qPCR 384 white plate (Roche & Bio-Rad type)	10 plate / bag, 5 bags / box
SEALS		
MB-PSM	PCR 96 Well Plate Sealing Membrane	10 membranes/bag, 10 bags/box
MB-QSM	qPCR 96 Well Plate Optical Sealing Membrane (pressure-sensitive adhesive film)	10 membranes/bag, 10 bags/box
MB-BQSM	qPCR 96 Well Plate Optical Sealing Membrane (stick adhesive film)	10 membranes/bag, 10 bags/box
MB-ASM	Aluminum membrane	10 membranes/bag, 10 bags/box
CENTRIFUGE TUBES		
MB-E17-A	1.7(1.5) ml Microcentrifuge Tubes	500 tubes/bag, 10 bags/box

APPENDIX

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ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

How to check 8-Strip or 96-Well plate holder/tray

7300 / 7500

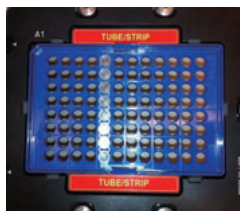


FOR USE WITH 96 WELL PLATES ONLY
4367032 **Plate Use**



FOR USE WITH 8-STRIP & INDIVIDUAL TUBES ONLY
4367033 **8-Strip Use**

ViiA 7



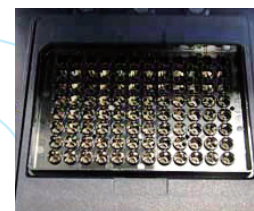
4381850 Blue tray for **8-Strip Use**

How to check 8-Strip or 96-Well plate holder/tray

StepOne Plus



Plate Use



4379983 Black tray for **8-Strip Use**

ABI qPCR machine 8-Strip & 96-Well Plate holder/tray number

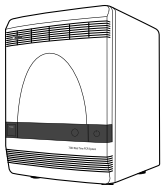
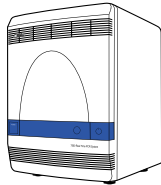

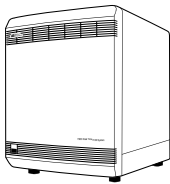


Machine PN	ABI holder/tray No. For 8-Strip	ABI holder/tray No. For 96-Well Plate
7000	4350105	4350105
7300&7500	4367033	4367032
7500 Fast	4403809	4359652
7900HT	Use 96-Well Plate Only	Direct Use 96-Well Plate
7900HT Fast	Use 96-Well Plate Only	Direct Use 96-Well Plate
StepOne	4375282	Direct Use Plate without 8-Strip Tray
StepOne Plus	4379983	Direct Use Plate without 8-Strip Tray
ViiA 7	4381850	4459845
ViiA7 Fast	4379983	4459846
QuantStudio	4381850	4459845
QuantStudio Fast	4379983	4459846
QuantStudio 3/5	4381850	Direct Use Plate without 8-Strip Tray
QuantStudio 3/5 Fast	4379983	Direct Use Plate without 8-Strip Tray

ABI Sequencer 8-Strip & 96-Well Plate holder/tray number

Machine PN	ABI holder/tray No. For 8-Strip	ABI holder/tray No. For 96-Well Plate
3130(xL)/3100 (0.1ml Fast 96 Well)	Use 96-Well Plate Only	4367470 (Retainer) 4315933 (Septa)
3130(xL)/3100 (0.2ml Standard 96 Well)	Use 96-Well Plate Only	4317241 (Retainer) 4315933 (Septa)
3730(xL) (0.1ml Fast 96 Well)	Use 96-Well Plate Only	4367469 (Retainer) 4315933 (Septa)
3730(xL) (0.2ml Standard 96 Well)	Use 96-Well Plate Only	4410228 (Retainer) 4315933 (Septa)
3500(xL) (0.1ml Fast 96 Well)	4410232 (Retainer) 4410701 (Septa)	4409530 (Retainer) 4412614 (Septa)
3500(xL) (0.2ml Standard 96 Well)	4410230 (Retainer) 4410701 (Septa)	4410228 (Retainer) 4412614 (Septa)


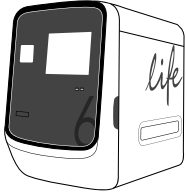

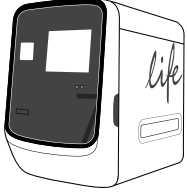
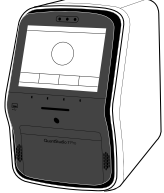
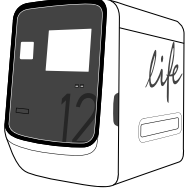
ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

0.2 ml Standard Profile qPCR Machine				
qPCR Machine	Compatibility Plasticware of Gunster			
	qPCR 8-Strip	ABI Holder & Tray Number	qPCR 96 Well Plate & Sealing Membrane	ABI Holder & Tray Number
7300 	MB-Q200	4367033	MB-Q96 MB-QSM (Film)	4367032
7500 	MB-Q200	4367033	MB-Q96 MB-QSM (Film)	4367032
ViiA 7 	MB-Q200 MB-Q200W	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	4459845
7900 	Use 96-Well Plate Only		MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
QuantStudio 1 	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
QuantStudio 3 	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate



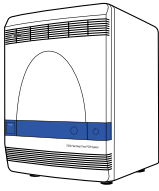

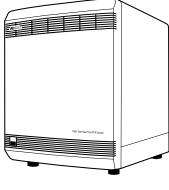

ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

0.2 ml Standard Profile qPCR Machine				
qPCR Machine	Compatibility Plasticware of Gunster			
	qPCR 8-Strip	ABI Holder & Tray Number	qPCR 96 Well Plate & Sealing Membrane	ABI Holder & Tray Number
 <p>QuantStudio 5</p>	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
 <p>QuantStudio 6</p>	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
 <p>QuantStudio 6 pro</p>	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
 <p>QuantStudio 7</p>	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
 <p>QuantStudio 7 pro</p>	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate
 <p>QuantStudio 12k</p>	MB-Q200	4381850	MB-Q96 MB-Q96-S MB-QSM (Film)	Direct Use 96-Well Plate


