0 4.16



a culture of innovation

6.22

500 mL

400

300

200

100

4.16

8.00





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OVERVIEW

60 ml

About TriForest Who We Are

Since its inception TriForest has been a culture of innovation. We are an energetic, multi-faceted, multidisciplined organization. We offer a unique combination of expertise in the manufacturing of life science research products and industrial plastics. TriForest entered the US market 16 years ago with the first polycarbonate square/octagonal bottle, creating the "new alternative to glass." Our products helped shift the paradigm in the manufacturing of sterile aqueous reagents, and suspension cultures. Glass bottles and Erlenmeyer flasks were replaced with our crystal clear autoclavable, shatterproof, and non-leaching LEXAN[®] Polycarbonate Labware.



As a manufacturer and consumer of our own products, we also offer a unique perspective on the practicality of our products. Over the years, we have acquired an in-depth understanding of manufacturing aqueous reagents, culture media and biologicals through our sister company Growcells, Inc. This expertise has enabled us to develop and manufacture an ideal product optimized for individual use, small and large scale production. Our products are manufactured in an ISO certified, class 10K clean room environment. They are particulate free,

optically clear and superior in construction. We designed our bottles to exceed the requirements of an ideal lab/production container. Our liquid manufacturing experience coupled with five decades of plastic design, engineering, molding and manufacturing experience gives us a unique advantage against our competition. We are a team of biologists and plastics engineers who understand the needs and desire of our customers.

Our goals are simple and as clear as our products. We aim to earn your trust and provide you with the best we have to offer. Our products are built to maximize customer satisfaction through our innovative product line of premium plastic Labware.

Finding Solutions | What We Do

We manufacture a line of premium plastic Labware with the user in mind. As a result we only use the optimal resin matched with the user's intent and applications. TriForest is a vertically integrated organization that performs all of its work in-house. From concept to prototype we do it all. We operate our own CAD/CAM, mold design, tool fabrication, process optimization, and production. Quality control is strictly adhered to with the ISO 9001:2008 regulations and each manufacturing process is closely monitored by a team of trained inspectors.

TriForest has been a culture of innovation.
We are an energetic, multi-faceted and multi-disciplined organization.

Core Competency



QUALITY

TriForest stands for Quality. Our labware is manufactured for the safe storage and leakproof transportation of contents used in life science applications, requiring the industry's highest validation standards of production. Our manufacturing facility is certified in accordance to ISO 9001 International Quality Management Systems, where our products are regularly audited and evaluated for conformance and effectiveness.



RELIABILITY

Our labware guarantees peace of mind. We provide reliability in every product, ensuring the integrity of your precious contents will be maintained. TriForest labware is designed for discriminating users who appreciate the utmost level of durability and ruggedness. We stand behind our products and are committed to provide a quality experience for all our users.



CONVENIENCE

At TriForest, we value common sense, practicality, and functionality. We go above and beyond our competitors to make sure the work on your end is minimized. Our product line is ergonomically engineered to maximize user performance in extensive applications. TriForest labware is easy to store, easy to use, and reuse. It offers the clarity and chemical compatibility necessary in a labware. For that reason, we believe our ultimate loyalty is to your convenience.



SAFETY

The foundation of our company begins with user-safety. We know how essential it is to have in hand a product that is reliable, user-friendly, and most of all, a tool to help eliminate laboratory accidents. TriForest provides customers a plastic alternative that is shatterproof, transparent, broadly chemically compatible, and FDA compliant. Furthermore, our support team is highly trained to assist you with utilization specifics with the ultimate goal of protecting those who matter the most.



SUSTAINABILITY

TriForest prides in providing premium labware that is safe, economical, reliable, innovative and sustainable. All of our products are conveniently recyclable and easy to store, but our conservational efforts do not end there. We offer a broad product portfolio with autoclavable capabilities, which enables terminal sterilization of products not available in most plastics.

