# Next generation vials

Every drug formulation is unique, just like every patient is too. Particularly high-potency medicines that are entering the market have exacting pharma packaging needs to ensure drug stability. With every drug requiring specific packaging features, pharma companies are looking for a concept that combines established packaging standards and a modern approach.

Challenge

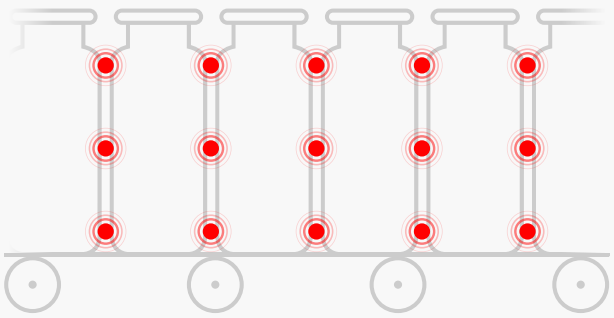
## The filing process

Traditional fill and finish operations rely on bulk filling lines. While these allow for a high throughput in a short period, the pharmaceutical containers are exposed to direct glass-to-glass contact. Subsequently, this can create glass particles that may end up inside the container or lead to defects and glass-breakage.

On top of this, developing and producing highly potent drugs such as biologics or vaccines comes at a high price. The need to reduce possible drug waste and to increase yields at the same time is therefore putting additional pressure on the pharmaceutical filling process.

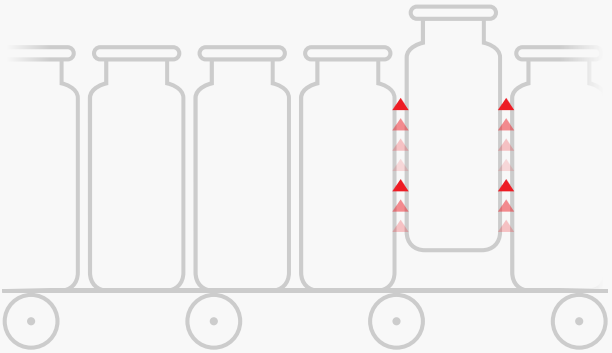
External impact | Climbing effect

Although glass has a remarkably high natural strength, the risk of breakage increases when pre-damaged glass is met with mechanical load. On conventional bulk filling lines and during transport, containers are exposed to axial and side pressure, for example, when they face glass-to-glass contact with other vials or glass-to-metal contact between the vials and the filling machine. These situations may lead to scratches or cracks, which can result in glass breakage.



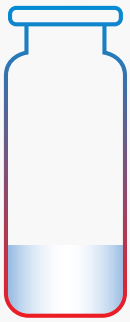
External impact | Climbing effect

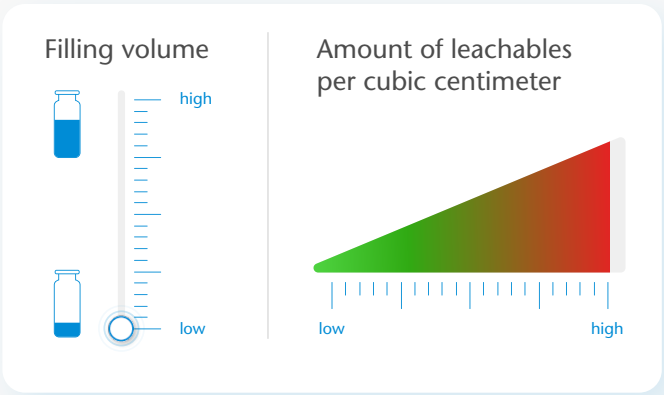
As vials come into direct contact with one another on bulk filling lines, the containers may stick together or begin climbing upwards. Both scenarios increase the risk of creating waste.

