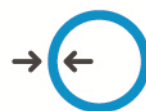






## AR-Glas

Tubing and Rod of Special Glass







**VIDRASA**  
VIDRIO EN TUBO Y VARILLA S.A.





# AR-Glas: Tubing

Outside Diameter		Wall Thickness		Weight per Tube	Carton / Densopack		Pallet Load
							
mm		mm		g/1500 mm	Number of Tubes	Weight approx. Kg	Weight approx. Kg
<b>4</b>	±0.10	<b>0.50</b>	±0.02	21	582	12.0	540.0
	±0.10	<b>0.70</b>	±0.03	27	551	15.0	540.0
	±0.13	<b>0.90</b>	±0.03	33	548	18.0	486.0
<b>5</b>	±0.10	<b>0.50</b>	±0.02	27	378	10.0	450.0
	±0.10	<b>0.70</b>	±0.03	36	367	13.0	468.0
	±0.13	<b>0.90</b>	±0.03	44	386	17.0	459.0
<b>6</b>	±0.10	<b>0.50</b>	±0.02	33	618	20.0	420.0
	±0.10	<b>0.70</b>	±0.03	44	252	11.0	495.0
	±0.10	<b>0.90</b>	±0.03	54	278	15.0	540.0
	±0.13	<b>1.10</b>	±0.03	64	252	16.0	432.0
<b>7</b>	±0.10	<b>0.50</b>	±0.02	38	418	16.0	448.0
	±0.10	<b>0.70</b>	±0.03	52	193	10.0	450.0
	±0.10	<b>0.90</b>	±0.03	65	186	12.0	540.0
	±0.13	<b>1.10</b>	±0.03	77	196	15.0	540.0
<b>8</b>	±0.10	<b>0.50</b>	±0.02	44	380	16.8	352.8
	±0.10	<b>0.70</b>	±0.03	60	342	20.6	432.6
	±0.10	<b>0.90</b>	±0.03	76	266	20.0	420.0
	±0.13	<b>1.10</b>	±0.03	90	234	20.9	438.9
<b>9</b>	±0.13	<b>0.50</b>	±0.02	50	340	17.0	357.0
	±0.13	<b>0.70</b>	±0.03	69	289	19.8	415.8
	±0.13	<b>0.90</b>	±0.03	86	238	20.4	428.4
	±0.15	<b>1.10</b>	±0.03	103	204	20.9	438.9
<b>10</b>	±0.13	<b>0.60</b>	±0.03	67	270	17.9	375.9
	±0.13	<b>0.80</b>	±0.03	87	240	20.8	436.8
	±0.15	<b>1.00</b>	±0.03	106	165	17.5	367.5
	±0.15	<b>1.20</b>	±0.04	125	165	20.5	430.5
<b>11</b>	±0.13	<b>0.60</b>	±0.03	74	256	18.8	451.2
	±0.13	<b>0.80</b>	±0.03	96	208	20.2	420.0
	±0.15	<b>1.00</b>	±0.03	118	169	19.9	417.9
	±0.15	<b>1.20</b>	±0.04	139	143	19.8	415.8
<b>12</b>	±0.13	<b>0.60</b>	±0.03	81	238	19.2	345.6
	±0.13	<b>0.80</b>	±0.03	106	196	20.7	372.6
	±0.15	<b>1.00</b>	±0.03	130	156	20.2	424.2
	±0.15	<b>1.20</b>	±0.04	153	126	19.2	345.6
<b>13</b>	±0.13	<b>0.60</b>	±0.03	88	208	18.2	436.8
	±0.13	<b>0.80</b>	±0.03	115	182	20.9	376.2
	±0.15	<b>1.00</b>	±0.03	142	143	20.2	363.6
	±0.15	<b>1.20</b>	±0.04	167	117	19.5	351.0
<b>14</b>	±0.12	<b>0.60</b>	±0.03	95	180	17.0	408.0
	±0.12	<b>0.80</b>	±0.03	125	168	20.9	376.2
	±0.14	<b>1.00</b>	±0.03	154	120	18.4	386.4
	±0.15	<b>1.20</b>	±0.04	182	110	19.9	417.9

