



SAFE ®
Store Aliquots For Ever

2D Long-term Sample Storage

for Biobanking, Compound Management and more

SAFE [®]
Store Aliquots For Ever



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What Really Matters

Biobanking, compound management, cryopreservation, population studies, transfusion medicine – the possible applications for high-quality, long-term storage of bio-materials in the microlitre scale are growing continually.

But if you store large quantities of small samples in the medium to long term for purposes of research and diagnosis, you generally have to deal with various requirements regarding the sample container to be used – from handling to storage through to the follow-up of the respective sample. The overriding priority is the best possible conservation of sample quality and quantity.

This means that three things need to be guaranteed for the samples to be stored: security, identifiability and space-saving storage. In addition, if automated processability is used in the laboratory, there is no better alternative for modern sample storage.



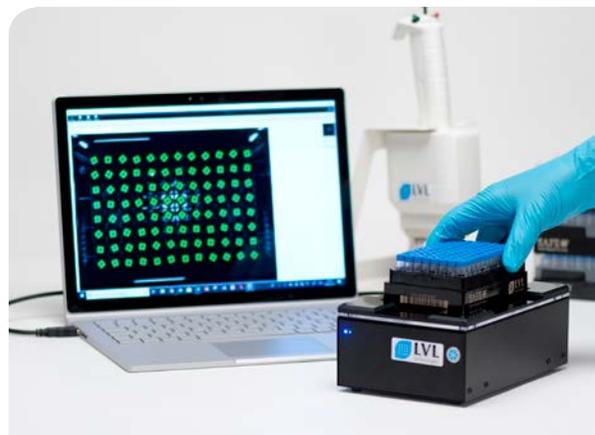
Handling

- Easy removal from sample container
- Problem-free aliquoting, even when using automated laboratory systems
- Minimum risk of cross-contamination
- Rapid opening and closing of containers
- Samples reliably assigned without need for labelling
- Quick and error-free identification of the specified coding
- Optional identification possibility with the human eye



Storage

- Thermostability of the containers and receptacles
- Space-saving storage
- Problem-free transfer to stores, even with automated storage systems



Traceability

- Maximum code security
- Unique coding
- Optimal legibility even at cryo-temperatures
- Optional code redundancy



Sample Quality and Quantity

- Best possible sealing of the selected closure option at cryo-temperatures and room temperature
- Best possible sealing during transport under negative pressure ratios
- High purity of the sample container
- Lowest possible concentration of bioactive compounds in the plastic used

Once these criteria have been verified, the potential user is faced with the following questions:

- Is the price of the containers in proportion to the value of the sample and the other costs associated with storage?
- What delivery times must be allowed for?

- Are customer-specific wishes taken into account?
- Are there any additional costs?

This brochure aims to provide you with a preliminary overview of the solutions that LVL technologies offers with the SAFE® product line for modern sample storage. Since this may not answer all of your questions, please give us a call. We are always here for you!

SAFE® - Store Aliquots For Ever

SAFE® 2D tubes from LVL technologies offer the greatest possible safety, automation capacity, flexibility and efficiency. In combination with attractive pricing, we have already convinced many customers all around the world, including in the following areas, to rely on SAFE® in the long-term:

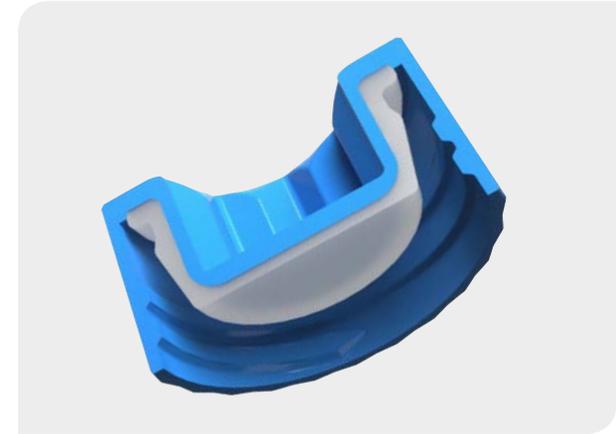
- Biobanking
- Epidemiological studies
- Cohort studies
- Transfusion medicine
- Compound management
- Forensics
- Kit manufacturing

What are the technical features of SAFE® that lead to it being used in so many applications?

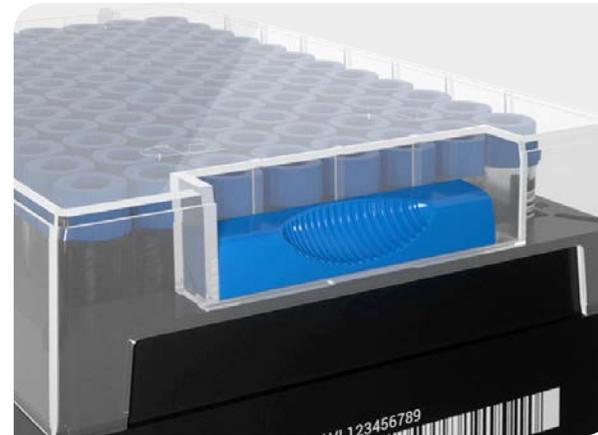


Leak-tightness

When launched, even the IT 96 internal screw tubes were extremely innovative: As a manufacturer, LVL dispenses with the traditional O-rings to seal the tubes and screw caps. The insecure positioning of the movable O-rings in the cap is not compatible with our understanding of sample safety. Instead, LVL uses a TPE compression, which forms an indissoluble unit with the polypropylene of the screw cap in the two-component process. The result is that the leak-tightness of the tubes was tested multiple times with very good results, inter alia, in the international standardised IATA test. What's more, the construction of the closely interlocking threads prevents the frequently observed overwinding of the screw connections in combination with the TPE sealing, particularly in manual caps without a firmly defined torque.



This philosophy was also rigorously pursued with the XT 96 tubes with external threads. Here too, LVL was the first and still is the only manufacturer not satisfied with a single-component sealing. The patented 2-phase TPE compression enables a leak-tightness that is considered unmatched for microtubes even to this day. The double phase-sealing is a particularly innovative feature. While closing, the first contact between the lateral edge of the tube and screw cap guarantees the seal against liquids (liquid sealing), the contact of the screw connection with the upper end of the tube edge minimises the ingress and leakage of gases (vapour sealing).



