

Product survey: Plasticware

# The Age of Plastic Labware

Charts showing the annual plastic production since the beginning of the 20th century are impressive. Almost flat until 1950 the production-curve has taken off like a rocket in the seventies to reach nearly 250 million tons today. Though only a small portion of the annual production is used for lab plasticware, plastic is to be found everywhere in the lab.

In 1839, the German apothecary Eduard Simon, put ten kilograms of Storax – a resin obtained from the Styrax tree *Liquidambar orientalis* – together with seven kilograms of sodium carbonate into a big cupreous distillation apparatus, added some water and started a fire to heat up the reaction mixture. After boiling for a while, milky water dropped out of the distiller cooling pipe. Simon realised that pale yellow oil had accumulated on the water's surface, which he called styrol (today known as styrene). While analysing the oil he made the puzzling observation that, "with old oil the residue, which cannot be vaporised without decomposition, is greater than with fresh oil, undoubtedly due to a steady conversion of the oil by air, light and heat to a rubber like substance". He, therefore, called the solid substance styrol oxide. Later on it transpired to Simon that the transformation of styrol was not due to oxidization. Neither was he aware of being the first to record a polymerisation reaction, namely the heat-activated polymerisation of styrene into polystyrene (PS).

It wasn't until 90 years later, in 1922, that 1953 Nobel Prize winner Hermann Staudinger came up with the revolutionary idea that Simon's solid styrol-product was a polymer composed of long chains of styrene molecules. Soon after Staudinger's seminal works on macromolecules, the chemical industry developed polystyrene into one of the world's leading plastics. Today, polystyrene is produced in monstrous reaction towers to satisfy the worldwide demand of about 15 million tons per year.

## Polystyrene is everywhere

Needless to say, polystyrene has also found its way into chemical, biological and medical laboratories. You may discover polystyrene in every nook and cranny of a lab. It is used for bottles, flasks, multi-well plates, spinner flasks, dishes and tubes to name but a few polystyrene plasticwares. Most disposable cell culture dishes and plates are made of polystyrene, since some of its features perfectly meet the needs of

cell culturing. Polystyrene is biologically inert, has excellent optical clarity and is hard and tough enough to withstand the daily use in incubators and other cell culture apparatus. Moreover, polystyrene granulate is rather cheap and easy to mould into different forms. Untreated polystyrene surfaces are, however, very hydrophobic, rendering them difficult for cells to attach. To overcome this drawback they are often modified



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with hydroxyl, keton, aldehyde, carboxyl or amine groups to increase the surface hydrophilicity and to introduce a negative or positive charge. Due to the low heat distortion point of polystyrene between 64° C and 80° C, polystyrene plasticwares would melt if autoclaved, hence they are the classic lab disposables.

Polystyrene is a good choice for a lot of applications from cell culturing to ELISA. Putting polystyrene cups or plates into a thermocycler's heating block, however, would lead to "plastic art" rather than to a PCR-product – the cups would simply melt. The majority of plasticware used for PCR today is made of polypropylene which has quite a high heat distortion point of 135° C. Moreover, polypropylene is resistant to chemicals, extraordinarily tough and withstands several autoclaving cycles. Though biological inertness is also mentioned as one of polypropylene's typical attributes in almost every piece of literature about poly-

propylene, that's not the whole truth. The performance of PCR-reactions may especially depend on the quality of the plastic material used. I am not kidding here, that's what the experts really say. After reading some recent articles on plasticware for PCR I am actually convinced that bad plastic quality – and not ill designed primers, denatured templates and old buffers – was the main reason why so many of my own PCR-reactions went down the drain. Usually PCR-tubes, stripes or plates are made of virgin polypropylene to prevent contamination with metals or other substances that may interfere e.g. with the polymerase. However, even virgin polypropylene may exhibit charged groups, anti-static properties and hydrophobic areas that can influence the PCR-reaction. Some companies, therefore, offer different plastic grades suitable for different PCR-applications.

## Polycarbonate instead of glass

Polycarbonate is another frequently used lab plastic. If you are looking for a less expensive alternative to polypropylene PCR-plates, plates made of polycarbonate are an option. Though they have some disadvantages, such as variable wall thickness and sample loss due to the material's porosity, polycarbonate plates can easily be sealed with adhesive tape. Polycarbonate often replaces glass in the lab because of its excellent clarity. In contrast to glass, however, it is almost unbreakable and has an outstanding impact resistance. Typically Erlenmeyer or other flasks are made of polycarbonate.