OVERVIEW

Product Profile Anatomy of a TriForest Bottle



60 ml

50













Threads

Continuous and straightshouldered semi-buttress threads designed to perfectly interlock bottle and cap to ultimately protect the integrity of contained liquids.

Graduation Markings

Molded-in graduation marking for approximate volumetric measurement reference. Screen printed graduation available on selected products.

Ergonomic Uniformity

Uniform wall thickness with beveled edge ergonomic design offers durability, strength, and improved handling ability. The soft corners of the bottles make it comfortable to hold and occupy minimum shelf space.



the bottle neck.

Secure Closure

Leak-proof, liner-free

virgin polypropylene

cap composed of

System

(PP) animal

Stable Base Uniform resin and weight distribution is the key to maintaining a bottle stable during filling processes. Our symmetrical base ensures steadiness in filling operations. Each bottle is marked with a resin identity and recycling code for user reference.

The broadest & most innovative polycarbonate resin employed in the life science market today.

Labware Packaging



Sterile Individually Wrapped

Our Erlenmeyer flat and baffled base flasks series come individually packaged in easy-tear bags and presterilized through gamma radiation to ensure maximum sterility and tamperevidence.

Sterile | Double Shrink-Wrap

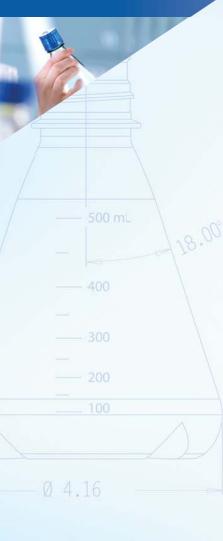
All of our PETG products are specially packaged with double-shrink wrap after being gamma irradiated. TriForest PETG products also come standard with tamper-evident caps to protect the sterility of each container individually.

Non- Sterile Shrink-Wrapped Trays

TriForest polycarbonate (PC) products that are shrink-wrapped in trays, further protected but standard packaging to protect from scratches, drops, or heavy handling.

Custom packaging available on all products. Please contact us at info@triforest.com

AUTOCLAVABLE



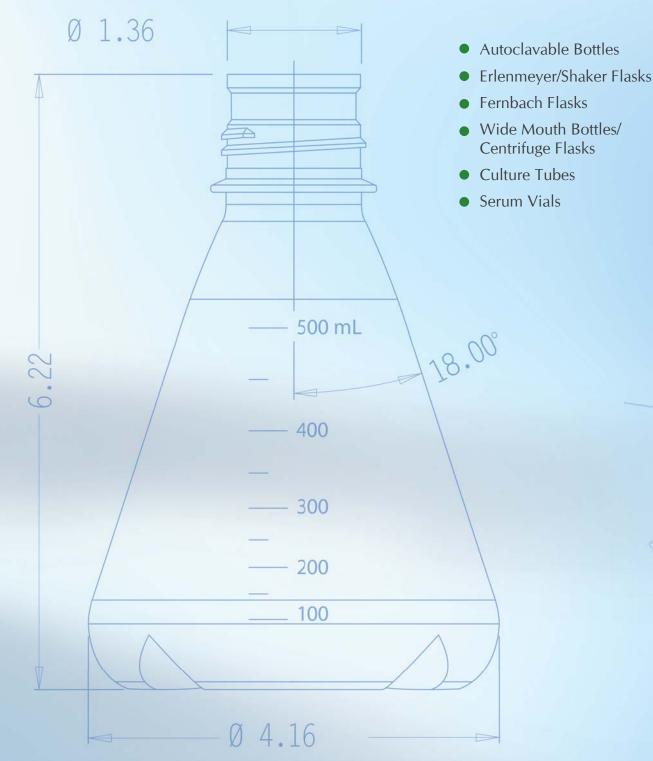
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Ser 20

Ser.

