

HLQ 235

Electrically melted direct drawn quartz tube (TDQ, Titanium Doped Quartz)



Product Overview

HLQ235 is a doped (titanium oxide) electrically fused quartz made from natural quartz sand, which is purified by the Heraeus refinement process. HLQ235 is designed for high efficiency and high-volume lamp applications. The tube is fabricated using the Heraeus single-step process (V-ZUG).

Key Features

- ozone free quartz
- low bubble content
- tight tolerances

Applications (e.g.)

- low pressure germicidal lamp
- amalgam lamp
- short-arc lamp

Geometrical Data

Outer Diameter (OD) [mm]	Tolerance [mm] ¹	Wall Thickness Range [mm]
10 - ≤ 12	± 0.3	≥ 1.0 - ≤ 2.0
> 12 - ≤ 17	± 0.3	≥ 1.0 - ≤ 2.5
> 17 - ≤ 23	± 0.3	≥ 1.0 - ≤ 4.0
> 23 - ≤ 28	± 0.4	≥ 1.0 - ≤ 5.0
> 28 - ≤ 40	± 0.4	≥ 1.0 - ≤ 6.0
> 40 - ≤ 45	± 0.5	≥ 1.0 - ≤ 6.0
> 45 - ≤ 50	± 0.5	> 1.4 - ≤ 4.5
> 50 - ≤ 55	± 0.5	> 1.5 - ≤ 4.0
> 55 - ≤ 60	± 0.5	> 1.5 - ≤ 3.5

Wall Thickness (WT) [mm]	Tolerance [mm]	Cumulative length of bubbles ²
≥ 1.0 - ≤ 2.0	± 0.15	< 6%
> 2.0 - ≤ 4.0	± 0.30	< 6%
> 4.0 - ≤ 6.0	± 0.40	< 6%

Feature	Area	Tolerance	Note
Ovality	OD > 10 - ≤ 20mm	≤ 0.25mm	
	OD > 20 - ≤ 46mm	≤ 0.50mm	
	OD > 46 - ≤ 60mm	≤ 0.60mm	
Siding	manufactured length	< ½ WT tolerance	(e.g. ± 0.20 WT = siding of 0.20)
Bow	all dimensions	< 1.0mm / 1m	not annealed
		< 1.5mm / 1m	annealed
Length	-	+ 20mm / - 0mm	snap cut ³

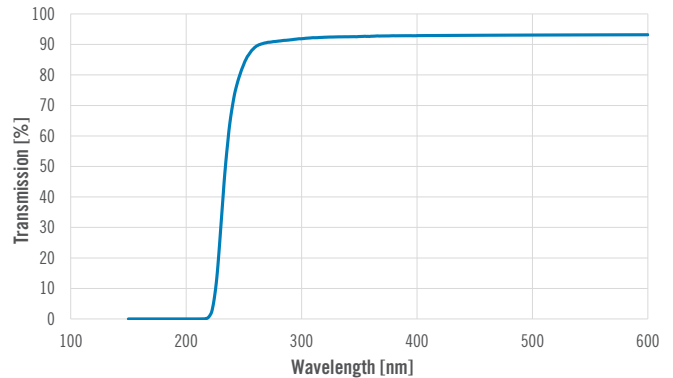
¹ Additional sizes and tolerances are available on request

² Bubbles < 0.5 mm length and < 0.08 mm width are not counted

³ Other cutting methods on request

Optical Properties

Typical transmission values for 2mm wall thickness



Wavelength [nm]	200	215	225	254	360
Transmission [%]	0	0	8	86	92

Visual Features

Tolerance

Inclusions	none
Surface Impurities (adherent)	none
Open Bubbles	none
Devitrification	≤ 1.0mm; max. 3 pcs / 1m (only for annealed tubes)

Chemical Properties

Typical OH Content [ppm]	~ 100 as drawn, reducible through vacuum annealing - <5 / <1										
Chemical Impurities [ppm]	Li	Na	K	Mg	Ca	Fe	Cu	Cr	Mn	Al	Ti
	0.6	0.1	0.2	0.03	0.6	0.1	<0.05	<0.05	<0.05	14	doped

Physical Properties

Softening Temperature	~ 1710°C
Annealing Temperature	~ 1220°C
Strain Temperature	~ 1125°C
Viscosity at 1300°C	~ 11.95 dPas
Maximum Working Temperature	continuous operation ~ 1160°C short-term operation ~ 1300°C
Density	2.2 g/cm ³

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The data given here is correct as of July 2021 and is subject to change.

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