Polystyrene, polypropylene and polycarbonate are by no means the only plastics you may encounter in the lab. Other prominent examples are high-density polyethylene, nylon, Teflon, polyvinyl chloride and polyethylene terephthalate. Not to mention the numerous copolymers derived from two or more monomeric species. On the next pages you will find a plethora of lab-products that are made from some of the plastics mentioned above.

HARALD ZÄHRINGER

## Plastic Labware

Company	Product Type	Plastic Material	Application(s)	Miscellaneous, Specialities, Generally	Price [EUR]
<b>BD Biosciences</b> Belgium www.bdbiosciences.com Contact: Scientific Support help.biosciences@europe.bd.com	Serological Pipettes with 2 different packagings BD Falcon & BD Advantage	Polystyrene	Cell Culture and General Applications	- Fundamental and Clinical Research	On request
	BD Falcon Round Bottom tubes ( from 5 to 19 ml) and 15, 50 ml (with standard and Flip-Top Cap ), 175 and 225 ml Conical Tubes	Polystyrene and Polypropylene	Cell Culture and General Applications	- Fundamental and Clinical Research	On request
	BD Falcon Flasks (from 12,5to 300 cm <sup>2</sup> ), Petri Dishes (from 35 to 150 mm) Multiwell Plates (from 6 to 1536 - well formats), Cell Culture Inserts (in 6, 12 and 24 - well format), Roller Bottles (Smooth and pleated surfaces).	Polystyrene	Cell Culture, Scale up, Production and High Throughput Screenings	- Fundamental and Clinical Research and Production	On request
	BD Primaria Flasks (25 and 75 cm <sup>2</sup> ), Petri Dishes (from 35 to 100 mm), and Multiwell Plates (6, 24 and 96 - well format)	Polystyrene	Cell Culture	- Fundamental and Clinical Research	On request
	BD BioCoat Flasks (from 25 to 175 cm <sup>2</sup> ), Petri Dishes from (35 to 100 mm) (Multiwell plates plates from 6 to 1536 well plates), Cell Culture Inserts (in 6, 12 and 24 - well format), and other.	Polystyrene coated with biological proteins	Cell Culture	- Fundamental and Clinical Research	On request
<b>Beckman Coulter</b> Krefeld, Germany www.beckmancoulter.com Contact: Christoph Kruell Phone +49 2151 3335 ckruell@beckmancoulter.com	Biomek Automation Pipette Tips	Polypropylene	Liquid transfer and mixing with automatic Biomek liquid handler	- Certified quality - Pipetting range 0.5 µl to 1 ml - Optional conductive tips - Optional filter tips	On request
	96 Deep- and Square-Well Titer Plates	Polystyrene, Polypropylene	Sample collection, compound preparation, nucleic acid purification, bacterial culture growth	- Optional Aluminium Foil Lids and Cap Mats	On request
	ChemLib High Well-Density Microplates	Cyclo-olefin co-polymer (COC)	Low volume screening (1536well, 3456well), optional surface treatment for cell based assays	- Evaporation barrier wells - Low evaporation lids - Low autofluorescence - Chemical resistance - Biocompatibility	On request
	Quick-Seal Ultracentrifuge Tubes	Polyallomer and Ultra-Clear	Pelleting, rate-zonal & isopycnic centrifuge separation	- 1,0-94,0 ml volumes in round-bottomed and konical sealed versions	On Request
	OptiSeal Ultracentrifuge Tubes	Polyallomer	Pelleting, rate-zonal & isopycnic centrifuge separation	- 3,3-36,2 ml volumes in round-bottomed sealed tubes	On Request
	Polycarbonate Ultracentrifuge Bottle Assemblies	Polycarbonate	Pelleting centrifuge separation	- 8.5-250 ml volumes in round-bottomed sealed tubes	On Request
	High Performance Centrifuge Tube & Bottle Assemblies	Polycarbonate, polypropylene and polyallomer	Clearing/Pelleting centrifuge separation	- 10.0-1,000 ml volumes in sealed round-bottomed tubes and flat-bottomed bottles	On Request
<b>Biostep</b> Jahnsdorf, Germany www.biostep.de Contact: Ilona Marzian Phone: +49 3721/3905-16 i.marzian@biostep.de	PCR tubes, 0,2 and 0,5 ml	Polypropylene	PCR and Realtime	- Thin walled design - Cleanroom produced - Free from DNase, RNase and human genomic DNA - Integral snap shut cap, flat ore domed - Available in red, yellow, green blue, purple	From 49,- (1000 pieces)
	8 and 12 thermo strips, available with flat ore domed caps strips	Polypropylene	PCR and Realtime	- Thin walled design - Cleanroom produced - Free from DNase, RNase and human genomic DNA - Ideal for use in 96well v-bottom thermal cyclers - Available in red, yellow, green blue, purple	From 42,- (250 pieces 8er cap strips) / 153,- (250 pieces 8er tube strips)
	PCR-plates, 24well, 48 well, 96well and 384well	Polypropylene	PCR and Realtime	- Thin walled design - Cleanroom produced - Free from DNase, RNase and human genomic DNA - Alphanumeric grid-referencing - Available non-skirted, skirted, semi skirted	From 79,- (25 plates)