98°IØ

Autoclavable Labware



07

AUTOCLAVABLE

Autoclavable Bottles













The ideal replacement for glass bottles and other reusable/disposable bottles

TriForest Lexan[®] polycarbonate (PC) labware is a safer alternative to glass. It is ideal for steam sterilization of all biologicals, liquids, reagents, media, buffers and aqueous solutions. Manufactured in an ISO 9001 compliant facility with FDA compliant, virgin Lexan[®] polycarbonate resin that is durable, chemically inert, non-leaching, and optically superior. Our square media bottles withstand repeated autoclaving, and are optimal for all microbial culture media production and preparation of terminally sterile fluids. Bottles are available as ergonomically square/octagonal and as Boston round designs. Bottles are provided non sterile with standard blue autoclavable caps engaged in a multi-barrier elastomer packaging. Caps are available with custom color options on bulk orders.

REUSABLE

PRODUCT SPECIFICATIONS

.....

Square/Octagonal

			A DESCRIPTION OF		11.000		
Catalog #	BPC-2000	BPC-1000	BPC-0500	BPC-0250	BPC-0125	BPC-0060	BPC-0030
Size/Volume:	2000ml	1000ml	500ml	250ml	125ml	60ml	30ml
Closure size (mm)	53B	38-430	38-430	38-430	38-430	24-415	20-415
Units /Tray	6	12	12	24	24	24	24
Trays/Case (Total Units)	4 (24)	4 (48)	6 (72)	4 (96)	6 (144)	8 (192)	12 (288)



Boston Round

Catalog #	RPC-1000	RPC-0500	RPC-0300
Size/Volume:	1000ml	500ml	300ml
Closure size (mm)	38-430	38-430	38-430
Units /Tray	12	12	24
Trays/Case (Total Units)	4 (48)	6 (72)	4 (96)

Ideal for storage and preparation of aqueous buffers, reagents, culture media and stock solutions.

TriForest media bottles have six cap alternatives designed for multiple applications, including the Vented DuoCAP^{*}, Septum Cap, Septum DuoCAP^{*}, Tamper-evident Cap, and the Port Cap. See page 22 for more details.



09

AUTOCLAVABLE

Plain / Baffled Base Erlenmeyer Flasks

TriForest Plain/Baffled Base Erlenmeyer flasks with patented DuoCAP systems provide improved air transfer. The unique neck diameter to the base ratio provides maximum surface area to volume ratio, further improving the aeration properties.

1000

RO















Vented Cap



Flat Base

REUSABLE

PRODUCT SPECIFICATIONS					
Erlenmeyer Flasks with DuoCAP					
Catalog # (Plain Base)	FPC-2000S	FPC-1000S	FPC-0500S	FPC-0250S	FPC-0125S
Catalog # (Baffled Base)	FBC-2000S	FBC-1000S	FBC-0500S	FBC-0250S	FBC-0125S
Size/Volume	2000ml	1000ml	500ml	250ml	125ml
Units/Pack	6	6	12	12	24
Packs/Case (Total Units)	4 (24)	4 (24)	4 (48)	6 (72)	6 (144)
Neck Diameter/Closure	53B	53B	38-430	38-430	38-430

Patented DuoCAP® System



Standard with all TriForest Shaker Flasks, it allows aerobic/anaerobic culture of microbes and algae without replacing the cap. The 0.22 μ m PTFE filter allows sterile exchange of gases and air.



Ideal for suspension cell culture of plants, mammals, microbes and media preparation.

AUTOCLAVABLE

Plain / Baffled Base Fernbach Flasks

Optically Clear











TriForest Fernbach culture flasks are sterile and designed for single use, however, they can be autoclaved and reused multiple times. They are ideal for all shaker/suspension culture. Like all TriForest Erlenmeyer flasks, the 3L and 7L Fernbach flasks come with the patented DuoCAP® standard. They are certified pyrogen and nuclease free. These flasks are available with or without baffles and are a complimentary addition to TriForest Erlenmeyer Family.

