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innovating for a better life

# Gx® Cartridges Platform

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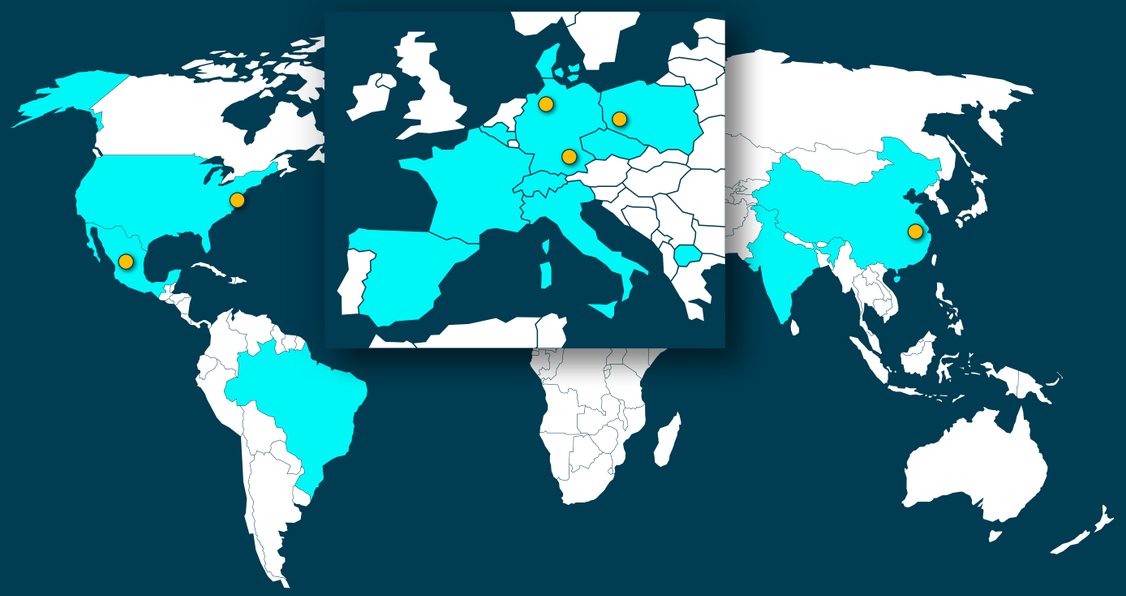

# Leading Supplier of Cartridges

Gerresheimer has established a comprehensive cartridge portfolio that caters to dental, insulin, GLP-1, and custom applications, showcasing our commitment to diverse healthcare needs. Our strategic investments in Ready-to-Fill (RTF) technology enhance your flexibility in filling and finishing processes, ensuring efficiency and adaptability in production. Furthermore, we have improved data and device integration, enabling you to fully benefit from the breadth of our capabilities.

**Paulina Broda**
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Cartridges and Sterile Solutions
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# Five Great Reasons to Choose Gerresheimer as Preferred System and Solution Partner for Cartridges

## 1 High-quality glass cartridges for parenteral drugs

We offer a comprehensive range of cartridges in premium-quality clear and amber glass variations, catering to diverse needs and preferences. Our cartridges are made of Type I borosilicate glass, ensuring exceptional durability and chemical resistance.

## 2 Full-service provider with a complete portfolio

The cartridges come in both bulk and Ready-To-Fill (RTF) options, with standard volumes of 1.5 ml and 3.0 ml. Furthermore, customizable sizes up to 20 ml are available on request to suit a range of applications. Various types of specialty treatments can be applied, offering additional functionality and protection.

## 3 Secure supply chain through global sourcing

We operate six cartridge manufacturing sites across Europe, North America and Asia to effectively mitigate risk.