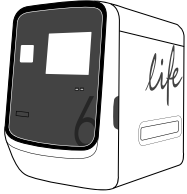

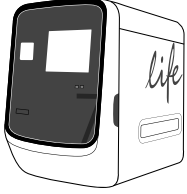
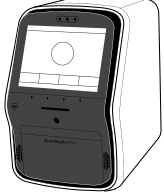
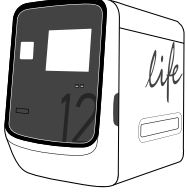
ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

0.1 ml Fast qPCR Machine (Low Profile)				
qPCR Machine	Compatibility Plasticware of Gunster			
	qPCR 8-Strip	ABI Holder & Tray Number	qPCR 96 Well Plate & Sealing Membrane	ABI Holder & Tray Number
StepOne 	MB-Q100	4379983	USE 8-Strip or 48-Well Plate Only	
StepOne Plus 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
7500 Fast 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
ViiA 7 Fast 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
7900 Fast 	Use 96-Well Plate Only		MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
QuantStudio 3 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate

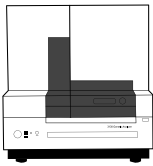
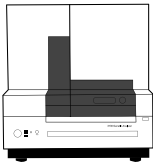
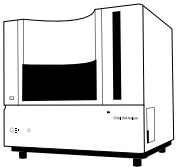
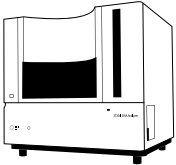



ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

0.1 ml Fast qPCR Machine (Low Profile)				
qPCR Machine	Compatibility Plasticware of Gunster			
	qPCR 8-Strip	ABI Holder & Tray Number	qPCR 96 Well Plate & Sealing Membrane	ABI Holder & Tray Number
QuantStudio 5 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
QuantStudio 6 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
QuantStudio 6 pro 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
QuantStudio 7 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
QuantStudio 7 pro 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate
QuantStudio 12k 	MB-Q100	4379983	MB-Q96-LBR MB-Q96-LP MB-QSM(Film)	Direct Use 96-Well Plate




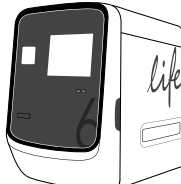

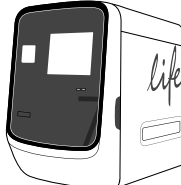
ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

Sequencer				
Sequencing Machine	Compatibility Plasticware of Gunster			
	qPCR 8-Strip	ABI Holder & Tray Number	qPCR 96-Well	ABI Holder & Tray Number
3130/3130xl (0.2ml Standard 96 well) 	Use Standard 96-Well Plate Only		MB-Q96 MB-Q96-S	USE ABI 4317241 (Retainer) and (Septa) 4315933
3130/3130xl (0.1ml Fast 96 well) 	Use Fast 96-Well Plate Only		MB-Q96-LP MB-Q96-LBR	USE ABI 4367470 (Retainer) and (Septa) 4315933
3730/3730xl (0.2ml Standard 96 well) 	Use Standard 96-Well Plate Only		MB-Q96 MB-Q96-S	USE ABI 4317241 (Retainer) and (Septa) 4315933
3730/3730xl (0.1ml Fast 96 well) 	Use Fast 96-Well Plate Only		MB-Q96-LP MB-Q96-LBR	USE ABI 4367470 (Retainer) and (Septa) 4315933
3500/3500xl (0.2ml Standard 96 well) 	MB-Q200	4410230 (Retainer) 4410701 (Septa)	MB-Q96 MB-Q96-S	USE ABI 4410228 (Retainer) and (Septa) 4412614
3500/3500xl (0.1ml Fast 96 well) 	MB-Q100	USE ABI 4410232 (Retainer) and (Septa) 4410701	MB-Q96-LP MB-Q96-LBR	USE ABI 4409530 (Retainer) and (Septa) 4412614
SeqStudio Genetic Analyzer 	MB-Q200	403081 (Retainer) A36543 (Septa)	MB-Q96 MB-Q96-S	A36541 (Septa)


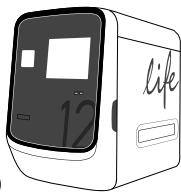


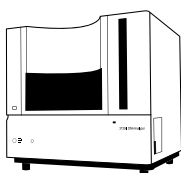
ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

384 qPCR & sequencing machine		
qPCR Machine	Compatibility Plasticware of Gunster	
	qPCR 384 Well Plate	Sealing membrane
 <p>ViiA (384 well)</p>	MB-384	MB-QSM
 <p>7900 (384 well)</p>	MB-384	MB-QSM
 <p>QuantStudio 5 (384 well)</p>	MB-384	MB-QSM
 <p>QuantStudio 6 (384 well)</p>	MB-384	MB-QSM
 <p>QuantStudio 6 pro (384 well)</p>	MB-384	MB-QSM
 <p>QuantStudio 7 (384 well)</p>	MB-384	MB-QSM

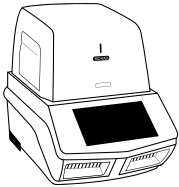
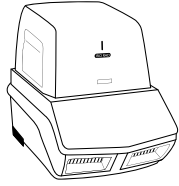
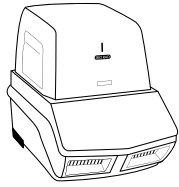
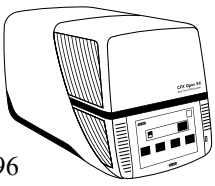
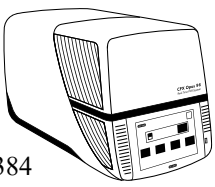
ABI qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ABI (Life Technology)

384 qPCR & sequencing machine		
qPCR Machine	Compatibility Plasticware of Gunster	
	qPCR 384 Well Plate	Sealing membrane
 <p>QuantStudio 7 pro (384 well)</p>	MB-384	MB-QSM
 <p>QuantStudio 12k (384 well)</p>	MB-384	MB-QSM
 <p>3130/3130xl (384 well)</p>	MB-384	USE ABI 4334865(Retainer) and (Septa)4315934
 <p>3500/3500xl (384 well)</p>	MB-384	USE ABI 4334865(Retainer) and (Septa)4315934
 <p>3730/3730xl (384 well)</p>	MB-384	USE ABI 4334865(Retainer) and (Septa)4315934