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<b>Biostep</b> Contact see page 56	Tips and filter tips, 0,1 to 1000 µl	Polypropylene	PCR, Realtime, and others	<ul style="list-style-type: none"> <li>- Universal tips</li> <li>- Autoclavable</li> <li>- Free of DNase or RNase contamination</li> <li>- Guaranteed absolutely metal free</li> </ul>	From 7,- (1000 pieces tips) and 59,- (10 racks à 96 filter tips)
	Tubes 1,5 ml, 15 ml and 50 ml	Polypropylene	Centrifugation, and others	<ul style="list-style-type: none"> <li>- Reaction tube with attached cap and graduation</li> <li>- Free of DNase or RNase and human DNA</li> <li>- Autoclavable</li> <li>- Temperature range -196 °C to +120 °C</li> <li>- Centrifugation 18000 x g</li> </ul>	From 14,- (1000 pieces 1,5 ml-tubes), 71,- (500 pieces 15 ml-tubes) and 79,- (500 pieces 50 ml-tubes)
<b>Biozym Scientific</b> Hessisch Oldendorf, Germany www.biozym.com <b>Contact:</b> Dirk Duven Phone: +49 5152-9020 support@biozym.com	Filter-Tips	Polypropylene	PCR, Cell-Culture	<ul style="list-style-type: none"> <li>- 3 different product lines with more than 60 items (packed in bags, racks or single wrapped)</li> <li>- All Filter-Tips are produced under clean room conditions and sterilized</li> <li>- Certified free of DNase, RNase and Pyrogens</li> <li>- Filter-Tips with Low Binding Technology</li> <li>- Filter-Tips for special application</li> </ul>	Starting from 16,-
	PCR Disposables	Polypropylene	PCR, Realtime PCR	<ul style="list-style-type: none"> <li>- 0.2 ml Tubes, 0.5 ml Tubes, 8- and 12-Tube-Strips, 8- and 12-Cap-Strips (different colours)</li> <li>- Microtiter Plates (high &amp; low profile, semi &amp; full skirted, unskirted, different sealing options/more than 200 items)</li> <li>- All PCR Disposables are produced under clean room conditions</li> <li>- Certified free of DNA, DNase, RNase and Pyrogens e.g. Realtime PCR 8-Tube-Strips with optical clear caps</li> </ul>	Starting from 15,-
	Reaction vessels	Polypropylene, Polyethylene	Storage, Lab work	<ul style="list-style-type: none"> <li>- 0.25-2 ml vessels (different colours, with or without graduations, standard or low binding)</li> <li>- 1.2 - 10 ml sterile Cryovials,</li> <li>- 15 and 50 ml Tubes</li> <li>- Altogether more than 160 items</li> <li>- All reaction vessels produced under clean room conditions</li> <li>- Certified free of DNase, RNase and Pyrogens</li> <li>- Storage up to -80 °C (Cryovials up to -196 °C)</li> </ul>	Starting from 11,-