# AR-Glas: Tubing

Outside Diameter	Wall Thickness	Weight per Tube	Carton / Densopack	Pallet Load		
						
mm	mm	g/1500 mm	Number of Tubes	Weight approx. Kg		
<b>15</b>	±0.14	<b>0.60</b> ±0.03	102	154	15.7	376.8
	±0.14	<b>0.80</b> ±0.03	134	143	19.1	343.8
	±0.14	<b>1.00</b> ±0.04	166	121	19.9	358.2
	±0.18	<b>1.20</b> ±0.04	196	100	19.5	409.5
<b>16</b>	±0.14	<b>0.60</b> ±0.03	109	143	15.6	374.4
	±0.14	<b>0.80</b> ±0.03	144	132	18.9	453.6
	±0.14	<b>1.00</b> ±0.04	177	110	19.4	349.2
	±0.18	<b>1.20</b> ±0.04	210	99	20.7	434.7
<b>17</b>	±0.14	<b>0.80</b> ±0.03	153	120	18.3	439.2
	±0.14	<b>1.00</b> ±0.04	189	100	18.8	451.2
	±0.18	<b>0.80</b> ±0.03	163	110	17.8	427.2
<b>18</b>	±0.19	<b>1.00</b> ±0.04	201	99	19.8	356.4
	±0.19	<b>1.20</b> ±0.04	238	81	19.2	345.6
	±0.23	<b>1.50</b> ±0.05	293	72	21.0	451.0
	±0.18	<b>0.80</b> ±0.03	172	99	17.0	408.0
<b>19</b>	±0.19	<b>1.00</b> ±0.04	213	90	19.1	343.8
	±0.23	<b>1.50</b> ±0.05	310	63	19.5	351.0
	±0.19	<b>0.80</b> ±0.04	182	90	16.3	391.2
<b>20</b>	±0.19	<b>1.00</b> ±0.04	224	90	20.1	361.8
	±0.19	<b>1.20</b> ±0.05	267	72	19.1	343.8
	±0.19	<b>0.80</b> ±0.04	191	80	15.2	364.8
<b>21</b>	±0.19	<b>1.00</b> ±0.04	236	80	18.8	451.2
	±0.19	<b>0.80</b> ±0.04	201	72	14.4	432.0
<b>22</b>	±0.19	<b>1.00</b> ±0.04	248	72	17.8	427.2
	±0.19	<b>1.20</b> ±0.05	295	64	18.8	451.2
	±0.19	<b>0.80</b> ±0.04	209	63	13.2	316.8
<b>23</b>	±0.19	<b>1.00</b> ±0.04	260	63	16.3	391.2
	±0.23	<b>1.50</b> ±0.05	381	49	18.6	446.4
	±0.19	<b>1.00</b> ±0.04	272	56	15.2	364.8
<b>24</b>	±0.19	<b>1.20</b> ±0.05	323	56	18.0	432.0
	±0.23	<b>1.50</b> ±0.05	399	49	19.5	351.0
	±0.19	<b>0.80</b> ±0.04	229	56	12.8	307.2
<b>25</b>	±0.24	<b>1.50</b> ±0.05	417	42	17.4	365.4
	±0.19	<b>1.00</b> ±0.04	296	48	14.1	338.4
<b>26</b>	±0.24	<b>1.20</b> ±0.05	352	48	16.8	403.2
	±0.24	<b>1.50</b> ±0.05	433	48	20.8	374.4
	±0.19	<b>1.00</b> ±0.04	319	42	13.4	402.0
<b>28</b>	±0.24	<b>1.20</b> ±0.05	380	42	15.9	381.6
	±0.24	<b>1.50</b> ±0.05	468	42	19.7	354.6
	±0.24	<b>1.20</b> ±0.05	407	35	14.2	340.8
<b>30</b>	±0.29	<b>1.50</b> ±0.06	503	35	17.6	422.4