Stability

The stability of the tubes and racks appears to be an obvious prerequisite; however in practice there are often deviations that can affect the storage process or even result in the loss of samples. SAFE® 2D tubes have an enlarged wall thickness for greater stability during the freezing process or in case of repeated freezing cycles. They are dimensionally stable, which is particularly important for picking in the automated storage systems. The SBS and CRYO racks for the storage of tubes are not just made of robust polypropylene or polycarbonate, they are also less malleable, and therefore very stable, due to their geometric form. SAFE® 2D tubes and racks are suitable for storage at temperatures ranging from -196°C (Vapour Phase Liquid Nitrogen) to +40° C.

SAFE® offers two different rack lid options with different fastening options (slide lock and push lock).



Barcode and Human Readable



Data Matrix Code



Barcode and Human Readable



Orientation Code as Data Matrix



Identifiability

If you switch to 2D coded tubes for the storage of samples, you must be able to rely on the fact that the samples are not just faster to identify, but also that identification is much more reliable. SAFE® 2D tubes offer impressive special features. Firstly, all tubes are produced in the SBS 96 format using a patented wet-on-wet process. This means that the black components, which carry the 2D code (data matrix), cannot be separated from the tubes either through mechanical, chemical or thermal influences. The 12-digit 2D code on the base of the tube is engraved using a high performance laser (laser etching) and thus, is highly resistant to chemical and thermal influences.

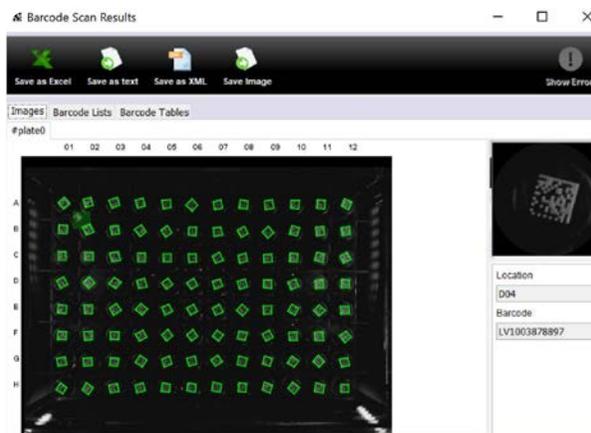
Safety also means that each code must be unique. Several automated and manual mechanisms in production ensure the required uniqueness. The final quality control in particular immediately triggers an alarm: After coding, each rack and each tube are scanned for legibility (if a tube cannot be read, the entire rack is rejected). Immediately after scanning an automated duplicate check with all previously assigned codes is started in the background. A duplicate coding is registered at this point at the latest.

LVL offers a unique, individual range of numbers without additional costs for a minimum order of 500 racks (e.g. 3 letters and 9 digits). If desired, this service can also be combined with the sending of an Excel file containing the codes of all delivered racks and tubes.

By default for all XT 48 tubes, optional for all others – a code on the side of the tube (legible to the human eye and/or as a 1D code) offers additional security and the opportunity to identify which work places have no 1D scanner or only one. Similarly, on the base of the tubes there is space for an additional code that is legible to the human eye.

All tube racks are lasered with an 1D code on the narrow side of the rack and a 2D orientated code on the bottom of the rack.

Finally, LVL offers screw caps in more than 12 different colours so that it is possible to roughly differentiate between different types of samples.





Efficiency

It goes without saying that SAFE® 2D tubes are – particularly in the XT/IT 96 version – innately efficient because it is possible to store significantly more samples in less space compared to classic primary or warehouse tubes. However, the XT 96 tubes are particularly efficient because of the closure with external thread, which makes them up to 30 percent shorter than tubes with an internal thread. The SAFE® SX 300 in particular – with an effective working volume of 300 µl and its minimal height of 19.1 mm (incl. screw cap) – is a real miracle of compactness. And the XSX 200 is even more compact with a height of only 15.5 mm.



Compatibility and Automation Capacity

An increasing proportion of used 2D tubes are processed partly or wholly automatically. This relates to pipetting and aliquoting, decoding, screwing and unscrewing and storage. SAFE® 2D tubes are constructed and prepared for this exact purpose. The following features ensure compatibility and automation capacity:



- SBS format of the tube racks
- Racks can be stacked
- 1D bar code on different rack sides, optional
- 2D orientation code on the base of the rack
- 2D codes of the tubes in the ECC200 standard and decodable using current scanners
- Tubes can be locked in the rack ready for screwing
- Screw caps constructed for the bit receptacle with semi-automated and fully automated cappers/de-cappers
- Screw caps can also be delivered in the SBS cap rack, optional
- Compatibility (e.g. picking) guaranteed with all current automated storage systems (certificates can be requested)



Customized Code



Flexibility and Customisation

SAFE® 2D tubes are an innovative high-tech product. This is also reflected in our efforts to take the individual wishes and requirements of our customers into consideration. In a nutshell, this means for 500 or more racks, for example, we will provide the following customisation requirements without additional costs:

- Unique range of numbers for racks and tubes (maximum 12 digits)
- Laser engraving of the SBS racks on all four sides according to customer specifications (e.g. logo, name, label fields)
- Free colour selection of the screw caps (pre-screwed or in the cap rack) also mixed column by column

Do you have special requirements? Get in touch!

Purity

SAFE® 2D tubes are manufactured under clean room conditions ISO 8. SAFE® 2D tubes are certified and free of DNA, DNase, RNase and endotoxins. Furthermore, we offer the added option of sterilisation and recommend this in forensics and for the storage of cells. Due to the use of pure, medical grade homopolymers, it was possible to achieve very good test results even when examining extractable, organic substances and metal ions.



Work Volume

Users are actually interested in the usable work volume rather than a theoretically available overall volume. We took this factor into account with the introduction of the tubes with external threads. The work volume, based on tubes with screw thread connectors, is quickly identified by the product designation. For the SX 300, for example, this means that it is possible to fill 300 μ l into the tube and store it in consideration of the expansion that occurs when stored at very low temperatures.