BIO-RAD, ROCHE, AGILENT, ANALYTIK JENA, QIAGEN qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

Bio-Rad

Bio-Rad qPCR machine			
qPCR Machine	Compatibility Plasticware of Gunster		
	qPCR 8-Strip	qPCR 96 Well Plate & Sealing Membrane	qPCR 384 Well Plate & Sealing Membrane
CFX 96 	MB-Q100 MB-Q100W	MB-Q96-LBR MB-Q96-LBR-W MB-BQSM (Film)	NON
CFX 96 Connect 	MB-Q100 MB-Q100W	MB-Q96-LBR MB-Q96-LBR-W MB-BQSM (Film)	NON
CFX 384 Connect 	NON	NON	MB-384 MB-384-W MB-BQSM (Film)
CFX Opus 96 	MB-Q100 MB-Q100W	MB-Q96-LBR MB-Q96-LBR-W MB-BQSM (Film)	NON
CFX Opus 384 	NON	NON	MB-384 MB-384-W MB-BQSM (Film)




BIO-RAD, ROCHE, AGILENT, ANALYTIK JENA, QIAGEN qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

ROCHE

Roche qPCR machine			
qPCR Machine	Compatibility Plasticware of Gunster		
	qPCR 8-Strip	qPCR 96 Well Plate & Sealing Membrane	qPCR 384 Well Plate & Sealing Membrane
 <p>LightCycler 96</p>	MB-Q100W	MB-Q96-LBR-W MB-QSM (Film)	NON
 <p>LightCycler 480I & 480II</p>	MB-Q100W	MB-Q96-LBR-W MB-QSM (Film)	NON
 <p>LightCycler 480I & 480II (384 well)</p>	NON	NON	MB-384-W MB-QSM (Film)




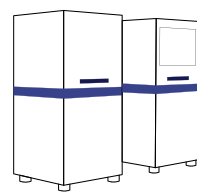
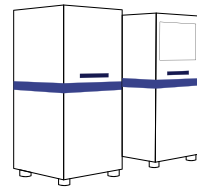
BIO-RAD, ROCHE, AGILENT, ANALYTIK JENA, QIAGEN qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

Analytik Jena qPCR machine			
qPCR Machine	Compatibility Plasticware of Gunster		
	qPCR 8-Strip	qPCR 96 Well Plate & Sealing Membrane	qPCR 384 Well Plate & Sealing Membrane
 <p>qTOWER³ G</p>	<p>MB-Q100W MB-Q200W</p>	<p>MB-Q96-LBR-W MB-QSM (Film)</p>	<p>NON</p>
 <p>qTOWER³ G touch</p>	<p>MB-Q100W MB-Q200W</p>	<p>MB-Q96-LBR-W MB-QSM (Film)</p>	<p>NON</p>
 <p>qTOWER³ 84</p>	<p>NON</p>	<p>NON</p>	<p>MB-384-W MB-QSM (Film)</p>

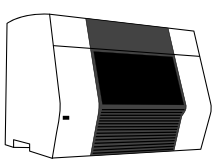
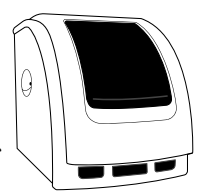


BIO-RAD, ROCHE, AGILENT, ANALYTIK JENA, QIAGEN qPCR INSTRUMENT PLASTICWARE SELECTION GUIDE

QIAGEN

Qiagen qPCR machine			
qPCR Machine	Compatibility Plasticware of Gunster		
	qPCR Strip	qPCR 96 Well Plate & Sealing Membrane	qPCR 384 Well Plate & Sealing Membrane
Rotor Gene Q Qiagen 	MB-QR4	NON	NON
Qiagen_QIAquant 	MB-Q100W MB-Q200W	MB-Q96-LBR-W MB-QSM (Film)	NON
Qiagen_QIAquant 384 	NON	NON	MB-384-W MB-QSM (Film)

AGILENT (STRATAGENE)

Agilent (Stratagene) qPCR machine		
qPCR Machine	Compatibility Plasticware of Gunster	
	qPCR 8-Strip	qPCR 96-Well
AriaMx 	MB-Q100	MB-Q96-LBR MB-QSM (Film)
Mx3005PM、Mx3000P 	MB-Q200	MB-Q96-S MB-QSM (Film)

qPCR 8-STRIP COMPATIBILITY CHART

	MB-100	MB-100C	MB-100W	MB-Q200	MB-Q200W	MB-QR4	Holder No
ABI							
7000				●			
7300				●			
7500				●			
7500 fast	●						
stepone	●						
stepone plus	●						
Vii7 fast	●						
Vii7				●			
7900				●			
7900 fast	●						
Quantstudio 3 (0.1ml)	●						
Quantstudio 5 (0.1ml)	●						
Quantstudio 6 (0.1ml)	●						
Quantstudio 6 pro (0.1ml)	●						
Quantstudio 7 (0.1ml)	●						
Quantstudio 7 pro (0.1ml)	●						
Quantstudio 12K (0.1ml)	●						
Quantstudio 1 (0.2ml)				●			
Quantstudio 3 (0.2ml)				●			
Quantstudio 5 (0.2ml)				●			
Quantstudio 6 (0.2ml)				●			
Quantstudio 6 pro (0.2ml)				●			
Quantstudio 7 (0.2ml)				●			
Quantstudio 7 pro (0.2ml)				●			
Quantstudio 12K (0.2ml)				●			
3130, 3130XL (0.1ml)	●						
3500, 3500XL (0.1ml)	●						
3730, 3730XL(0.1ml)	●						
3130xl				●			
3500xl				●			
3730xl				●			
Seqstudio Genetic Analyzer				●			

qPCR 8-STRIP COMPATIBILITY CHART

	MB-100	MB-100C	MB-100W	MB-Q200	MB-Q200W	MB-QR4	Holder No
Bio-Rad							
CFX96		●	●				
CFX96 connect		●	●				
CFX Opus 96		●	●				
CFX Opus 384							
Roche							
LightCycler 96			●				
LightCycler 480I & 480II			●				
Analytik Jena							
qTOWER ³ G			●		●		
qTOWER ³ G touch			●		●		
qTOWER ³ 84							
Qiagen							
Qiagen_Rotor-Gene Q						●	
Qiagen_QIAquant			●		●		
Stratagene							
AriaMx	●						
Mx3005PM、Mx3000P	●						



qPCR 96 & 384 WELL PLATE COMPATIBILITY CHART (INCLUDING SEALING MEMBRANE)