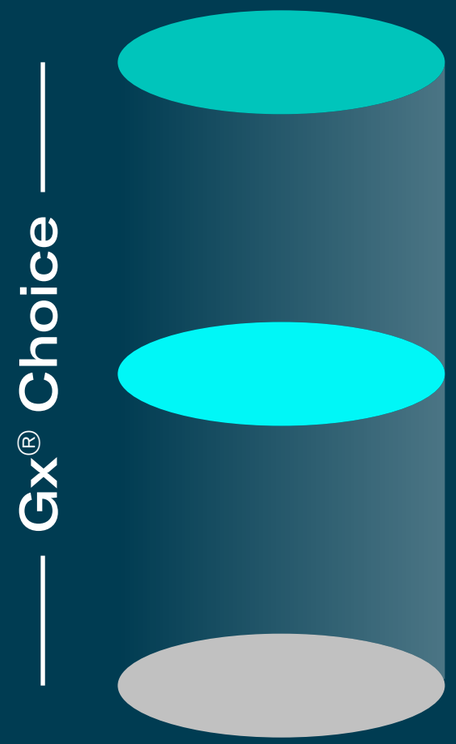
## 4 The right cartridge for your needs

Based on our performance level system we offer Gx® Value and Gx® Advance Cartridges. Moreover, Gx® Elite Cartridges in bulk and RTF options are in development. This allows you to choose the cartridge level whose quality attributes are perfectly tailored to your requirements.

## 5 System and solution provider for cartridge-based device systems

Our cartridge-based platform solutions for drug delivery devices have been designed to be quickly and cost-effectively tailored to the specific needs of different therapeutic areas and medicines. They are simple and reliable for home use which supports patient independence and frees up healthcare providers. We support the full adaptation of our devices including regulatory submission of a final combination product. This reduces burden on you and helps accelerate time-to-market.

# Gx® Performance Levels




## Gx® Elite

Best-in-class quality and protection
for highly sensitive drugs.

## Gx® Advance

Improved quality for
higher efficiency in fill & finish.

## Gx® Value

Proven solutions
in pharmaceutical quality.

## For All Your Needs and Applications

To make it as easy as possible for you to find the right Gerresheimer product we have created a consistent structure with three performance levels for our vials, syringes, ampoules and cartridges.

The new classification is based on an understandable systematic with increasing performance from Gx® Value up to Gx® Elite and clearly defined quality requirements and attributes for each level.

Products at all performance levels passed through multi-stage, strict quality assurance processes and fulfill all regulatory requirements. On all three performance levels we offer several standard products in each product category: a broad range for all needs and applications.

Moreover, with Gx® Choice, we also offer you the opportunity to customize products and solutions according to your requirements. Whether you are optimizing for clinical efficiency, patient safety, or brand identity, Gx® Choice ensures your product is as unique as your application.

# Gx® Value Cartridge

Proven solutions in pharmaceutical quality.

Gx® Value Cartridges are functional products in proven pharmaceutical quality made of type I borosilicate glass. They guarantee an efficient and cost-effective fill & finish process at all times and comply with all regulatory requirements. We produce Gx® Value Cartridges worldwide locally for the respective markets and guarantee a high level of supply availability.

Typical areas of application include heparins, generics and small molecule drugs.

## Product Benefits

**Internationally standardized product**
Full compliance to ISO standards to address pharma quality

**Local-for-local supply**
Secured supply chain by global availability with short lead times
Multiple sources (Gx plants)

**Proven functionality**
Seamless integration into all existing fill & finish equipment

**State-of-the-art material**
Glass tubing from all major suppliers available

## Product Offerings

| | Gx® Value Level | Gx® Advance Level | Gx® Elite Level<br>In development |
|---|---|---|---|
| **Siliconization** | Oily | Baked-on-siliconized | Baked-on-siliconized |
| **Crimping** | Uncrimped | Crimped | Crimped |
| **Configuration** | Bulk | RTF & Bulk | RTF |
| **Treatment** | None | Ion-exchange possible | Ion-exchange possible |
| **Sterilization** | Unsterile | Steam | Steam |

# Gx® Advance Cartridges

Improved quality for higher efficiency in fill & finish.

Gx® Advance Cartridges offer the properties of the Gx® Value Vials plus additional benefits such as tighter dimensional tolerances, reduced glass-to-glass and glass-to-metal contact and reduced cosmetic defects. If more performance and even less risks are required for fill & finish, then the Gx® Advance Cartridges are the right choice.

Gx® Advance Cartridges are suitable for immunotherapy or diabetes medications, for example.