SX 300
= Real Working Volume 300 μ l



2 SAFE[®] 96 XT

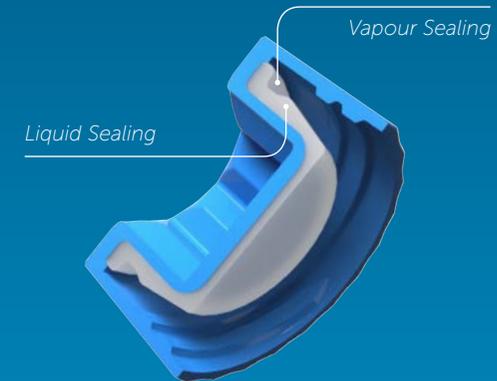
2D Coded Tubes with External Thread in 96 SBS/ANSI Rack

Especially when it comes to sample storage in automated storage systems, for reasons of costs, it is essential that the largest possible quantity of samples can be stored in a smallest possible space.

This is where tubes with external threads have the edge over tubes with internal threads due to their lower height. The SAFE[®] SX 300 in particular – with an effective working volume of 300 µl and its minimal height of 19.1 mm (incl. screw cap) – is a real miracle of compactness. And the XSX 200 is even more compact with a height of only 15.5 mm.

With patented two-phase TPE compression

Another advantage of the external thread tubes: Depending on the application, the risks of cross-contamination can be minimised. Furthermore, there is no need to accept the disadvantages in terms of leak-tightness compared to the conventional solutions with internal threads due to the special, patented two-phase TPE compression. On the contrary, due to the two contact phases for the sealing of the liquid phase and a potential gas phase, this screw cap results in the very best sealing characteristics for safe, long-term sample storage.



Tri-Coded Tubes with External Thread



External Thread with Double Start Thread for Maximum Rotation of 180°



Manual Capper / Decapper / Picker with MX 500 Tube

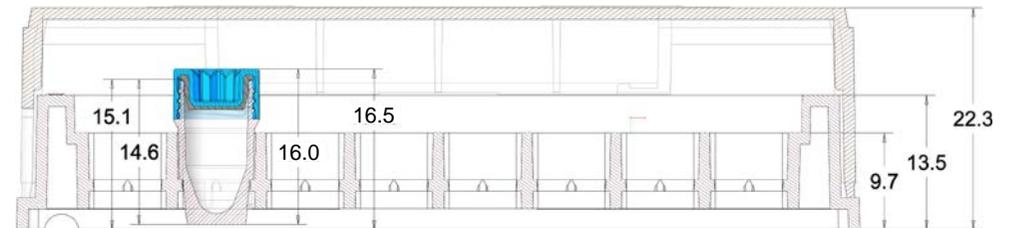


XSX 200

Working Volume	With Screw Caps	220 µl
	With Push Caps	220 µl
	With Heat Seal	250 µl
Type of Rack	Polycarbonat	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	N.A.	
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	14.6 mm
	With Screw Cap	16.0 mm
	With Push Cap	16.0 mm
Rack Height	Without Cap	15.1 mm
	Screw Capped Tubes	16.5 mm
	With Lid	22.3 mm



Technical Drawing



Standard Item Number 2DNC-X02-BL-NS-SLC-L

Order Information

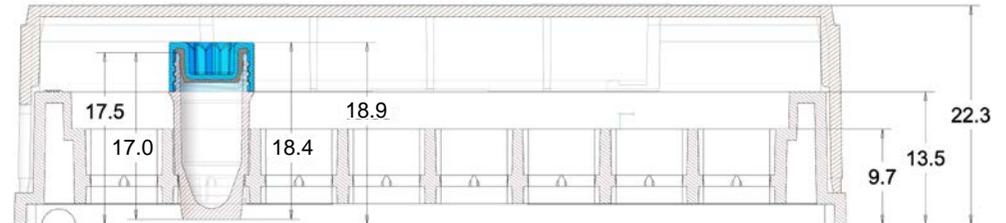


SX 300 Mini

Working Volume	With Screw Caps	280 µl
	With Push Caps	280 µl
	With Heat Seal	310 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube (optional)	Human Readable	
Screw Caps	Pre-Capped Stacked on SBS 96 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	17.0 mm
	With Screw Cap	18.4 mm
	With Push Cap	18.4 mm
Rack Height	Without Cap	17.5 mm
	Screw Capped Tubes	18.9 mm
	With Lid	22.3 mm



Technical Drawing



Standard Item Number 2DNC-X028BL-NS-SLC-L

Order Information

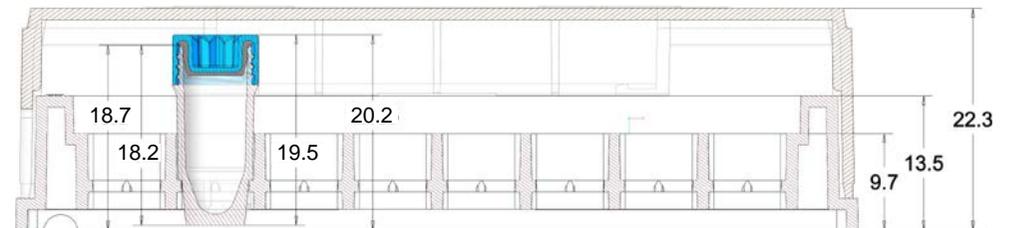


SX 300

Working Volume	With Screw Caps	300 µl
	With Push Caps	300 µl
	With Heat Seal	330 µl
Type of Rack	Polycarbonate Polypropylene	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	Human Readable
Screw Caps	Pre-Capped Stacked on SBS 96 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	18.2 mm
	With Screw Cap	19.5 mm
	With Push Cap	19.5 mm
Rack Height	Without Cap	18.7 mm
	Screw Capped Tubes	20.2 mm
	With Lid	22.3 mm



Technical Drawing



Standard Item Number 2DNC-X03-BL-NS-SLC-L

Order Information



MX 500

Working Volume	With Screw Caps	500 µl
	With Push Caps	500 µl
	With Heat Seal	530 µl

Type of Rack	Polycarbonate Polypropylene
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Type of Rack Lid	Slide Lock Push Lock
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Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D

Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C

Standard Side Code Tube (optional)	1D and Human Readable
------------------------------------	-----------------------

Screw Caps	Pre-Capped
	Stacked on SBS 96 Cap Rack
	Bulk Ware

Purity	Production Sterile (ISO 8)
	Pre-Sterilized (Beta Radiation)

