

HLQ 382 / HLQ 382 V8 / HLQ 382 V40

Doped electrically fused direct drawn quartz tube



Product Overview

HLQ382 is a doped (cerium oxide) electrically fused quartz made from natural quartz sand, which is purified by the Heraeus refinement process. HLQ382 is designed for high efficiency and high-volume lamp applications. The tube is fabricated using the Heraeus single-step process (V-ZUG).

Key Features

- UV-blocking quartz
- low bubble content
- tight tolerances

Applications (e.g.)

- long arc laser excitation lamp

Geometrical Data

Outer Diameter (OD) [mm]	Tolerance [mm] ¹	Wall Thickness Range [mm]
≥ 20 - ≤ 23	± 0.3	≥ 1.5 - ≤ 3.0
> 23 - ≤ 30	± 0.4	≥ 1.5 - ≤ 3.0
> 30 - ≤ 40	± 0.5	≥ 1.5 - ≤ 3.0
> 40 - ≤ 45	± 0.6	≥ 1.5 - ≤ 3.0
> 45 - ≤ 50	± 0.7	> 2.0 - ≤ 3.0

Wall Thickness (WT) [mm]	Tolerance [mm]	Cumulative length of bubbles ²
≥ 1.5 - ≤ 2.0	± 0.2	< 6 %
> 2.0 - ≤ 3.0	± 0.3	< 6 %

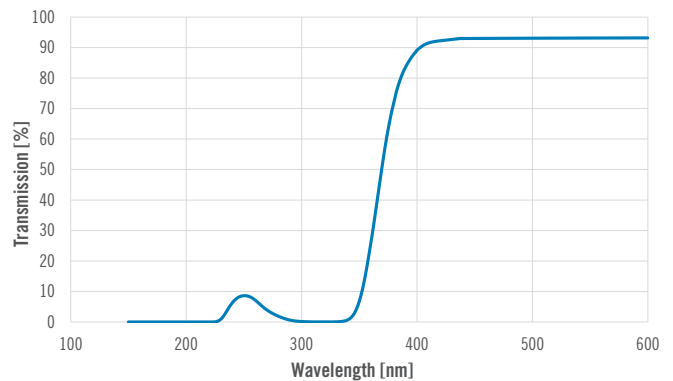
Feature	Area	Tolerance	Note
Ovality	OD > 20 - ≤ 40mm	≤ 0.50mm	
	OD > 40 - ≤ 50mm	≤ 0.60mm	
Siding	manufactured length	< ½ WT tolerance	(e.g. ± 0.20 WT = siding of 0.20)
Bow	over a one meter length	< 1.0mm / 1m	not annealed
		< 1.5mm / 1m	annealed
Length	-	+ 20mm / - 0mm	snap cut ¹

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

Optical Properties

Typical transmission values for 2mm wall thickness (not tempered)



Wavelength [nm]	245	315	350	380	436	588
Transmission [%] HLQ382	< 10	0	7	72	92	93
Transmission [%] HLQ382 V8 / V40	2	0	17	78	92	93

Visual Features

Tolerance

Outer Surface Distortions		Tubes could show slight structure
Surface Impurities (adherent)	none	
Open Bubbles	none max.: ≤10mm length and ≤ 0.1 width	inner tube cumulated length 20mm
Inclusions (particle)	> 0.1 - ≤ 0.4mm > 0.4mm	max. 10 pc per tube length none
Discolouration	max. 15 pcs. or 5 % of outer surface	Blue lines (Ce-concentration)
Devitrification	< 0.2 - ≤ 1.5mm; max. 5 pcs / 1m	annealed

Chemical Properties

Typical OH Content [ppm]	~ 140 as drawn, reducible through vacuum annealing										
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

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

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

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