	Pipette Tips	Polypropylene	Lab work	<ul style="list-style-type: none"> <li>- More than 150 items for nearly all purposes packed in bags or racks</li> <li>- All Tips are produced under clean room conditions and certified free of DNase, RNase and Pyrogens</li> </ul>	Starting from 8,30
	Pipette Tips for robotic workstations	Polypropylene	Lab work	<ul style="list-style-type: none"> <li>- More than 100 items for diff. automated liquid handling systems from Tecan, Beckman, Packard, Zymark, Qiagen</li> <li>- Standard Tips, sterile Standard Tips, sterile Filter-Tips, conductive Tips, sterile conductive Tips, sterile conductive Filter-Tips</li> <li>- All Tips are produced under clean room conditions and certified free of DNase, RNase and Pyrogens</li> </ul>	Starting from 21,10
	Rack and Storage Systems	Polypropylene, Polycarbonate	Storage, Lab Work	<ul style="list-style-type: none"> <li>- More than 170 different items</li> <li>- For storage of Cryovials, Reaction Vessels, PCR Tubes and Strips, 15 and 50 ml Tubes Work Racks for Cryovials, Reaction Vessels, PCR Tubes and Strips, 15 and 50 ml Tubes Slidetiter Boxes Cooling Racks</li> </ul>	Starting from 8,30
	UTW 96-Well Plate, skirted	Polypropylene	PCR, Fast PCR, qPCR	<ul style="list-style-type: none"> <li>- UTW (Ultra Thin Wall) plate</li> <li>- Walls 2 x thinner</li> <li>- Near-perfect concentricity of the inner and outer walls</li> <li>- Uncommonly uniform thinness from well-to-well</li> </ul>	Starting from 139,- (50 plates)
	<b>Carl Roth</b> Karlsruhe, Germany www.carlroth.de <b>Contact:</b> Jörg Trapp Phone: +49 721/5606510 j.trapp@carlroth.de	Rotilabo-centrifuge tubes with screw cap 0,5 ml, 1,5 ml, 2,0 ml, self-standing, sterile	Made of PP	Sample handling	<ul style="list-style-type: none"> <li>- Can be centrifuged up to 13000xg</li> <li>- Volume: 0,5/ 1,5/ 2,0ml</li> <li>- Clear, sterile or unsterile</li> <li>- Temperature stable from -196 to 121 °C</li> <li>- Coloured lid inserts for easy identification available</li> </ul>
Rotilabo-centrifuge tubes, black		Made of PP	Sample handling	<ul style="list-style-type: none"> <li>- Can be centrifuged up to 15000 xg</li> <li>- Volume: 1,5ml</li> <li>- Black, unsterile</li> <li>- Temperature stable from -80 to 121 °C</li> <li>- Ideal for light-sensitive samples</li> <li>- Autoclavable</li> </ul>	Country-specific prices
Rotilabo-PCR-micro-reaction tubes-strips		Made of PP	PCR	<ul style="list-style-type: none"> <li>- Strips with 8 micro-centrifuge tubes</li> <li>- Flat or curved lid</li> <li>- Thin-walled PCR-tubes</li> <li>- Certified DNase-, RNase and DNA-free</li> </ul>	Country-specific prices