	MB-Q96	MB-Q96-S	MB-Q96-LP	MB-Q96-LBR	MB-Q96-LBR-W	MB-384	MB-384-W	MB-QSM	MB-BQSM
ABI									
7000	●							●	
7300	●							●	
7500	●							●	
7500 fast			●					●	
Stepone Plus			●					●	
Vii7 fast			●	●				●	
Vii7	●	●						●	
Vii7 (384 well)						●		●	
7900	●	●						●	
7900 fast			●	●				●	
7900 (384 well)						●		●	
Quantstudio 3 (0.1ml)			●	●				●	
Quantstudio 5 (0.1ml)			●	●				●	
Quantstudio 6 (0.1ml)			●	●				●	
Quantstudio 6 pro (0.1ml)			●	●				●	
Quantstudio 7 (0.1ml)			●	●				●	
Quantstudio 7 pro (0.1ml)			●	●				●	
Quantstudio 12K (0.1ml)			●	●				●	
Quantstudio 1 (0.2ml)	●	●						●	
Quantstudio 3 (0.2ml)	●							●	
Quantstudio 5 (0.2ml)	●							●	
Quantstudio 6 (0.2ml)	●							●	
Quantstudio 6 pro (0.2ml)	●							●	
Quantstudio 7 (0.2ml)	●							●	
Quantstudio 7 pro (0.2ml)	●							●	
Quantstudio 12K (0.2ml)	●							●	
Quantstudio 5 (384 well)						●		●	
Quantstudio 6 (384 well)						●		●	
Quantstudio 7 (384 well)						●		●	
Quantstudio 12K (384 well)						●		●	
3130, 3130XL (0.1ml)			●	●					
3500, 3500XL (0.1ml)			●	●					

**qPCR 96 & 384 WELL PLATE COMPATIBILITY CHART
(INCLUDING SEALING MEMBRANE)**

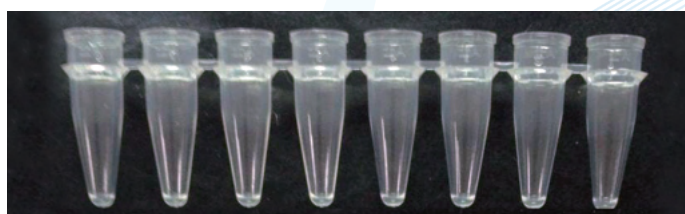
	MB-Q96	MB-Q96-S	MB-Q96-LP	MB-Q96-LBR	MB-Q96-LBR-W	MB-384	MB-384-W	MB-QSM	MB-BQSM
ABI									
3730, 3730XL(0.1ml)			●	●					
3130xl (0.2ml)	●	●							
3500xl (0.2ml)	●	●							
3730xl (0.2ml)	●	●							
3130xl (384 well)						●			
3500xl (384 well)						●			
3730xl (384 well)						●			
seqstudio genetic analyzer	●	●							
Bio-Rad									
CFX96				●	●				●
CFX96 connect				●	●				●
CFX Opus 96				●	●				●
CFX Opus 384						●	●		●
Roche									
LightCycler 96					●			●	
LightCycler 480I & 480II					●			●	
LightCycler 480I & 480II (384 well)							●	●	
Analytik Jena									
qTOWER ³ G					●			●	
qTOWER ³ G touch					●			●	
qTOWER ³ 84							●	●	
Qiagen									
Qiagen_QIAquant					●			●	
Stratagene									
AriaMx				●				●	
Mx3005PM、Mx3000P				●				●	

WHITE, CLEAR TUBES DIFFERENCE IN qPCR

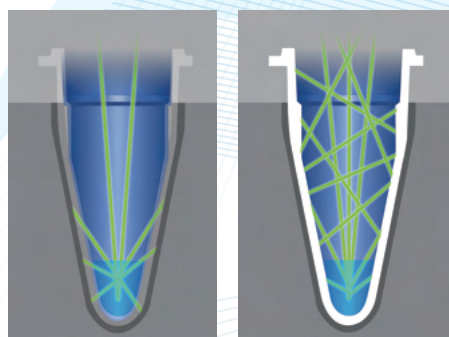
ROX passive dye : It didn't participate qPCR reaction, it used to normalize qPCR reporter dye (like SYBR).

	Rox-dependent	No Rox
Machine Brands	ABI Stratagene Biometra	Bio-Rad Roche Eppendorf
Does mastermix including ROX	Yes	No
Ct value determined by	ΔRn (Reporter RFU/ Rox RFU)	Reporter RFU
Ct value difference among White, Forsted, Clear tubes	White = Clear	White > Clear

Clear



White



Clear

White

White tube could reflect all light that will cause higher RFU intensity.