## Product Benefits

**Internationally standardized product**
Full compliance to ISO standards to address pharma quality

**Local-for-local supply**
Secured supply chain by global availability with short lead times
Multiple sources (Gx plants)

**Proven functionality**
Seamless integration into all existing fill & finish equipment

**State-of-the-art material**
Glass tubing from all major suppliers available

**Improved fill & finish efficiency**
Improved product quality leads to less defects on fill & finish lines with improved performance and reduced TCO

**Higher product quality**
Tighter AQLs, reduced glass-to-glass and glass-to-metal contact leads to reduced cosmetic defects. Increased dimensional consistency for all products

**Advanced system variety**
Additional system features like surface treatment and elastomer components available

## Product Offerings

| | Gx® Value Level | Gx® Advance Level | Gx® Elite Level<br>In development |
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| **Siliconization** | Oily | Baked-on-siliconized | Baked-on-siliconized |
| **Crimping** | Uncrimped | Crimped | Crimped |
| **Configuration** | Bulk | RTF & Bulk | RTF |
| **Treatment** | None | Ion-exchange possible | Ion-exchange possible |
| **Sterilization** | Unsterile | Steam | Steam |

# Gx® Advance RTF Cartridges

Improved quality for higher efficiency in fill & finish.

Gx® Advance RTF Cartridges are supplied in a Ready-to-Fill (RTF) packaging powered by the well-known EZ-fill® platform. For you, this means no need for in-house washing and sterilization. This simplifies your production processes, reduces down-time and accelerates time-to-market.

The packaging design minimizes glass-to-glass and glass-to-metal contact, thus reducing particulate contamination and risks associated with vial damage and breakage. The EZ-fill® platform supports various configurations, catering to both small and large production scales. It also integrates seamlessly with standard fill & finish lines.

## Product Benefits

**Internationally standardized product**
Full compliance to ISO standards to address pharma quality

**Local-for-local supply**
Secured supply chain by global availability with short lead times
Multiple sources (Gx plants)

**Proven functionality**
Seamless integration into all existing fill & finish equipment

**State-of-the-art material**
Glass tubing from all major suppliers available

**Improved fill & finish efficiency**
Improved product quality leads to less defects on fill & finish lines with improved performance and reduced TCO

**Higher product quality**
Tighter AQLs, reduced glass-to-glass and glass-to-metal contact leads to reduced cosmetic defects; increased dimensional consistency for all products

**Advanced system variety**
Additional system features like surface treatment and elastomer components available

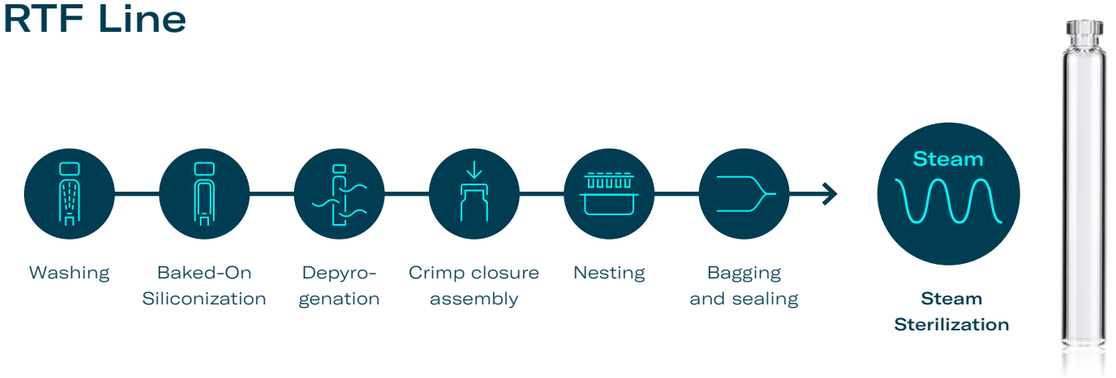
**Proven sterilization method**
Sterilized with steam

**Standardized RTF packaging**
Available in nest & tub or tray

**De-risking of fill & finish**
The RTF packaging minimizes the risk of cartridge damage or breakage ensuring the integrity of the drug product

**Product launch support**
Sample availability for development and scale-up activities; technical documentation available