## AR-Glas: Tubing

Outside Diameter		Wall Thickness		Weight per Tube	Carton / Densopack		Pallet Load
							
mm		mm		g/1500 mm	Number of Tubes	Weight approx. Kg	Weight approx. Kg
<b>32</b>	±0.24	<b>1.20</b>	±0.05	435	30	13.1	393.0
	±0.29	<b>1.50</b>	±0.06	539	30	16.2	388.8
<b>34</b>	±0.24	<b>1.20</b>	±0.05	463	30	13.9	333.6
	±0.29	<b>1.50</b>	±0.06	574	30	17.2	412.8
<b>36</b>	±0.40	<b>1.20</b>	±0.06	492	20	9.8	343.0
	±0.40	<b>1.50</b>	±0.07	609	20	12.2	427.0
<b>38</b>	±0.40	<b>1.20</b>	±0.06	522	20	10.4	249.6
	±0.40	<b>1.50</b>	±0.07	645	20	12.9	309.6
<b>40</b>	±0.50	<b>1.20</b>	±0.08	550	20	11.0	264.0
	±0.50	<b>1.50</b>	±0.08	680	20	13.6	326.4

Tube length approx. 1500 mm.

All carton contents and weights are approximate.

Special sizes can be produced upon request.


Packing:

≤ OD 7 mm = Cartons

≥ OD 8 mm = Densopack

Densopack: Each bundle of tubes is shrink-wrapped with foil at both ends which protects them from moving about thus avoiding scratches. This procedure not only means better safety during transport but also reduces the customer's packaging waste. The shrink wrapping round the whole pallet offers supplementary protection during transport.

## AR-Glas: Rod

Diameter		Carton Contents		Pallet
				
mm		Number of Rods	Weight approx. Kg	Weight approx. Kg
<b>3</b>	±0.10	509	13.5	445.5
<b>4</b>	±0.15	308	14.5	478.5
<b>5</b>	±0.15	217	16.0	528.0
<b>6</b>	±0.15	141	15.0	495.0
<b>7</b>	±0.20	104	15.0	495.0
<b>8</b>	±0.20	79	15.0	495.0
<b>9</b>	±0.20	60	14.3	471.9
<b>10</b>	±0.25	49	14.4	475.2
<b>12</b>	±0.25	33	14.0	462.0
<b>14</b>	±0.30	24	13.8	455.4
<b>16</b>	±0.35	20	15.1	543.6
<b>20</b>	±0.50	16	18.8	507.6
<b>25</b>	±0.70	9	16.6	448.2

Rod length approx. 1500 mm.

All carton contents and weights are approximate.

Special sizes can be produced upon request.

# AR-Glas: The Glass

## The Glass

AR-Glas is a clear glass of Hydrolytic Class 3, and belongs to the soda lime group of glasses, with a high alkali and alkaline earth oxide content. AR-Glas has a medium coefficient of linear expansion of 9.1.

## The Advantages

The outstanding properties of AR-Glas are its multiple application possibilities, the good price/performance ratio, good workability and the accuracy of its dimensions. All the standard dimensions listed are available at short notice.

## The Quality

The quality of the products is ensured by the use of the most modern manufacturing technology and the DIN EN ISO 9001 quality assurance system, certified by TÜV certificate. The quality features are described in the relevant technical data sheets.