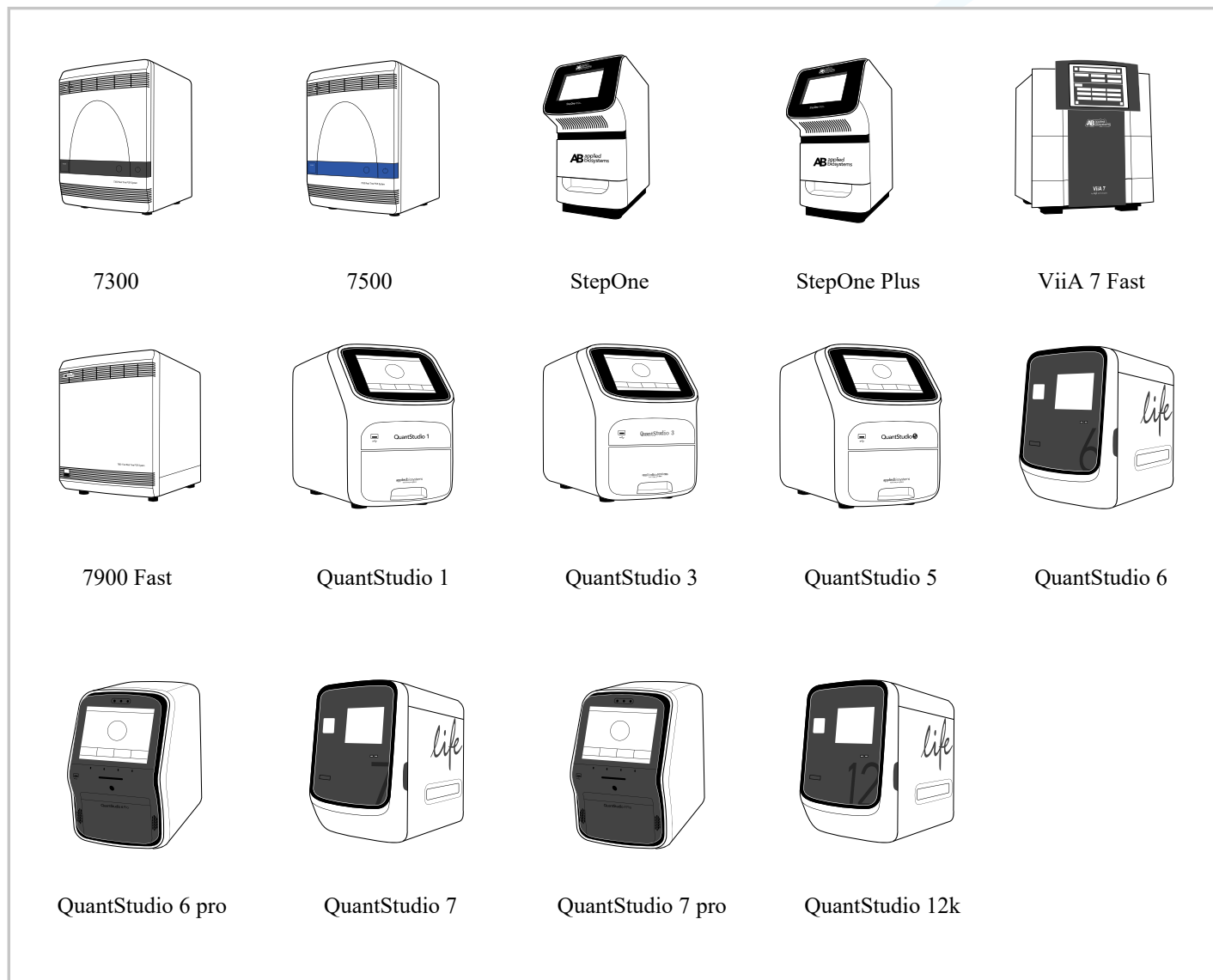
In **no ROX machine**, higher Reporter RFU will determine lower Ct value (the lower Ct the better).
The comparison are White > Clear

In **ROX-dependent machine**, higher Reporter and Passive RFU will get almost the same Rn and determine the same Ct value.
The comparison are White = Clear

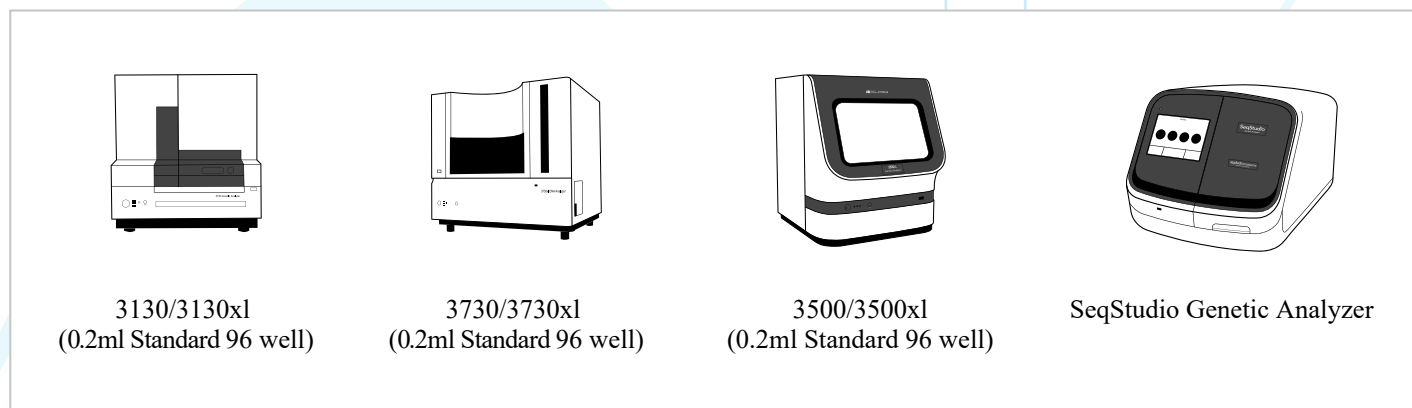
Don't put different type of tube in the same qPCR experiment, that will case different Ct value, even with the same sample.

qPCR and SEQUENCER MACHINE PICTURES

ABI

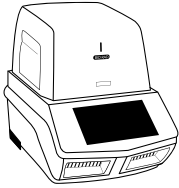


SEQUENCER

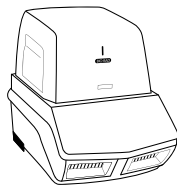


qPCR and SEQUENCER MACHINE PICTURES

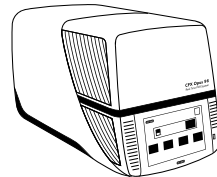
BIO-RAD



CFX 96



CFX 96 Connect/384 Connect



CFX Opus 96/384

ROCHE



CFX 96

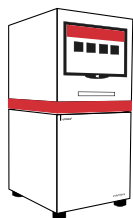


LightCycler 480I & 480II/
480I & 480II(384 well)