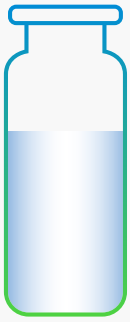


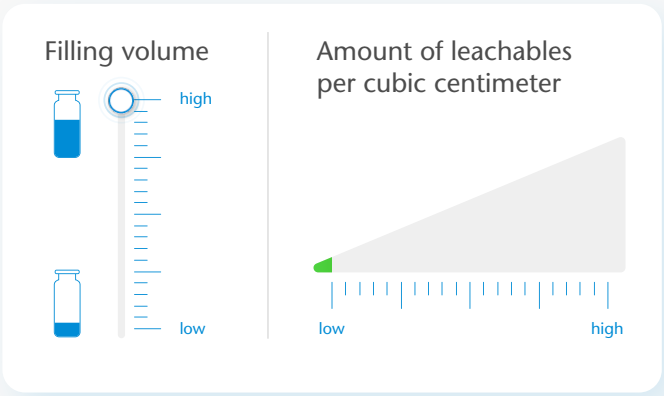
# Risk of drug/container interactions

As a majority of sensitive and biologic drugs are filled below nominal filling volume, the risk increases of the drug interacting with the container. This is the case because the bottom-near heel region of standard vials may acquire an inhomogeneous chemical structure during the forming process and is prone to ion exchange. In other words: A lower filling volume is met with a higher amount of leachables from the container, which may harm the drug and reduce drug stability.







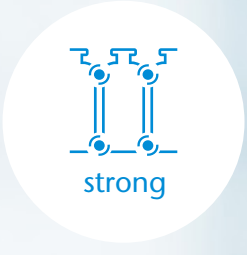
# How can a pharmaceutical container fulfill all the requirements from ensuring drug stability to supporting efficient processing?

Innovation

## Multiple needs, one solution

In order to meet the various exacting demands of sensitive drugs and drugs with low filling volumes, SCHOTT developed a modular vial concept known as SCHOTT EVERIC™. Manufactured from an improved FIOLAX® borosilicate glass tubing, namely FIOLAX® CHR (controlled hydrolytic resistance), the ultra-pure vials offer a packaging solution that serves individual drug and patient needs.





## Unmatched drug stability

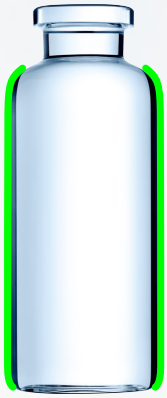
pure

Manufactured according to the company's approved DC forming process (delamination controlled), EVERIC™ pure vials feature a high chemical stability and homogeneous surface near the bottom heel area. This makes the vials particularly suitable for biologics with low-filling volumes, while ensuring that delamination is under full control. Moreover, by keeping the glass composition untouched, no costly re-registration is needed when replacing conventional tubular type-I glass vials for already marketed drugs with EVERIC™ pure.

## Optimized strength

strong

EVERIC™ strong vials stand for optimized container strength, which is achieved by designing geometries within the ISO tolerances. Thanks to computer simulation, the vial's handling and contact points in the heel and shoulder area are improved to better withstand axial pressure and side compression. The improved geometries further eliminate inherent stress in the glass.



## Smoother line operations

smooth

EVERIC™ smooth vials feature an outer coating to additionally protect the glass surface from flaws, such as scratches, during the entire process. The outer silicone coating on the bottom and tubular part of the containers create a low friction surface while maintaining the optimized container strength. The result: An improvement of the coefficient of friction (CoF) by 80 percent for a smooth container flow to prevent vials climbing or sticking.

# For a healthy future

Health plays a vital role in society and as novel drugs and treatment options are being developed, requirements for the drug packaging will only become more complex. Whether it is to protect the drug formulation or to improve the patient experience, an extended EVERIC™ vial portfolio including, for example, an inner coating for enhanced drug stability will ensure that all needs – both from the drug and the patient – are covered.

Let´s realize the global vision of saving lives.

## What's your next milestone?

Contact

Diana Löber
Pharmaceutical Systems
SCHOTT AG