## RTF Line

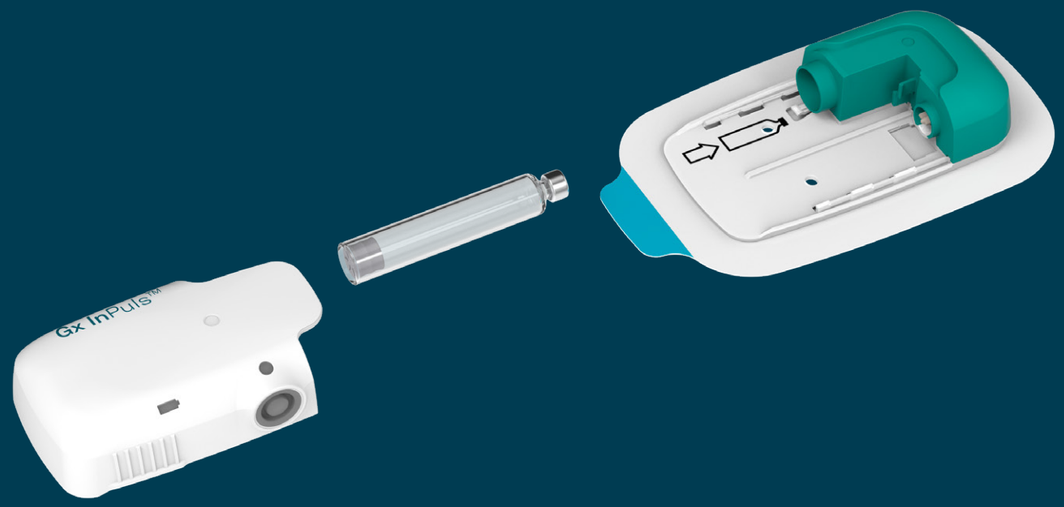


# System and Solution Provider

Our cartridge-based proprietary platform devices support therapy goals and patient independence by empowering subcutaneous self-administration of liquid drugs. Our expertise in development, manufacturing, and regulatory submission reduces development risk and time-to-market.

Our innovative cartridge-based autoinjector platform can accommodate volumes of up to 3 ml, catering to a variety of medical needs with precision and ease. This system is designed for convenience and ensures accurate dosing with minimal user effort, making it an ideal choice for self-administration.

In addition, the cartridge-based Gx InPuls™ platform for the subcutaneous administration of small-molecule drugs accompanies patients through their day while gently, accurately delivering their therapy. A combination device from SQ Innovation based on the Gx InPuls™ infusor is approved in the US by the FDA for delivery of a novel furosemide formulation to treat heart failure.




# Add-ons and Services

## Add-ons

Our special treatments can enhance the glass surface of cartridges with additional features. Baked-on Siliconization is an option to provide slide coating for efficient and optimal emptying. For our Gx® Advance RTF Cartridges we use steam sterilization as sustainable alternative to ethylene oxide.

## Container-level traceability

The Gerresheimer traceability system enables complete traceability of our products throughout the value chain: from primary packaging to secondary packaging, and from drug filling and serialization up to the final application at the PoC. Therefore traceability helps to increase patient safety and fight counterfeiting. Data can be linked to individual products, analyzed and evaluated via our powerful digital infrastructure.

## Accredited Lab Services

Our analytical services help you to determine the perfect glass packaging solution for your drug molecules. Whether material and mechanical testing, non-conformance identification, delamination or elemental extractables testing – we are pleased to support you with our dedicated lab capabilities.

# About Gerresheimer

Gerresheimer is an innovative systems and solutions provider and a global partner for the pharma, biotech and cosmetic industries. The Group offers a comprehensive portfolio of drug containment solutions including closures and accessories, as well as drug delivery systems, medical devices and solutions for the health industry. The product range includes digital solutions for therapy support, medication pumps, syringes, pens, auto-injectors and inhalers as well as vials, cartridges, ampoules, tablet containers, infusion, dropper and syrup bottles and more. Gerresheimer ensures the safe delivery and reliable administration of drugs to the patient. Gerresheimer supports its customers with comprehensive services along the value chain and in addressing the growing demand for enhanced sustainability. With over 40 production sites in 16 countries in Europe, America and Asia, Gerresheimer has a global presence and produces locally for regional markets. Together with Bormioli Pharma, the Group generated revenues of around EUR 2.4bn in 2024 and currently employs around 13,600 people. Gerresheimer AG is listed in the MDAX on the Frankfurt Stock Exchange (ISIN: DE000A0LD6E6).

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