Outer Diameter	8.65 mm
----------------	---------

Tube Height	Without Cap	26.2 mm
	With Screw Cap	27.5 mm
	With Push Cap	27.5 mm

Rack Height	Without Cap	26.7 mm
	Screw Capped Tubes	28.0 mm
	With Lid	30.3 mm



Technical Drawing



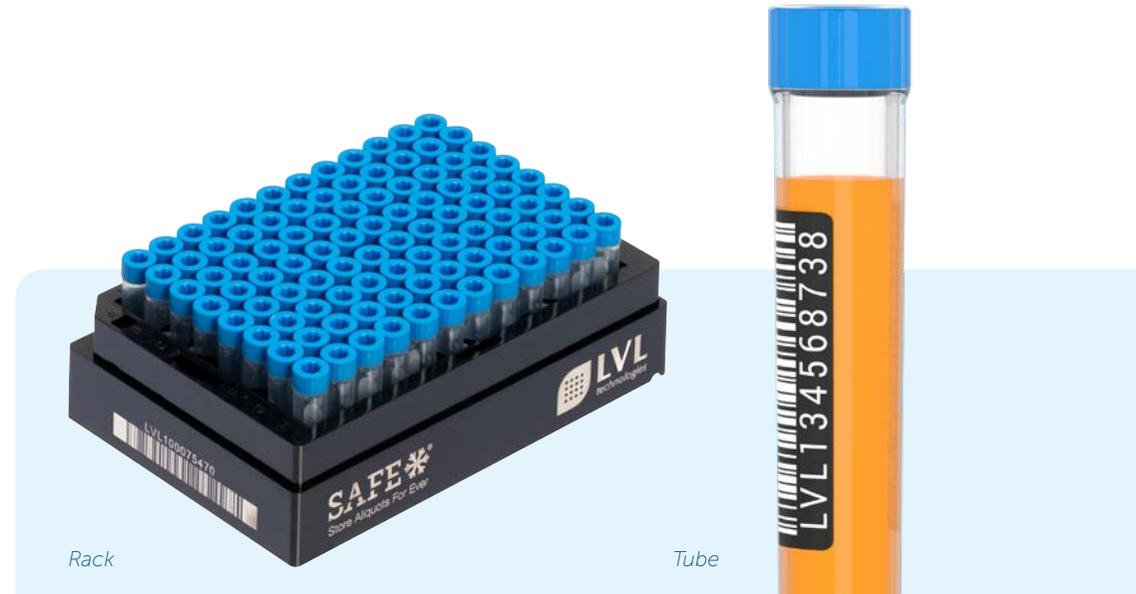
Standard Item Number 2DNC-X05-BL-NS-SLC-L

Order Information



LX 1000

Working Volume	With Screw Caps	1,000 µl
	With Push Caps	1,000 µl
	With Heat Seal	1,030 µl
Type of Rack	Polycarbonate	
	Polypropylene	
Type of Rack Lid	Slide Lock	
	Push Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped Stacked on SBS 96 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	44.3 mm
	With Screw Cap	45.6 mm
	With Push Cap	45.6 mm
Rack Height	Without Cap	44.8 mm
	Screw Capped Tubes	46.1 mm
	With Lid	48.3 mm



Technical Drawing

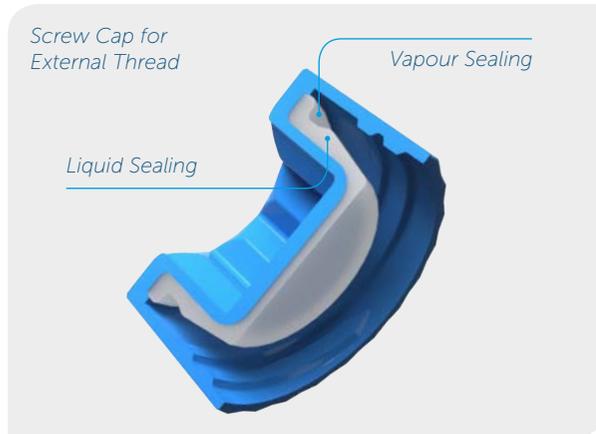


Standard Item Number 2DNC-X10-BL-NS-SLC-L

Order Information



Screw Caps XT (96/48/24)



The patented 2-phase TPE compression enables an optimal leak-tightness. The double phase-sealing is a particularly innovative feature. While closing, the first contact between the lateral edge of the tube and screw cap guarantees the seal against liquids (liquid sealing), the contact of the screw connection with the upper end of the tube edge minimises the ingress and leakage of gases (vapour sealing).

In principle, screw caps are delivered in three different forms: pre-screwed, in a cap rack (SBS 96/48) or loosely in a bag.

By default, LVL offers more than 12 different cap colours, which can also be mixed column by column for larger quantities.



	GR Green RAL 6001		BL Blue RAL 5015
	LI Lime RAL 6018		BC Black RAL 9004
	YE Yellow RAL 1021		GY Grey RAL 7046
	OR Orange RAL 1028		WH White RAL 9003
	RE Red RAL 2002		BR Brown RAL 8004
	PI Pink RAL 4003		RS Signal Red RAL 3024
	VI Violet RAL 4001		

Push Caps 96

Push or septum caps are the cheaper alternative to screw caps. They are usually used if storage is limited to a few years, the storage temperature does not fall below -80°C and the samples only have to be stored and not shipped.

Through the - also automated - pressing of the caps and the subsequent removal of the foil, the 96 tubes are closed individually at the same time.

Also available as single row and column stripes.

*Rack LI 1000
with Push Caps*



*Rack MI 500
with Push Caps*



Push Caps Available in 9 Different Colours



3

SAFE® 96 IT

2D Coded Tubes with Internal Thread in 96 SBS/ANSI Rack

The injected TPE compression ring in the screw cap combined with the wide-nosed mouth of the tube and significantly improved sealing compared to the conventional screw caps with an O-ring. The screw cap cannot be overtightened, the permanently injected sealing ring cannot detach itself from the thread. The high screw cap is a big plus for manual handling.