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<b>Carl Roth</b> Contact see page 57  <b>Contact:</b> Isabell Cartharius i.cartharius@carlroth.de	Rotilabo-pipettor stand	Made of ABS	Pipettor stand	- For holding of 6 standard pipettors	Country-specific prices
	Roth measuring vials	Made of PP or LDPE	Scintillation	- Different types and sizes	Country-specific prices
<b>Eppendorf</b> Hamburg, Germany www.eppendorf.com <b>Contact:</b> Application Hotline Phone: +49 1803 666 789 application-hotline@eppendorf.de	twin.tec real-time PCR plates	Polypropylene / polycarbonate	qPCR, low-volume qPCR, automated qPCR	- Increased reflection - Thin walled wells for best heat transfer - Effective sealing	N/A
	twin.tec PCR plates	Polypropylene / polycarbonate	PCR, low-volume PCR, automated PCR	- Thin walled wells for best heat transfer - Effective sealing	N/A
	DeepwellPlate 96	Polypropylene	Sample Storage, Sample Preparation, Mixing, Automation	- RecoverMaxWell design protects against sample loss - OptiTrack matrix in 5 colours ensures easy orientation - g-Safe: Centrifugation up to 6,000 x g - DNA/Protein LoBind quality available	N/A
	DeepwellPlate 384	Polypropylene	Sample Storage, Sample Preparation, Mixing, Automation	- RecoverMax Well Design protects against sample loss - OptiTrack matrix in 5 colours ensures easy orientation - g-Safe: Centrifugation up to 6,000 x g - DNA/Protein LoBind quality available	N/A
<b>GE Healthcare Europe</b> München, Germany www.gelifesciences.com <b>Contact:</b> Christoph Häusler Phone: +49 89 96281-660 productde@ge.com	Cytostar-T cell culture microplate	Polystyrene and scintillants	Uptake assay of radioactive tracers	- Package Size 5 x 96 well-plates - Homogenous assay with certain isotopes	324,-
	Collection plate 500 µl V-bottom	Polypropylene	Collection plate especially designed for usage with MultiTrap and PreDictor plates	- Package size 5 x 96-well plates - For centrifugation, vacuum and automated robotic systems - Supports purification of recombinant proteins, enrichment of proteins and high-throughput process development	23,-
	Empty disposable PD-10 column	Polypropylene and Polyethylene	Gravity flow purification of bio-molecules	- 50 per package - for gravity flow and centrifugation - to be packed with bulk media e.g. Sephadex	167,-
	LabMate PD-10 Buffer Reservoir	Polypropylene	Gravity flow purification of bio-molecules	- 10 per package - Increases equilibration and sample volume up to 25 ml	29,50
<b>Greiner Bio-One</b> Frickenhausen, Germany www.gbo.com/bioscience <b>Contact:</b> Lara Marchetti lara.marchetti@gbo.com	CELLSTARdishes/flasks/multiwell plates/microplates	Polystyrene	Depending on the respective surface suited for cultivation of adherent or suspension cells	- High-grade polystyrene with exceeding clarity facilitating optical control of cell proliferation and morphology	On request
	CELLSTARAutoFlask	Polystyrene	Cell culture flask for automated systems with standard microplate footprint.	- Unique centrifugation pocket enabling separation of cells from supernatant inside the flask	On request
	CELLMASTER PET-/PS Roller bottles	Polystyrene (PS) / Polyethylene-terephthalate (PET)	Large scale cell culture. Production of virus, vaccines, recombinant proteins and therapeutics	- Seamless blow-moulding technique - No leaking seams - Radial ribbed surface to expand growth area from 850-4250 cm <sup>2</sup>	On request
	ThinCert cell culture inserts	Polystyrene housing, PET capillary pore membrane (both USP class VI certified)	Porous membrane supports for cell based studies and tissue reconstruction	- Hanging and self-lift geometry	On request
	ThinCert Plate	Polystyrene, Copolymer	Air-lift-culture, optimised for use with ThinCert cell culture inserts	- Air-lift-culture	On request
	CELLCOAT dishes/flasks	Polystyrene	Protein-coated culture vessels for adherent cell culture. Improved adhesion and cell proliferation	- ECM or Poly-D/L-Lysin coating	On request
	lumox multiwell plates/dishes	Frame: polyolefin, bottom: lumox film	Fluorescent staining and other microscopic applications	- lumox = gas-permeable film	On request
<b>Ibidi</b> Martinsried/München, Germany www.ibidi.de <b>Contact:</b> Ulf Rädler Phone: +49 89-520 461700 uraedler@ibidi.de	Culture insert	ibidi plastic	Wound healing and Invasion assays	- Carrier to separate 2 cell populations - Defined cell free gap - Small culture area - Suitable for microscopy	80,- (25 inserts, plus tax and shipping)
	Dish with grid	ibidi plastic material	Relocating or counting cells	- Ideal to relocate cells - Grid with 500 µm repeat distance - Reference structure for cell movement - Cell counting - Relocate transfected cells	118,- (60 pieces, plus tax and shipping)

