Viridian vials are Type I borosilicate vials with a low coefficient of friction external coating.

Glass Composition: approximate oxide weight (%)

Oxide Component	Symbol	Corning 51-V Tubing
Silicon Dioxide	SiO_2	72.0
Boron Oxide	B_2O_3	11.5
Aluminium Oxide	Al_2O_3	6.8
Calcium & Magnesium Oxide	CaO + MgO	0.7
Sodium Oxide	Na_2O	6.5
Potassium Oxide	K_2O	2.4
Iron Oxide*	Fe_2O_3	<600 ppm
Barium Oxide*	BaO	<400 ppm
Titanium Dioxide*	TiO_2	<400 ppm

*Not introduced in the batch composition.

Chemical Resistance Classifications

		Corning 51-V Tubing
Hydrolytic Resistance (Glass Grain)	Ph. Eur. (3.2.1B) / USP <660>	Type I
Hydrolytic Resistance (Glass Grain)	ISO 720	HGA1
Soluble Alkali Test	JP 7.01	Complies
Acid Resistance Class	DIN 12116	Class S1
Alkali Resistance Class	ISO 695	Class A2
ASTM Laboratory Glass Class	ASTM E 438	Class B

Physical Properties

Name	Unit	Corning 51-V Tubing
Average Linear T.E.C.	$10^{-7}\ K^{-1}$	54
Density	$g\ cm^{-3}$	2.33
Relative Refractive Index	(number)*	1.49

* λ at 587.6 nm

Viscosity Curve — Characteristic Temperatures

Name	Viscosity (Poise)	Corning 51-V Tubing
Working Point	$10^{4.0}$	1130°C
Softening Point	$10^{7.6}$	785°C
Annealing Point	$10^{13.0}$	570°C
Strain Point	$10^{14.5}$	525°C

Heavy Metals/Arsenic/Antimony

Heavy Metals

Contents of Pb, Cd, Hg, Cr(VI) is below the 100 ppm limit value stated by the US Toxics in Packaging Clearing House (TPCH) and European Parliament and Council Directive Article 11 of 94/62/ EC of 10. Dec. 1994 on packaging and packaging waste with updates 2001/171/EC and 2006/340/EC.

Arsenic and Antimony

Corning's pharmaceutical glass does not introduce any arsenic nor antimony in the batch composition of its glasses. Tests performed as per U.S. and European Pharmacopoeia prescriptions on containers made from Corning clear glass tubes give the following results: Arsenic (As) = Not detectable; Antimony (Sb) = Not detectable

Coating Chemical Characteristics and Physical Properties

Biological Reactivity/Toxicity*	Meets Class V for Plastics
Solubility: Aqueous or Organic Solvents	Below MDQ (<0.8 µg/g)
Volatile Organic Compounds	Below LOQ (<0.5 µg/g)
Appearance	Visibly transparent, colorless
Thickness	<100 nm as single layer
Coefficient of Friction under 10N Load	<0.5

*USP <87> and <88>

Contact Us

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