SBS 96 Rack with
Pre-Capped Tubes
MI 500



Tri-Coded Tubes
with Internal Thread



Internal Thread with
TPE-Sealing

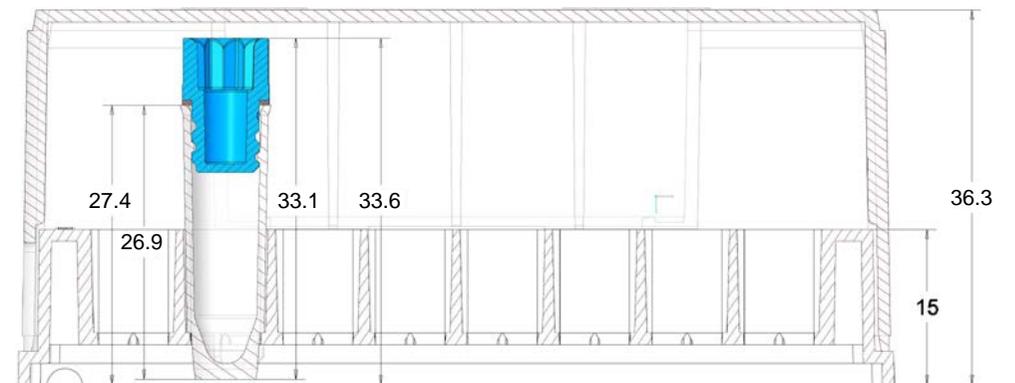


MI 500

Working Volume	With Screw Caps	480 µl
	With Push Caps	550 µl
	With Heat Seal	600 µl
Type of Rack	Polypropylene	
	Polycarbonate (for Push Caps only)	
Type of Rack Lid	Slide Lock	
	Push Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	26.9 mm
	With Screw Cap	33.1 mm
	With Push Cap	28.0 mm
Rack Height	Without Cap	27.4 mm
	Screw Capped Tubes	33.6 mm
	With Lid	36.3 mm



Technical Drawing



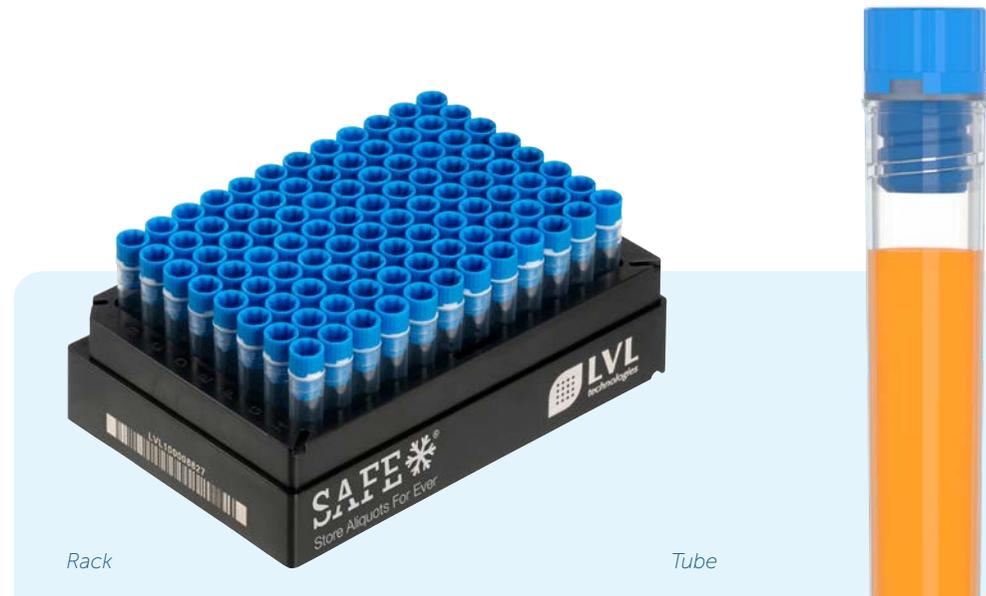
Standard Item Number 2DNC-I05-BL-NS-SLP-L

Order Information

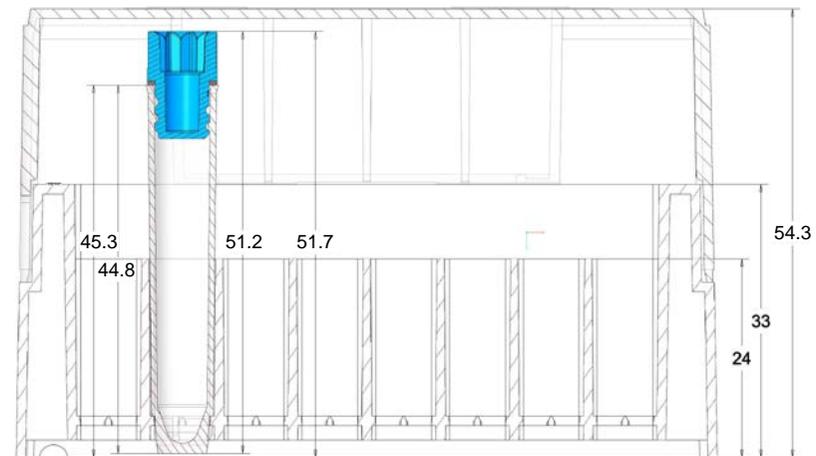


LI 1000

Working Volume	With Screw Caps	1,000 µl
	With Push Caps	1,070 µl
	With Heat Seal	1,120 µl
Type of Rack	Polycarbonate Polypropylene	
Type of Rack Lid	Slide Lock Push Lock	
Rack Identifier	Narrow Side Bottom	1D and Human Readable 2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube (optional)	1D and Human Readable	
Screw Caps	Pre-Capped Stacked on SBS 96 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	44.8 mm
	With Screw Cap	51.2 mm
	With Push Cap	45.9 mm
Rack Height	Without Cap	45.3 mm
	Screw Capped Tubes	51.7 mm
	With Lid	54.3 mm



Technical Drawing



Standard Item Number 2DNC-I10-BL-NS-SLP-L

Order Information



Screw Caps IT



In the case of screws caps for internal threaded tubes LVL uses a TPE compression, which forms an indissoluble unit with the polypropylene of the screw cap in the two-component process. The result: the leak-tightness of the tubes was tested multiple times with very good results, inter alia, in the international standardised IATA test. What's more, the construction of the closely interlocking threads prevents the frequently observed over winding of the screw connections in combination with the TPE sealing, particularly in manual caps without a firmly defined torque.

In principle, screw caps are delivered in three different forms: pre-screwed, in a cap rack (SBS 96) or loosely in a bag.

As standard, LVL offers more than 12 different cap colours, which can also be mixed column by column in the event of larger quantities.