PRODUCT SPECIFICATIONS

Plain Base

Catalog #	FPC-7000S	FPC-3000S
Size/Volume:	7000ml	3000ml
Neck Diameter/Closure	53B	69B
Units/Pack	1	3
Packs/Case (Total Units)	2 (2)	4 (12)
Suggested Culture Volume	≤ 4000ml	≤ 1900ml

Baffled Base



Catalog #	FBC-7000S	FBC-3000S
Size/Volume:	7000ml	3000ml
Neck Diameter/Closure	53B	69B
Units/Pack	1	3
Packs/Case (Total Units)	2 (2)	4 (12)
Suggested Culture Volume	≤ 4000ml	≤ 1900ml

Ideal for all shaker/suspension culture.

REUSABLE

Wide Mouth Bottles / Centrifuge Flasks

TriForest Wide-Mouth polycarbonate (PC) bottles are engineered for applications included ultra centrifugation or culture of microbes, plants, algae, and organisms requiring large surface area to volume ratios.

As ultracentrifuge flasks the bottles withstand maximum speeds without leakage and are ideal for all GS3 rotors. These centrifuge bottles are used where relatively small amounts of solids are involved. The tight-fitting polypropylene screw cap reduces the possibility of aerosol escape. The bottles and caps are re-usable and re-sterilizable by autoclaving. The bottles are provided non sterile with the cap on as standard offering.



PRODUCT SPECIFICATIONS

Wide Mouth Bottles

Catalog #	WPC-1000	WPC-0500	WPC-0400	WPC-0300	WPC-0180
Size/Volume:	1000ml	500ml	400ml	300ml	180ml
Closure size (mm)	63	63	63	63	54
Units/Tray	12	12	12	24	12
Trays/Case (Total Units)	4 (48)	6 (72)	6 (72)	4 (96)	12 (144)

Ideal for centrifugation, analytical testing, sampling, and cell culture.

Optically Clea

Autoclavable



AUTOCLAVABLE

Culture Tubes

Ideal replacement for reusable glass culture tubes and other disposible cultures tubes...

TriForest Lexan[®] Polycarbonate (PC) culture tubes are opticallyclear, durable, and a safer alternative to glass. They are available non-sterile for production of terminally sterilized products. The tubes are flat-bottom and ideal for preparation and large scale manufacturing of microbial culture media. PC tubes offer a wide range of chemical resistance as well as excellent strength and ability to withstand repeated steam sterilization as shatter resistant. Leak-proof caps provide security and seal content without spillage. TriForest culture tubes maintain excellent pH control, unlike glass tubes. All tubes are provided un-capped, non sterile, bulk packed with caps and have a flat base.



PRODUCT SPECIFICATIONS

Culture Tubes

Catalog # (Plain Base)	TPC-20125	TPC-16125	TPC-15103	TPC-13100
Base x Height (mm)	20 x 125	16 x 125	15 x 103	13 x 100
Neck Diameter	20	16	15	13
Units/Case	900	1200	1716	1500

Ideal for media preparation and production of terminally sterilized products.

Obligate aerobic bacteria gather at the top of the test tube in order to absorb maximal amount of oxygen, while obligate anaerobic bacteria gather at the bottom to avoid oxygen when test tubes are not sealed. TriForest test tubes allow the even dispersion of bacteria.











REUSABLE

Serum Vials

TriForest glass-clear virgin FDA approved Lexan[®] Polycarbonate (PC) serum vials are ideal for sampling, storage, and production of steam sterilized biologicals. They are designed for the leakproof shipment of reagents and buffer solutions. All sterile Vials and caps have lot number traceability and are nonpyrogenic and non-cytotoxic. These shatterproof, resistant vials are useful for packaging serum, veterinary, pharmaceuticals, cosmeceutical, and nutraceutical extracts. They can also be used with most aromatic compounds. Our PC vial series is durable, reusable, and a safer alternative to glass vials. They are provided non sterile with caps separately packed.