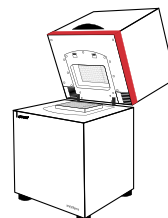
ANALYTIK JENA



qTOWER³G



qTOWER³G Touch

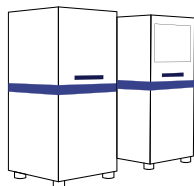


qTOWER³84

QIAGEN

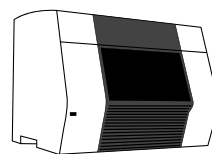


Rotor Gene Q Qiagen

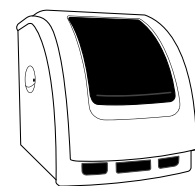


Qiagen_QIAquant/384 QIAquant

AGILENT



AriaMx



Mx3005PM、Mx3000P

CHEMICAL RESISTANT CHART

Chemical Resistance Classifications are given at the bottom of the following charts.

First letter of each pair applies to conditions at 20° C; the second to those at 50° C. At 20°C → AB ← at 50° C

Chemical	LDPE	HDPE	PP	PET	Teflon®	PC	PSF	PS
1,2,4-Trichlorobenzene	DD	DD	DD	DD	AA	DD	DD	DD
1,2 Dichloroethane	DD	DD	DD	DD	AA	DD	DD	DD
1,4-Dioxane	BC	BB	BC	–	AA	BC	BC	DD
2,2,4-Trimethylpentane	CD	CD	CD	–	AA	DD	BC	DD
2,4 Dichlorophenol	DD	DD	DD	–	AA	DD	DD	DD
2-Butanol	AA	AA	AA	–	AA	AB	AB	BB
2-Methoxyethanol	AB	AA	AA	–	AA	DD	DD	DD
2-Propanol	AA	AA	AA	–	AA	AA	AA	AB
Acetaldehyde	BD	BC	BD	–	AA	CD	DD	DD
Acetamide, Sat.	AA	AA	AA	–	AA	DD	DD	AA
Acetone	DD	DD	AB	DD	AA	DD	DD	DD
Acetonitrile	AA	AA	CD	–	AA	DD	DD	DD
Acetophenone	DD	CC	CC	–	AA	DD	DD	DD
Acrylonitrile	AA	AA	CD	–	AA	DD	DD	DD
Adipic Acid	AB	AA	AA	–	AA	AA	BB	AA
Allyl Alcohol	AA	AA	AA	–	AA	BC	BC	BC
Aluminum Hydroxide	AB	AA	AB	–	AA	CD	BB	BB
Amino Acids	AA	AA	AA	–	AA	AA	AA	AA
Ammonia	AA	AA	AA	–	AA	DD	BC	BC
Ammonia, 25%	AA	AA	AA	–	AA	DD	AB	AB
Ammonium Glycolate	AB	AA	AB	–	AA	BC	BB	AA
Ammonium Hydroxide, 5%	AA	AA	AA	CD	AA	CD	BB	AC
Ammonium Hydroxide, 30%	AB	AA	AB	DD	AA	DD	BB	BC
Ammonium Oxalate	AB	AA	AB	–	AA	AA	AA	AA
Ammonium Salts	AA	AA	AA	–	AA	AB	AA	BB
Amyl Alcohol	AA	AA	AA	–	AA	BC	AA	BC
Amyl Chloride	DD	CD	DD	–	AA	DD	DD	DD
Aniline	AB	AB	BC	–	AA	CD	DD	DD
Aqua Regia	DD	DD	DD	–	AA	DD	DD	DD
Arsenic Acid	BC	AB	AA	–	AA	AA	–	AA
Benzaldehyde	AB	BD	AB	–	AA	CD	CC	DD
Benzenamine	AB	AB	BC	–	AA	CD	DD	DD
Benzene	DD	DD	DD	DD	AA	DD	DD	DD
Benzoic Acid, Sat.	AA	AA	AB	–	AA	AB	CC	BB
Benzyl Acetate	AB	AA	AB	–	AA	CD	DD	DD
Benzyl Alcohol	DD	CD	DD	–	AA	DD	DD	DD
Boric Acid	AA	AA	AA	DD	AA	AA	–	AB
Bromine	DD	CD	DD	–	AA	CD	DD	DD
Bromobenzene	DD	DD	DD	–	AA	DD	DD	DD
Bromoform	DD	DD	DD	–	AA	DD	DD	DD
Butadiene	DD	CD	DD	–	AA	DD	DD	DD
Butyl Acetate	DD	CC	CC	–	AA	DD	DD	DD
Butyl Chloride	DD	DD	DD	–	AA	DD	DD	DD
Butyric Acid	DD	CD	DD	–	AA	CD	BB	DD
Calcium Hydroxide	AA	AA	AA	–	AA	DD	BB	BB
Calcium Hypochlorite	AA	AA	AA	–	AA	CD	AA	BC
Carbazole	AA	AA	AA	–	AA	DD	DD	AA
Carbon Disulphide	DD	DD	DD	–	AA	DD	DD	DD

A-No damage after 30 days of constant exposure. B-Little or no damage after 30 days of constant exposure.

C-Some effect after 7 days of constant exposure. D-Immediate damage may occur. Not recommended for continuous use.

CHEMICAL RESISTANT CHART

Chemical Resistance Classifications are given at the bottom of the following charts.