- | | | | |
|--|-----------------------|--|---------------------------|
| | GR Green
RAL 6001 | | BL Blue
RAL 5015 |
| | LI Lime
RAL 6018 | | BC Black
RAL 9004 |
| | YE Yellow
RAL 1021 | | GY Grey
RAL 7046 |
| | OR Orange
RAL 1028 | | WH White
RAL 9003 |
| | RE Red
RAL 2002 | | BR Brown
RAL 8004 |
| | PI Pink
RAL 4003 | | RS Signal Red
RAL 3024 |
| | VI Violet
RAL 4001 | | |

4 SAFE[®] 48 XT

2D Coded Tubes with External Thread in 48 SBS/ANSI Rack

The advantage of the SBS format compared with conventional cryo tubes in the cryo rack, is the inbuilt compatibility with automated processes. The SBS rack makes a changeover to an automatic sample distributor easy. An advantage of the external thread: Depending on the application, the risks of cross-contamination can be minimised. Furthermore, there is no need to ac-

cept the disadvantages in terms of leak-tightness compared to the conventional solutions with internal threads due to the special, patented two-phase TPE compression. On the contrary, due to the two contact phases for the sealing of the liquid phase and a potential gas phase, this screw cap results in the very best sealing characteristics for safe, longterm sample storage.

SBS 48 Rack with Pre-Capped Tubes XLX 2000



SBS 48 Rack with XLX 4000 Tubes



Tube Presenter SBS 48 with XLX 2000 Tubes

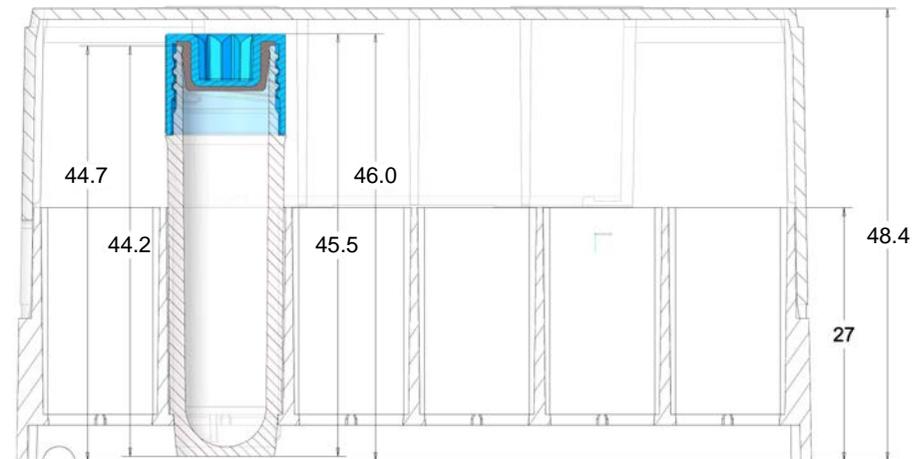


XLX 2000

Working Volume	With Screw Caps	2,000 µl
	With Heat Seal	2,000 µl
Type of Rack	Polypropylene	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	1D and Human Readable	
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	Bulk Ware
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	12.80 mm	
Tube Height	Without Cap	44.2 mm
	With Screw Cap	45.5 mm
Rack Height	Without Cap	44.7 mm
	Screw Capped Tubes	46.0 mm
	With Lid	48.4 mm



Technical Drawing



Standard Item Number 2DSC-X20-BL-NS-SLP-L

Order Information

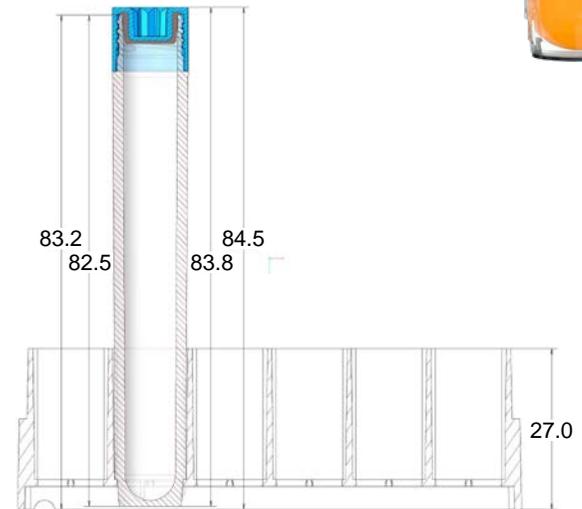


XLX 4000

Working Volume	With Screw Caps	4,000 µl
	With Heat Seal	4,000 µl
Type of Rack	Polypropylene	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	1D and Human Readable	
Screw Caps	Pre-Capped Stacked on SBS 96 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	13.00 mm	
Tube Height	Without Cap	82.5 mm
	With Screw Cap	83.8 mm
Rack Height	Without Cap	83.2 mm
	Screw Capped Tubes	84.5 mm
	With Lid	87.0 mm