Leakproof







PRODUCT SPECIFICATIONS

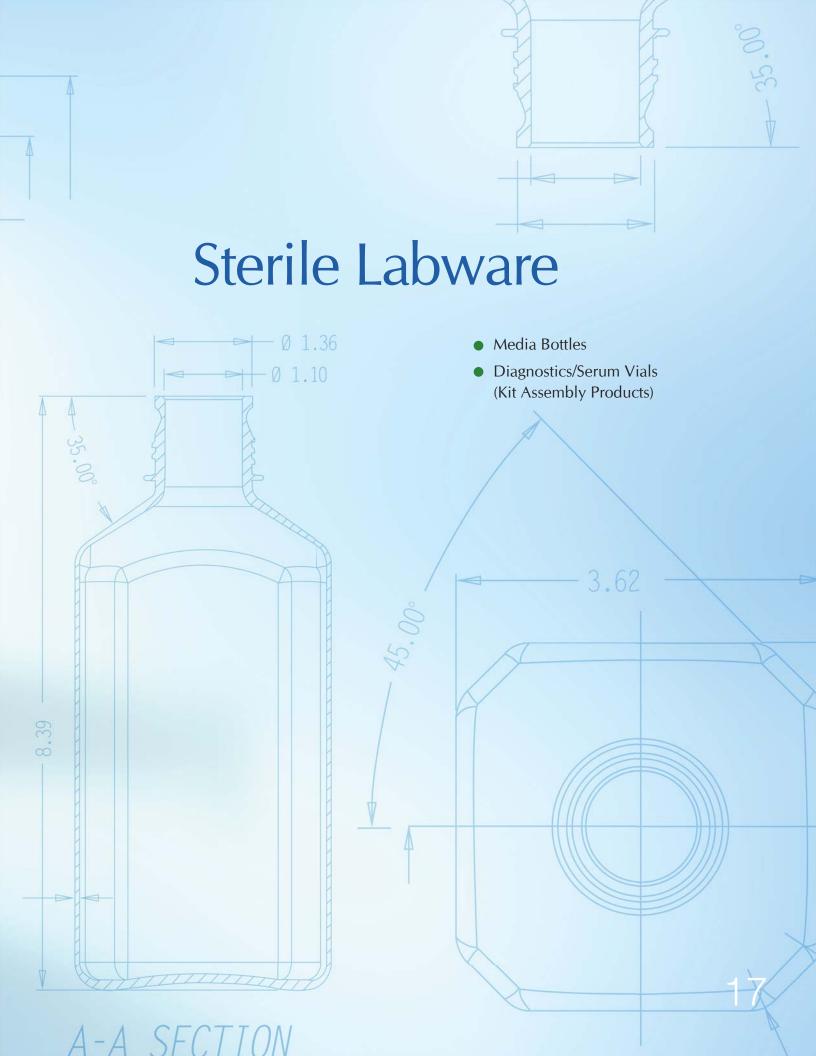
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Serum Vials

Catalog #	RPC-0010	RPC-0005
Size/Volume:	10ml	5ml
Closure size (mm)	20-415	20-415
Units /Tray	100	100
Trays/Case (Total Units)	16 (1600)	16 (1600)

Ideal for sampling, storage, production and packaging of steam sterilized biological.





STERILE



TriForest Square / Octagonal PETG ergonomic media bottles are ideal for storage of media, laboratory reagents, and biological buffers. Bottles are radiation-sterilized and have a patented tamperevident closure system. Graduation markings are molded in for reference filling. The bottles are provided gamma sterilized SAL 10⁻⁶, with blue caps engaged. Each case is specifically packaged for sterile production with multi-barrier elastomer packaging.











PRODUCT SPECIFICATIONS



		La mart			0	9	
Catalog # (Tamper Evident Cap)	BGC-2000S	BGC-1000S	BGC-0500S	BGC-0250S	BGC-0125S	BGC-0060S	BGC-0030S
Catalog # (Standard Cap)	BGC- 2000SB	BGC- 1000SB	BGC- 0500SB	BGC- 0250SB	BGC- 0125SB	BGC- 0060SB	BGC- 0030SB
Size/Volume	2000ml	1000ml	500ml	250ml	125ml	60ml	30ml
Closure size (mm)	53B	38-430	38-430	38-430	38-430	24-415	20-415
Units/Tray	6	12	12	24	24	24	24
Trays/Case (Total Units)	4 (24)	4 (48)	6 (72)	4 (96)	6 (144)	8 (192)	12 (288)

Ideal for media storage, transportation, and automation.



