

CORNING

Corning[®] Viridian[™] Vials

Bring Science to Life. Sustainably.

Accelerate production in a more environmentally friendly package



Corning® Viridian™ Vials

Performance Meets Sustainability

Reducing glass waste and manufacturing emissions to deliver a more sustainable choice.

Sustainable Design

Less is more

Less glass means less raw material extracted from the environment and less material waste at end-of-life.

Using 100% renewable energy, Viridian Vials have a positive impact on every stage of vial usage, from manufacturing to patient use.

*Compared to conventional vials not using renewable energy



Reduction in
Material Waste



Reduction in
CO₂e Emissions*

Verified by 3rd party Life Cycle Assessment (LCA)

When it comes to sustainability claims, it's essential to verify your data. Our independent LCA by Sphera confirms Viridian Vials claims and highlights the impact it can have for our customers.

Our data shows that even when compared to a conventional vial made with 100% renewable electricity, Viridian Vials can reduce emissions by 15%.

Raw Material

↓ 0.30g CO₂e

Tubing Manufacturing

↓ 6.20g CO₂e

Transportation

↓ 0.02g CO₂e

Vial Manufacturing*

↓ 4.88g CO₂e

11.4g per vial reduction in CO₂e

*Manufacturing = Conversion + Coating + Packaging



✦ 20% less glass

🛡️ Low-friction coating

🍷 Type I borosilicate glass

Extrapolated to 10 million vials

Viridian Vials could save up to 114,000 kg of CO₂e, which is equal to consuming >12,900 gallons (>48, 830 liters) of gasoline.

A 2R Custom Viridian Vial weighs 3.5g, compared to a conventional 2R that weighs 4.4g. This means that Viridian Vials would eliminate 9 tons of glass from going to landfill if 10 million vials are consumed.

Corning® Viridian™ Vials are a drop-in solution that can reduce manufacturing emissions by up to 30% and glass material waste by 20%, while enabling faster and safer fill-finish operations.

Viridian Vials, an externally coated Type I borosilicate vial, can improve quality and boost filling line efficiency, helping our customers increase production in an environmentally friendly package.

Performance Accelerant & Protecting Quality

Patented external coating

Corning's external coating technology is proven to reduce friction, damage, rejects, and glass particles, improving filling line efficiency and helping to reduce drug recalls.

Protected by our industry leading external coating, the breakage rate of Viridian Vials is as good or lower than conventional vials.



Improvement in fill-finish efficiency



Reduction in glass particles

Line trial

In collaboration with Optima, a leading manufacturer of fill-finish equipment, we tested two vial types:

- Standard 2R borosilicate vials (4.4g)
- 2R Custom Viridian Vials (3.5g)

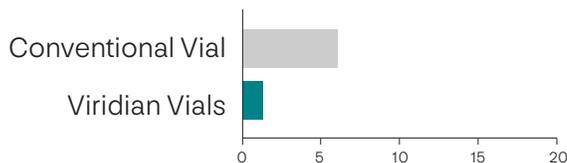
The vials were run at a speed of 450 vials per minute and recirculated >120 times, simulating >200,000 vials processed for each group.

The trial showed:

- No breakage observed in washing, depyrogenation, accumulation, singulation, or star wheels
- Lower tip over rate from Viridian Vials compared to conventional vials
- No functional issues with washing or depyrogenation
- No need for modification of fill-finish change parts

Tip overs per hour

Line trial for vial handling behavior



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