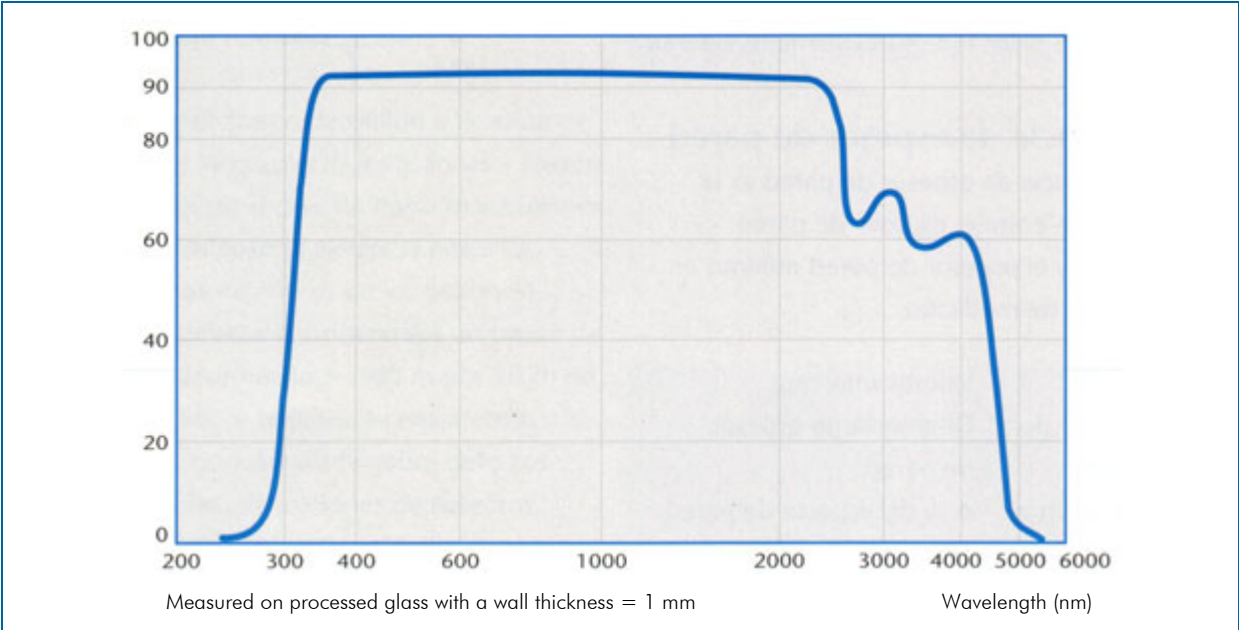
## The Fields of Application

AR-Glas has a wide range of applications, and is processed, for example, into pipettes, vials and test tubes. Many other laboratory articles and other technical products (e.g. solar collectors) are also made of AR-Glas, and it is also used in the decorative glass industry for the manufacture of Christmas decorations. Nowadays, is also being used in lighting field.





Transmission (%)





# AR-Glas: Technical Data

## Length

The standard length is:

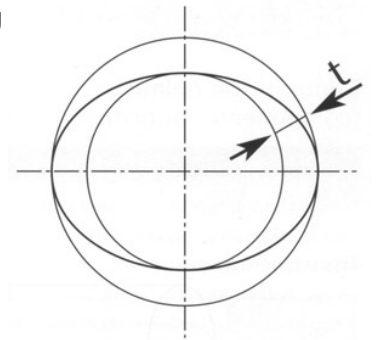
Tubing	1500 +5/-0 mm
Rod	1500 ± 20 mm

We can supply different lengths from 20 to 4000 mm depending in outside diameter.

## Out-of-Round

Out-of-Round depends on the nominal outside diameter (OD). The following maximum values have been laid down:

OD	Maximum value <i>t</i>
< 25 mm	0.4 % of OD
25 – 30 mm	0.6 % of OD
> 35 mm	0.8 % of OD



## Siding

Siding is the difference between the maximum and minimum wall thickness in a measured plane.

Wall thickness	Maximum values
< 0.80 mm	Siding 6 % of the wall thickness
≥ 0.80 mm	7 % of the wall thickness

## Straightness

Straightness according to DIN ISO 1101 is based on the following maximum values:

Tubing	Maximum value <i>t</i>
OD 4 - < 6 mm	3.0 mm / 1500 mm
OD ≥ 6 mm	0.8 mm / 1000 mm

## Stress

Longitudinal stress	max. 4.0 MPa
Edge stress	max. 4.5 MPa

## Stones and Knots

Stones are opaque inclusions, knots are transparent inclusions. Stones and knots with a core diameter of  $\geq 0.5$  mm are regarded as faults.

## Airlines

Airlines are an elongated, gaseous inclusion along the length of the tubing, which is generally not visible to the naked eye.

The aggregate airline length is defined by adding together the length of all airlines  $> 15$  mm (or in the case of two or more overlapping airlines, the distance between the extremities of the airlines concerned). A cumulative airline length of  $> 1.00$  m per 10 m of tubing is regarded as a fault.

## End Finishes

Tubing	
End Finish: plain cut and fused	
Standard: vial fusing with a fusing thickness of 0.15 mm	
Other tubing end versions:	Fusing thickness
Slightly fused	0.05 mm
Medium fusing	0.10 mm
Heavy fusing	0.20 mm
Rod	
Untreated	

## Packaging

The products are provided in carton boxes.

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