AUTOMATION FRIENDLY

Optically Clear

Shatterproo

Gamma Radiated

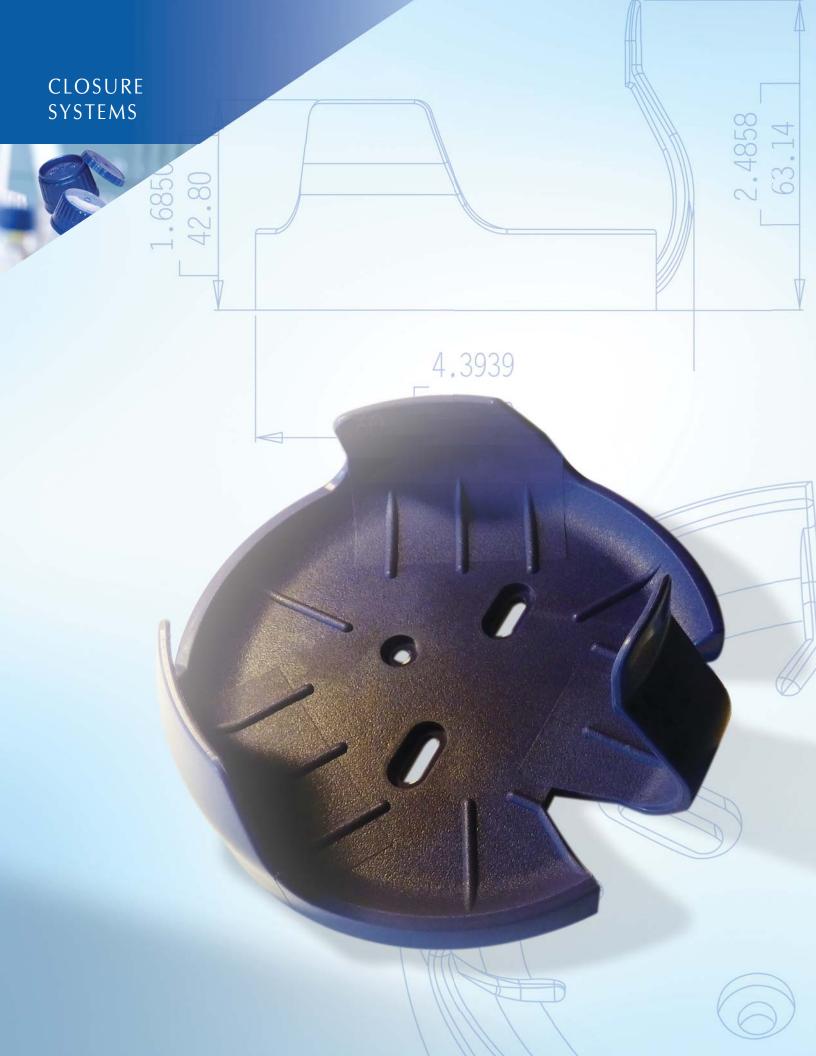
Tamper-Evident Cap

Diagnostics / Serum Vials

TriForest polythylene terephthalate copolyester (PETG) sterile serum vials are ideal for diagnostic specimen, safe storage, transfer and transport of antibodies, proteins, nucleic acids, and aqueous enzyme and substrates. All TriForest PETG media bottles meet current biological and pharmaceutical regulatory standards such as: USP Class VI, non-cytotoxic, non-pyrogenic, USP < 661 > , European Pharmacopeia for Abnormal toxicity (modified), and are made from ADCF (Animal Derived Component Free) materials. PETG media bottles are suitable for air shipment and are tested during each manufacturing run to ensure leak proof performance. They are packaged with a blue tamper-evident, polyethylene closure for security of sterility from gamma radiation center. They are provided sterile SAL 10^{-6} , in multi-barrier clean-room packaging with standard blue caps engaged.