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<b>G. Kisker Biotechnology</b> Steinfurt, Germany www.kisker-biotech.com Contact: W. Kisker Phone: +49 2551-864310 contact@kisker-biotech.com	PCR-Tube Strip of 8 tubes with attached lid	N/A	RT-PCR	N/A	53,90 (120 Strips)
	96 well PCR-Plate with black coding	N/A	PCR	- Easy identification by black coding	249,- (100 Plates)
	Cell Scraper	N/A	Tissue culture	- Cell harvesting	79,90 (100)
	Pestelles	N/A	Homogenization, suspension	- Cell/DNA homogenization	7,90 (10)
	Cryoboxes	N/A	Deep temperature storage	- Liquid nitrogen freezing	7,90 (1)
<b>OMX</b> Weßling, Germany www.omx.de Contact: Lutz Eichacker Phone: +49 8153-9087853	OMX	Polypropylene	In-gel digestion for mass spectrometry	- Pick Protein - Digest - Extract Peptide	3,20
<b>Peqlab Biotechnologie</b> Erlangen, Germany www.peqlab.de Contact: Christof Larisch Phone: +49 9131 6107020 info@peqlab.de	- 96 Well and 384 Well PCR-Plates - unskirted, semi-skirted, fully skirted and low profile - Plates for ABI Cyclers and ABI Fast Block Cycler	- 25 plates - 5 x 25 plates - 10 x 25 plates of native polypropylene	PCR and Real-Time PCR (transparent, white, black)	- Ultra-thin-walled for optimal temperature transfer - Native polypropylene chemically inert and non-porous material - Clearroom production certified free from cellular, DNase, RNase, human DNA and endotoxin contamination	71,50 (25 plates, list prices)
	- 8-PCR Strips with domed or flat caps or added single caps - Low Profile cap strips	- 250 tube stripes with or without cap strips - 5 x 250 tube stripes with or without cap strips - 10 x 250 tube stripes with or without cap strips of Native polypropylene	PCR and Real-Time PCR (transparent and white tube strips, transparent and ultra-transparent cap strips)	- Ultra-thin-walled for optimal temperature transfer - Native polypropylene chemically inert and non-porous material - Clearroom production certified free from cellular, DNase, RNase, human DNA and endotoxin contamination	151,70 (250 8er strips inclusive cap strips)
	Single PCR Tubes 0.2 ml or 0.5 ml with domes or flat caps	- 1000 tubes - 5 x 1000 tubes - 25 x 1000 tubes of native polypropylene	PCR and Real-Time PCR (only 0.2 ml tubes)	See above	35,16 (1000 tubes)
	SafeGuard filter-tips 10 µl, 30 µl, 100 µl, 200 µl, 250 µl, 1000 µl, 1250 µl	- Native polypropylene with hydrophobic und chemically inert filters of polyethylen	- 10 Racks à 96 tips or 1 bag of 960 tips - 10 Racks à 100 tips or 1 bag à 1000 tips (1000 µl) - 8 Racks à 96 tips or 1 bag à 768 tips (1250 µl)	- Hydrophobic und chemically inert filters of polyethylen - Highest lot-to-lot consistency precision manufacturing and demanding quality assurance - Clearroom production and sterile because of g-radiation - Certified free from cellular, DNase, RNase and human DNA - Optional with ‚Low Binding‘ surface for maximal sample retention at minimal volumina	59,- (960 Tips)
	Pipet tips 10 µl (different models), 200 µl, 1000 µl, 1250 µl	- Native polypropylene	- 10 Racks à 96 tips or 1 bag à 1000 tips - 50 Racks à 96 tips or 10 bags à 1000 tips	- Certified free from cellular, DNase, RNase and human DNA - Highest lot-to-lot consistency precision manufacturing and demanding quality assurance - Different colors available - 10 µl and 200 µl Tipps optional as Tip station available (Stacking-System for 960 Tips with the space of 2 single racks)	12,30 (1000 Tips)
	96 well and 384 well deep well plates 0.5 ml, 1.2 ml and 2.2 ml volume with sealing mats	1 x 32 plats, 5 x 32 plates, 1 x 50 plates, 5 x 50 Platten of native polypropylene (depends on model) 1 x 50 sealing mats 5 x 50 sealing mats	- Perfect for storage of different samples and cells - For use in automated robotic handling systems and multi channel pipets	- Highest lot-to-lot consistency precision manufacturing and demanding quality assurance - certified free from cellular, DNase, RNase and human DNA	1,84 (per plate)
	<b>Sigma-Aldrich</b> www.sigma-aldrich.com	Corning plasticware	Various	Cell Culture, Genomics, Drug Discovery, General Laboratory uses	- Improved surfaces for higher performance
Serological pipettes		Polystyrene	Transferring liquids and suspensions of various viscosities	- "Shorties" for tight spots	N/A
Reagent reservoirs		Polypropylene	Multiwell plate pipetting	- Removable lids, sterile and nonsterile	N/A
Sealing film		Polyester	PCR, ELISA, High Throughput screening	- Heat resistant, excellent barrier properties	N/A