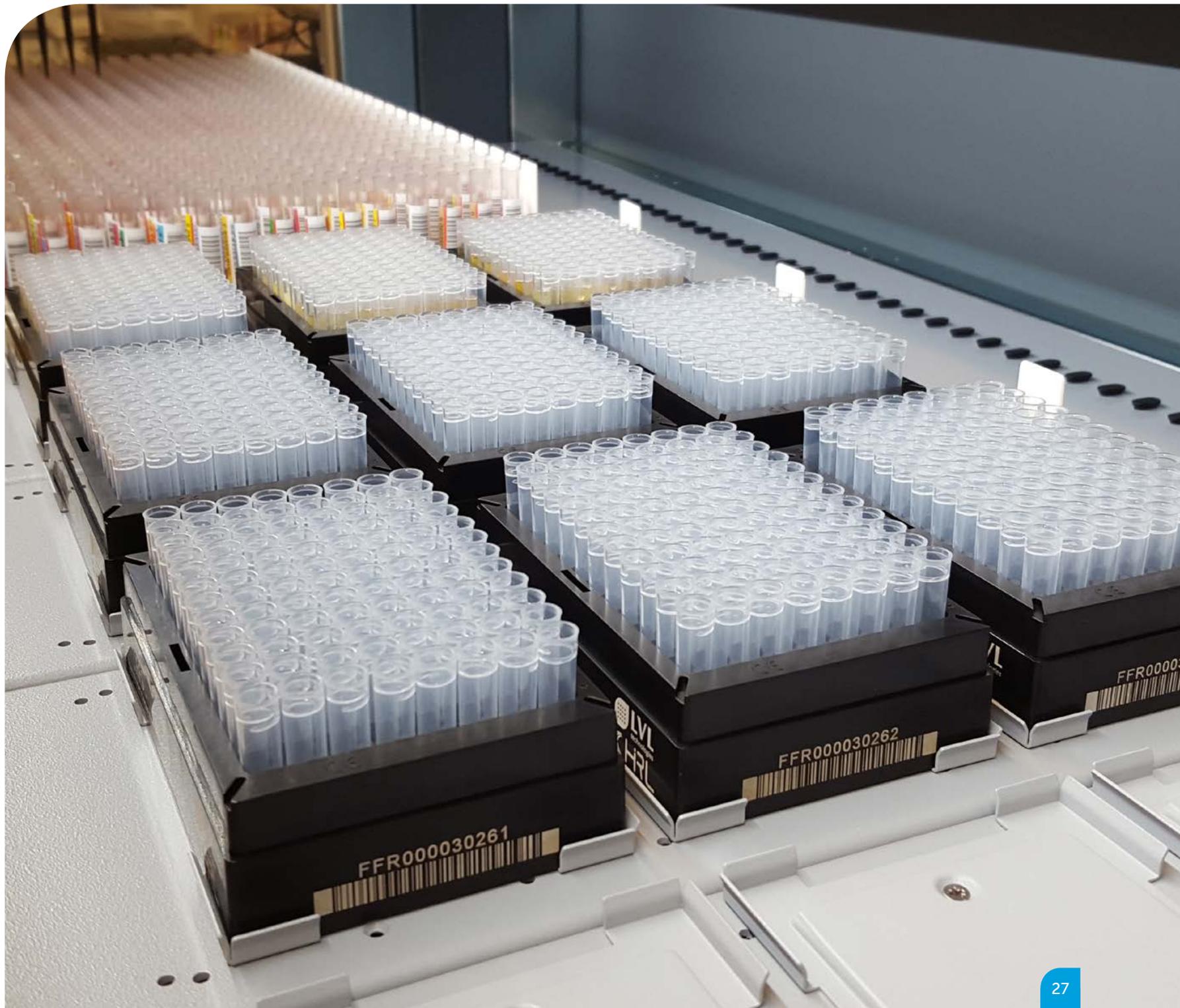
Technical Drawing



Standard Item Number 2DSC-X40-BL-NS-SLP-L

Order Information





5 SAFE® 24 XT

2D Coded Tubes with External Thread in 24 SBS/ANSI Rack

The 24 SBS format rounds off the lower end of the LVL technologies SBS product range. In addition to the well-established advantages of the SAFE® XT technology, which offers the lowest possible risk of contamination, the most efficient use of space and a patented two-phase compression seal, each tube is perfectly suited for the specific requirements of modern biobanking.

- XXLX 2000 – traditionally used as a tissue vial due to the low height and large diameter, but can also be used for fluids
- XXLX 4000 / XXLX 6000 – suitable for storing larger tissue samples and larger volumes with a reduced height & as reformatting storage tubes for frozen Legacy Samples (Cryo Tubes, Eppi™, Sarstedt™ Micro Tube, Nunc® CryoTubes®, WHEATON® CryoElite™, and much more)
- XXLX 8000 – for high volume storage requirements

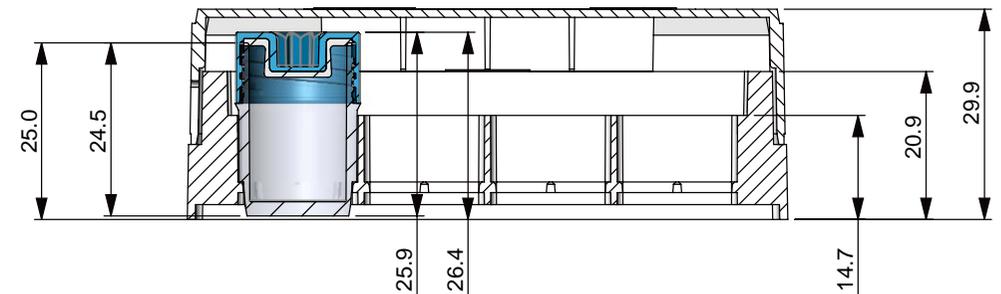


XXLX 2000

Working Volume	With Screw Caps	2,000 µl
	With Heat Seal	2,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack	Bulk Ware
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	24.5 mm
	With Screw Cap	25.9 mm
Rack Height	Without Cap	25.0 mm
	Screw Capped Tubes	26.4 mm
	With Lid	29.9 mm



Technical Drawing



Standard Item Number 2DNC-XL2-BL-NS-SLC-L

Order Information

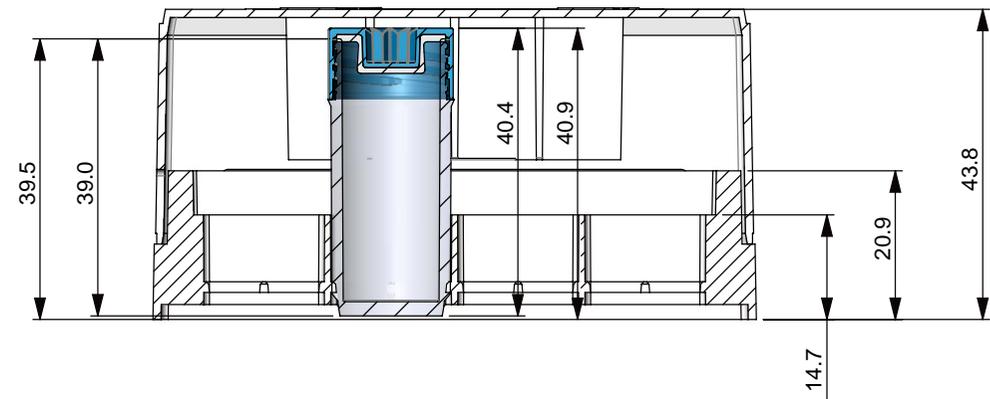


XXLX 4000

Working Volume	With Screw Caps	4,000 µl
	With Heat Seal	4,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube (optional)	1D and Human Readable	
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	39.0 mm
	With Screw Cap	40.4 mm
Rack Height	Without Cap	39.5 mm
	Screw Capped Tubes	40.9 mm
	With Lid	43.8 mm