Serum Vials		
Catalog #	RGC-0010S	RGC-0005S
Size/Volume:	10ml	5ml
Closure size (mm)	20-415	20-415
Units /Tray	100	100
Trays/Case (Total Units)	16 (1600)	16 (1600)

Ideal for diagnostic specimen, transportation and automation.



Closure Systems & Accessories

The efficiency of two in one captured in our patented devices.

Featuring TriForest patented Polypropelene (PP) DuoCAP[®] closures, multi-purpose filter-adapter and carefully engineered shaker clamps.

Closures

- Standard
- Tamper-Evident
- Vented DuoCAP[®]
- Septum
- Septum DuoCAP[®]
- Port Cap Kit

Others

- Filter-Adapter
 - Shaker Clamps

CLOSURE SYSTEMS

Labware Closures















Ideal match for TriForest labware...

TriForest closures are made with high density polypropelene and polyethylene, therefore autoclavable and recyclable. Engineered for secured sealing, the caps are also customizable to include your logo and available in all PMS colors upon request. Our colored caps are durable, resuable and easy to identify. They are designed for multiple purposes in one for your convenience, featuring well-defined closure knurls for firm grip and easy capping. All closures are linerless with integrally-molded seal ring to ensure leak performance. The remaining closures are derived from the same design, and guarantee the security of our containment. Closures include one to four pieces, depending on the model. They are non-cytotoxic, non-hemolytic, and non-pyrogenic. Additionally, all closures are also FDA compliant for food and beverage usages.

Featuring the patented Vented DuoCAP[®] for aerobic and anaerobic cell culture. These closures allow sterile air exchange through a PTFE 0.22 um membrane and a leak-proof seal with dual cap. Maximum recommended pressure: 10 PSIG. The dual cap provides easy manipulation of closure with ergonomic grip lines and fits all TriForest media bottles with neck closure size 53B and 38-430.



The TriForest Septum DuoCAP® combines the elastomeric sealing of silicone

with the excellent CO2 gas barrier of polyvinylidene chloride (PVDC) contact wetting surface. Designed to fit the closure without adhesives, these caps are leakproof, non-cytotoxic, non-hemolytic, and non-pyrogenic. They could be used with all TriForest Square and Boston Round media bottles with 53B and 38-430 neck finish.

Standard Cap

Provides closures to polycarbonate square, round media bottles, PC vials and culture tubes. Blue is the standard color for all caps. Custom colors are available upon request.



Catalog #	CPC-53	CPC-38	CPC-24	CPC-20
Neck Finish	53B	38/430	24/415	20/415

Tamper-Evident Cap

Standard sealing method for all TriForest PETG products and polycarbonate media bottles. Tamper-evidence ensures and serves as proof of content containment. Ideal for consumables. Standard color is blue.



Catalog #	TECG-53	TECG-38	TECG-24	TECG-20
Neck Finish	53B	38/430	24/415	20/415

Vented DuoCap®

Accompanies both flat and baffled flasks of all sizes. Also available for media bottles. Constructed in standard blue polypropelene with a PTFE 0.22 um membrane. Ideal for aerobic/anaerobic cell culture.

	Catalog #	DCPC-69	DCPD-53	DCPD-38
1	Neck Finish	69B	53B	38/430
		c pat	TriForest is to o introduce the oncept, a vente a screw lid desi cented by TriFor Many variations available to the	DuoCAP® d cap with gned and est Labware. s are now

CLOSURE SYSTEMS



Septum Cap

Serves as closure for flasks and media bottles. This cap comes in standard blue polypropelene with gray butyl rubber. Ideal for injectibles, especially pathogenic media.