First letter of each pair applies to conditions at 20° C; the second to those at 50° C. At 20°C → AB ← at 50° C

Chemical	LDPE	HDPE	PP	PET	Teflon®	PC	PSF	PS
Carbon Tetrachloride	CD	BC	BC	DD	AA	DD	DD	DD
Cellosolve Acetate	AB	AA	AB	–	AA	CD	DD	DD
Chlorine Water	BD	BC	CD	–	AA	BC	DD	DD
Chlorine, 10% (Moist)	BD	BC	CD	–	AA	BC	DD	DD
Chlorine, 10% in air	BD	AC	BD	–	AA	AB	DD	CD
Chlorine, wet gas	BD	BC	CD	–	AA	BC	DD	DD
Chloroacetic Acid	AA	AA	AB	–	AA	CD	DD	BD
Chlorobenzene	DD	DD	DD	–	AA	DD	DD	DD
Chloroform	CD	CD	DD	–	AA	BC	DD	DD
Chromic: Sulfuric Acid Mixture, 96%	DD	DD	DD	A–	AA	DD	DD	DD
Citric Acid, 10%	AA	AA	AA	–	AA	AB	AA	AB
Cresol	DD	CD	BC	–	AA	DD	DD	DD
Diacetone	DD	DD	BC	–	AA	DD	DD	DD
Diacetone Alcohol	CD	AA	AC	–	AA	DD	DD	BD
Dibutylphthalate	–	–D	DD	–	AA	BD	DD	DD
Diethyl Benzene	DD	CD	DD	–	AA	CD	DD	DD
Diethyl Ether	DD	CD	DD	–	AA	DD	DD	DD
Diethyl Ketone	DD	DD	BB	–	AA	DD	DD	DD
Diethyl Malonate	AA	AA	AA	–	AA	CD	CC	DD
Diethylamine	DD	CD	BD	–	AA	DD	BC	BB
Diethylene Dioxide	BC	BB	BC	–	AA	CD	DD	DD
Diethylene Glycol	AA	AA	AA	–	AA	BC	BB	BB
Diethylene Glycol Ethyl Ether	AA	AA	AA	–	AA	CD	CC	DD
Dimethyl Acetamide	CD	AA	AA	–	AA	DD	DD	DD
Dimethyl Formamide	AA	AA	AA	–	AA	DD	DD	DD
Dimethylsulphoxide (DMSO)	AA	AA	AA	DD	AA	DD	DD	AB
Dioxane	BC	BB	BC	–	AA	CD	DD	DD
Dipropylene Glycol	AA	AA	AA	–	AA	BC	BB	AA
Ethanol, 40%	AB	AA	AB	–	AA	AB	AB	BC
Ether	DD	CD	DD	A–	AA	DD	DD	DD
Ethyl acetate	AA	AA	AB	DD	AA	DD	DD	DD
Ethyl Alcohol (Absolute)	AB	AA	AB	–	AA	AB	AB	CD
Ethyl Alcohol, 40%	AB	AA	AA	B–	AA	AB	AB	BC
Ethyl Alcohol, 96%	AB	AB	AA	B–	AA	AB	AB	BC
Ethyl Benzene	DD	DD	DD	A–	AA	DD	DD	DD
Ethyl Benzoate	CC	BB	BC	–	AA	DD	DD	DD
Ethyl Butyrate	BD	BC	BD	–	AA	DD	DD	DD
Ethyl Chloride	CD	CC	CD	–	AA	DD	DD	DD
Ethyl Chloride, Liquid	CD	CC	CD	–	AA	DD	DD	DD
Ethyl Cyanoacetate	AA	AA	AA	–	AA	CD	CC	BD
Ethyl Lactate	AA	AA	AA	–	AA	CD	CC	CD
Ethylene Chloride	BD	BC	CD	DD	AA	DD	DD	DD
Ethylene Glycol	AA	AA	AA	A–	AA	BC	AA	AA
Ethylene Glycol Monomethyl Ether	AA	AA	AA	–	AA	CD	CC	DD
Ethylene Oxide Gas	CC	BC	CC	BC	AA	CD	AA	DD
Ethylene Oxide, 100%	AB	AA	AB	BC	AA	BC	BB	AC
Fatty Acids	CD	BD	CD	–	AB	BC	DD	DD
Fluorine	AA	AA	AA	–	AA	AB	BC	CD

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CHEMICAL RESISTANT CHART

Chemical Resistance Classifications are given at the bottom of the following charts.

First letter of each pair applies to conditions at 20° C; the second to those at 50° C. At 20°C → AB ← at 50° C

Chemical	LDPE	HDPE	PP	PET	Teflon®	PC	PSF	PS
Formaldehyde, 10%	AB	AA	AB	–	AA	AB	BC	DD
Formaldehyde, 40%	AA	AA	AA	–	AA	AB	BC	CD
Formalin, 10%	AB	AA	AB	–	AA	AB	BC	DD
Formalin, 40%	AB	AA	AB	–	AA	AC	CC	CC
Formic Acid	AB	AA	AB	–	AA	AB	BB	AB
Formic Acid, 3%	AB	AA	AB	–	AA	BC	BB	CC
Formic Acid, 50%	AA	AA	AB	–	AA	CD	AB	CC
Formic Acid, 85%	AB	AA	AB	–	AA	CD	AB	CD
Formic Acid, 100%	AB	AB	AB	–	AA	BC	DD	DD
Freon TF	AB	AA	AA	B–	AA	AC	BB	AC
Glutaraldehyde	AA	AA	AA	–	AA	AA	AA	AA
Glycerine (Glycerol)	DD	BC	BC	A–	AA	CD	AB	DD
Hexane	DD	DD	DD	–	AA	DD	DD	DD
Hydrazine	–	–D	AB	–	AA	BC	AB	CC
Hydrobromic Acid, 69%	AA	AA	AA	–	AA	AA	AA	AA
Hydrogen Peroxide, 3%	AB	AA	AB	A–	AA	AA	AA	AB
Hydrogen Peroxide, 30%	AB	AA	AB	A–	AA	AA	AA	AB
Hydrogen Peroxide, 90%	DD	DD	CD	–	AA	DD	DD	DD
Iodine Crystals	AA	AA	AA	–	AA	AB	AB	BB
Isobutanol	AA	AA	AA	–	AA	AA	AA	AB
Isopropanol, 100%	BC	AB	BC	–	AA	DD	DD	DD
Isopropyl Acetate	CD	BC	CD	–	AA	DD	DD	DD
Isopropyl Ether	DD	DD	DD	–	AA	DD	DD	DD
Lactic Acid, 3%	AB	AA	AB	CD	AA	AB	AA	BB
Lactic Acid, 85%	AB	AA	AB	DD	AA	AB	AA	BB
Mercury	AA	AA	AA	–	AA	DD	AA	AA
Methanol, 100%	AA	AA	AA	B–	AA	BC	BC	CD
Methoxyethyl Oleate	AB	AA	AB	B–	AA	BD	DD	DD
Methyl Acetate	CD	CC	BC	–	AA	DD	DD	DD
Methyl Ethyl Ketone	DD	DD	AB	B–	AA	DD	DD	DD
Methyl Isobutyl Ketone (MIBK)	DD	DD	BC	DD	AA	DD	DD	DD
Methyl Propyl Ketone	BC	AB	BC	DD	AA	DD	DD	DD
Methyl-t-Butyl Ether	DD	CD	CD	DD	AA	DD	DD	DD
Methylene Chloride	CD	CC	CD	DD	AA	DD	DD	DD
Nitric Acid, 10%	AA	AA	AA	B–	AA	AB	AC	BD
Nitric Acid, 20%	AB	BC	CC	B–	AA	BC	BC	DD
Nitrobenzene	DD	CD	DD	DD	AA	DD	DD	DD
Nitromethane	DD	CD	CD	DD	AA	DD	DD	DD
n-Amyl Acetate	BC	AB	BC	–	AA	DD	DD	DD
n-Butanol	AA	AA	AA	–	AA	BC	BC	AB
n-Butyl Acetate	BC	AB	BC	–	AA	DD	DD	DD
n-Decane	CD	CD	BD	–	AA	CD	BC	CD
n-Heptane	CD	BC	CC	–	AA	AB	AB	DD
n-Octane	AA	AA	AA	–	AA	BC	BC	DD
Oil, Mineral	BD	AA	AA	–	AA	AB	AA	AA
Oxalic Acid, 10%	AA	AA	AA	–	AA	AA	AA	AA
Ozone	AB	AA	AB	–	AA	AB	AA	CC
o-Dichlorobenzene	CD	CC	CD	DD	AA	DD	DD	DD