Technical Drawing



Standard Item Number 2DNC-XL4-BL-NS-SLC-L

Order Information

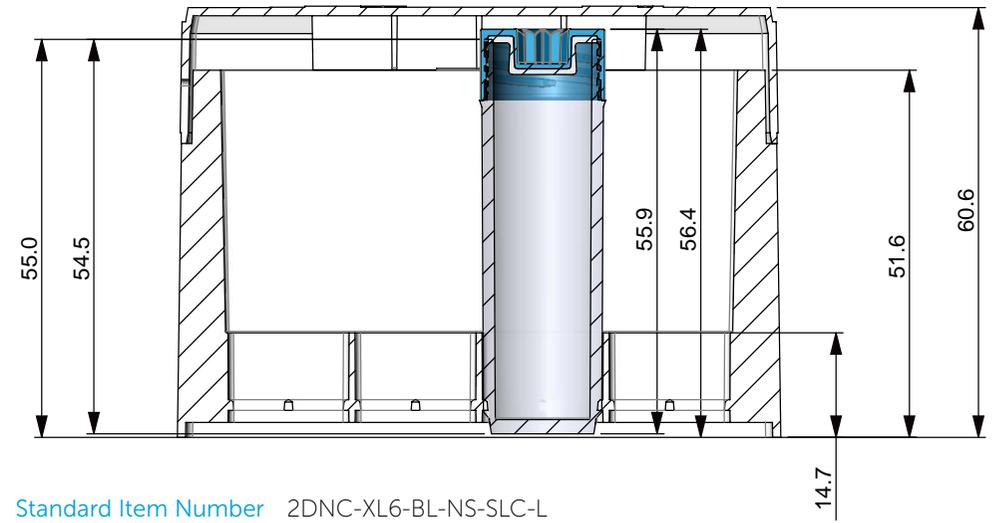


XXLX 6000

Working Volume	With Screw Caps	6,000 µl
	With Heat Seal	6,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube (optional)	1D and Human Readable	
Screw Caps	Pre-Capped Stacked on SBS 24 Cap Rack Bulk Ware	
Purity	Production Sterile (ISO 8) Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	54.5 mm
	With Screw Cap	55.9 mm
Rack Height	Without Cap	55.0 mm
	Screw Capped Tubes	56.4 mm
	With Lid	60.6 mm



Technical Drawing



Standard Item Number 2DNC-XL6-BL-NS-SLC-L

Order Information

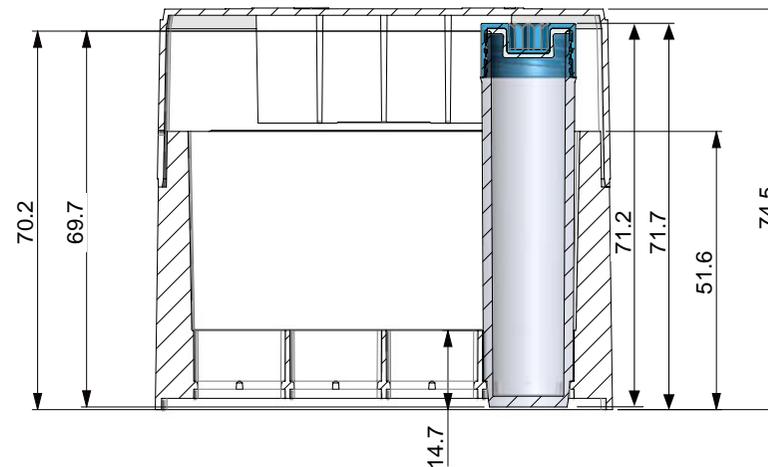


XXLX 8000

Working Volume	With Screw Caps	8,000 µl
	With Heat Seal	8,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube (optional)	1D and Human Readable	
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	69.7 mm
	With Screw Cap	71.2 mm
Rack Height	Without Cap	70.2 mm
	Screw Capped Tubes	71.7 mm
	With Lid	74.5 mm



Technical Drawing



Standard Item Number 2DNC-XL8-BL-NS-SLC-L

Order Information



Order Number Structure

2D Code Bottom

Thread Type

- X External
- I Internal

Cap / Cap Colour

- NC Non Capped
- BL Blue
- WH White
- BC Black
- RE Red
- GR Green
- YE Yellow
- OR Orange
- LI Lime
- PI Pink
- VI Violet
- BR Brown
- RS Signal Red
- GY Grey

Lid

- SL Slide Lock
- LL Slide Lock Low
- PL Push Lock

Packaging Size

- L Large (50 Rack units)
- S Small (10 Rack units)

2D SC – X 10 – BL – NS – SL C – L

Side Code

- SC Side Coded
- NC Non Coded

Working Volume

- 02 200 µl SBS 96
- 03 300 µl SBS 96
- 05 500 µl SBS 96
- 10 1.000 µl SBS 96
- 20 2.000 µl SBS 48
- 40 4.000 µl SBS 48
- L2 2.000 µl SBS 24
- L4 4.000 µl SBS 24
- L6 6.000 µl SBS 24
- L8 8.000 µl SBS 24

Purity

- NS Non Sterile
(Production Sterile)
- PS Pre Sterilized

Rack Material

- C Polycarbonate
- P Polypropylene

6 SAFE[®] CRYO

2D Sample Archiving in the Classic, Square Cryo Format

Particularly when samples are to be stored in existing and pre-configured storage systems, it is sometimes not possible to switch to the modern SBS format – especially, if the future introduction automated handling and automated sample storage can be excluded.



2 ml Tube with Internal Thread



Cryo Rack with Orientation Code



5 ml Tube with Internal Thread

Tubes

- Tube material: polypropylene
- 2D barcode laser etched on the base of the tube
- Extra 1D barcode on side, as well as a white text description field for labelling
- Polished tubes for excellent transparency
- Outer F-bottom for good legibility, internal U-bottom for low dead volume
- Tubes stand alone or are screwed into a stable, fixed position in a rack
- Available with internal thread (100 tubes per rack), and external thread (81 tubes per rack) and for 2 ml and 5 ml
- Graduation for an exact dosing
- Closable with screw caps (delivered capped)
- Caps are produced in 2K procedure
- Seal is injected into the screw cap
- Storage of tubes over liquid nitrogen at temperatures down to -196°C
- Autoclavable at 121°C for 20 minutes
- Beta sterilised (certified as free of DNA, PCR inhibitor, RNA, DNase, RNase, endotoxins/pyrogenies, ATP)

Rack

- Material: polycarbonate
- Rack is labelled with linear barcode (1D) on narrow side and with data matrix code on bottom
- Lid with raster insert for rapid identification of tubes
- Storage of rack and tubes over liquid nitrogen at temperature down to -196°C
- 81 racks available in 5 different colours