Tamper-Evident Cap









Catalog #	SCPC-53	SCPC-38
Neck Finish	53B	38/430

Septum DuoCap®

This cap is an ingenious combination of our TriForest septum Cap and vented DuoCAP[®]. It provides an additional layer of protection to the standard septum caps.

100	Catalog #	DCSC-53	DCSC-38
13	Neck Finish	53B	38/430

Port Cap

Given the multiple port needs of our customers, we have designed the port cap in autoclavable polypropelene. It contains four ports that could be used simultaneously or separately. Port covers included.



Catalog #	PHC-53 (4 ports)	PHC-38 (3 ports)
Neck Finish	53B	38/430

ACCESSORIES

Filter Adapter

Ideal match for TriForest Labware...

TriForest has designed a polypropylene filter adapter to combine the filtration options of your preferred 38-430 bottleneck filters (see picture) with our rugged labware product line. It provides a leakproof alternative that increases product utility and media containment. The filter adapter is autoclavable, easy to store, use and reuse.





Ideal replacement for other shaker clamps...

TriForest polypropylene shaker clamps are carefully engineered to provide both clipping elasticity and motion resistance in one product. Featuring a non-scratch design, our shaker clamps come in standard blue color accompanied by stainless steel screws and washers. Our clamps fit all industry standard shaking incubators and are autoclavable for reuse.

Catalog #	SFC-2000	SFC-1000	SFC-0500	SFC-0250	SFC-0125
Size (mL)	2000	1000	500	250	125
Height (mm)	89.57	74.5	63.14	57.63	51.17
Diameter (mm)	169.1	143.9	111.6	90.4	74.72

Shaking Incubation: Snap and Shake



Screw clamp on shaker platform.



Snap shaker flask in clamp.



Shaking of cell culture.

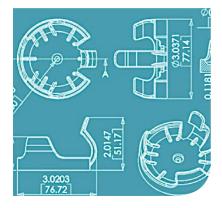
PRODUCT CUSTOMIZATION



Product Customization







Customizable | Closures

TriForest molding manufacturing expertise now provides customers the option of personalizing their labware orders. One way is to add the company logo of their choice to our product caps. The selected logotype is embedded onto our propylene caps and resistant to autoclaving and scratching. The caps may also be customized to match the PMS color of choice. All caps retain the same properties after customization.*

Customizable Products

Another alternative available to TriForest customers is the customization of labels. Whether a template is provided or you request we design one for you, do not miss out on the opportunity to add labels or silk screening of your company logo on our products. The graduation interval may also be customized to fit desired needs. Silk screening comes in white and can be combine with our manufacturing capabilities to provide custom-color resins in the color of choice.*

Product Customization

Personalizing our labware in any color or logo allow customers to maximize brand exposure and ownership of the product line during private labeling, but our efforts do not end there. With over 40 years of plastic molding expertise, TriForest offers customers the unique opportunity to create new product designs. Whether the product is highly priced and you seek a better alternative or the product you have in mind is non-existent, we will make it for you. Contact one of our customer service representatives for details.*

*Minimum quantity required.

APPLICATIONS

Applications



Analytical Testing environmental quality



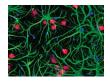
Automation

Centrifugation

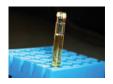
precipitation

• aqueous

- high throughput filling
- aseptic/sterile



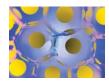
Cell Culture • microbial food testing



Clarity • compatible with • density meters



- **Media Storage** • nucleous free
- sterile/aseptic filled





- anaerobic









Terminal Sterilization

- cell culture
- microbial culture





Suspension Culture biofuel • insect cell culture



Transporation

• leakproof

• broad temperature range





- **Media Preparation**
- steam sterilization
- sterile filtration
- Packaging • improved gas barrier



Sampling

- quality control
- product validation

VERTICAL INTEGRATION

- 60 r











Customer Service Responsiveness

Design Engineering

Plastics Manufacturing Expertise

Life Science Research



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