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CHEMICAL RESISTANT CHART

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First letter of each pair applies to conditions at 20° C; the second to those at 50° C. At 20°C → AB ← at 50° C

Chemical	LDPE	HDPE	PP	PET	Teflon®	PC	PSF	PS
Perchloric Acid	BD	BD	BD	–	BC	DD	DD	BC
Perchloric Acid, 70%	BD	BD	BD	–	BC	DD	DD	BC
Perchloroethylene	DD	DD	DD	–	AA	DD	DD	DD
Phenol, 100%	DD	DD	DD	DD	AA	DD	DD	DD
Phenol, 50%	DD	DD	DD	DD	AA	DD	DD	CD
Phenol, Crystals	BD	BC	BD	DD	AA	DD	CC	DD
Phenol, Liquid	DD	DD	DD	DD	AA	DD	DD	CD
Propane	DD	CD	DD	–	AA	CD	CC	DD
Propionic Acid	CD	AC	AB	–	AA	DD	BB	BD
Propylene Glycol	AA	AA	AA	–	AA	BC	BB	AA
Propylene Oxide	AB	AA	AB	–	AA	BC	BB	DD
Pyridine	DD	DD	DD	–	AA	DD	DD	DD
p-Chloroacetophenone	AA	AA	AA	–	AA	DD	DD	DD
p-Dichlorobenzene	CD	BC	BC	–	AA	DD	DD	DD
Resorcinol, 5%	AA	AA	AA	–	AA	BC	DD	BC
Resorcinol, Sat.	AA	AA	AA	–	AA	BC	DD	BC
Salicylaldehyde	AB	AA	AB	–	AA	BC	CC	DD
Salicylic Acid, Sat.	AA	AA	AA	–	AA	AB	AA	AB
Salt Solutions, Metallic	AA	AA	AA	–	AA	AA	AA	BB
Silicone Oil	AB	AA	AA	DD	AA	AA	AA	AB
Silver Nitrate	AB	AA	AB	–	AA	AA	AA	BC
Sodium Dichromate	AA	AA	AA	–	AA	AA	AA	AA
Sodium Hydroxide, 1%	AA	BC	AA	A–	AA	CD	AA	AA
Sodium Hydroxide, 10%	AA	BC	AA	A–	AA	DD	AB	AA
Sodium Hydroxide, 50%	BB	BC	AA	DD	AA	DD	AB	AB
Sodium Hypochlorite, 15%	AA	AA	BC	B–	AA	BC	AA	AA
Stearic Acid	AA	AA	AA	–	AA	AB	BB	AB
Sulfur dioxide	DD	CD	DD	–	AA	BD	BB	DD
Sulfur Dioxide, wet or dry	AA	AA	AA	–	AA	AB	BB	CD
Sulfur Salts	CD	BC	CD	–	AA	CD	BB	DD
Sulfuric Acid, 6%	AA	AA	AA	A–	AA	AA	AA	AB
Sulfuric Acid, 20%	AA	AA	AB	A–	AA	AB	AA	AB
Sulfuric Acid, 30%	AA	AA	BB	B–	AA	BC	AA	BD
Sulfuric Acid, 60%	AB	AA	AB	–	AA	BC	AA	BD
Tartaric Acid	AA	AA	AA	–	AA	AB	AA	BB
Tetrahydrofuran	CD	BC	BC	–	AA	DD	DD	DD
Thionyl Chloride	DD	DD	DD	–	AA	DD	DD	DD
Tincture of Iodine	AB	AB	BB	–	AA	DD	–	BC
Toluene	CD	CD	CD	CD	AA	CD	DD	DD
Tributyl Citrate	BC	AB	BC	–	AA	DD	CC	DD
Trichloroacetic Acid (TCA)	BD	CC	CD	–	AA	CD	BB	CD
Trichloroethane	DD	CD	DD	–	AB	DD	DD	DD
Trichloroethylene	DD	CD	DD	–	AA	DD	DD	DD
Triethylene Glycol	AA	AA	AA	–	AA	AB	AA	AB
Tripropylene Glycol	AA	AA	AA	–	AA	AB	AA	AA
Tris Buffer, Solution	AB	AB	AB	BB	AA	BC	BC	BD
Urea	AA	AA	AA	–	AA	DD	CC	AB
Xylene	BD	BC	CD	–	AA	DD	DD	DD

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