



# KARALTAY

**Your Bridge to Success**

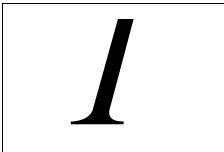
## **Analytical Instruments & Accessories-UV/AAS**

**Version 2006-1A  
Written and edited in CHINA**

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# Spectrophotometer Cells

Karaltay manufactures many popular types of UV-VIS-NIR spectrophotometer cuvettes including micro-cells. Samples to be measured for absorbance or transmission are held in cells for all common spectrophotometers. Karaltay's cells comply with international standards and are compatible with many brands of spectrophotometers.



## 1A. Karaltay Advantage

Karaltay cuvettes are 100% handcrafted and 100% individually inspected. A unique Karaltay advantage is that all quartz cells are fused and ready for ultrasonic cleaning plus heavy solvent use.

## 1B. Spectrophotometer Cell Materials



**Glass or Quartz Cells with stopper**

Sketch Drawing



**Quartz Cells with Lid**



**Semi-micro cells with black wall**



**Semi-micro cells**



**Micro Cells with black wall**



**Flow Cells**



Karaltay manufactures cells with different types of glass depending on the spectral range required for analysis. These materials include Optical Glass, suitable for use from 334 nm through 2300 nm and UV grade Quartz suitable for use between 179 nm and 2600 nm. The table below contains % transmission for these materials:

Material	Code	Application	% Transmission	Matching Tolerance
<b>Optical glass</b>	G	VIS	> 80% @ 365nm	Within 0.5% @ 360 nm
<b>ES quartz glass</b>	Q	UV-VIS	> 80% @ 200nm	Within 1.5% @ 240nm
<b>IR quartz glass</b>	I	UV-VIS-NIR	> 80% @ 200nm	Within 1.5% @ 240nm

## 1C. Types of Cells







Karaltay manufactures the following types of cells:

Type	Description
1	Standard Rectangular
2	Rectangular with Graded Seal
3	Fluorimeter Rectangular
4	Fluorimeter Rectangular w/Graded Seal
5	Semi-Micro Rectangular
6	Semi-Micro Self Masking
7	Semi-Micro Fluorimeter
8	Micro Short Rectangular
9	Micro Short Self Masking
10	Micro with Lid
11	Self Masking Micro
12	Micro Fluorimeter
13	Standard Rectangular with Stopper
14	Fluorimeter Rectangular with Stopper
15	Semi Micro with Stopper
16	Semi Micro w/Stopper Self Masking
17	Micro with Stopper
18	Micro w/Stopper Self Masking
19	Micro Fluorimeter with Stopper
20	Cylindrical Cell One Stopper
21	Cylindrical Cell Two Stoppers
22	Cylindrical Cell with Screw Cap
23	Long Outlet Cylindrical
24	Absorptiometer Rectangular



			
Standard cell with lid	Standard cell with Teflon stopper	standard cell with lid and round bottom	Standard cell with Teflon stopper and round bottom
			
Standard cell with lid and level bottom	cell with lid	Micro cell with frosted walls	Standard fluorescence cell with lid
			
Standard fluorescence cell with Teflon stopper	Micro fluorescence cell with lid	Micro fluorescence cell with Teflon stopper	Micro cell with black walls and lid
			
Micro cell with black walls and Teflon stopper	Micro cell with frosted walls and with lid	Micro cell with frosted walls and Teflon stopper	Semi-Micro cell with black walls and lid
			
Semi-Micro cell with black walls and Teflon stopper	Semi-Micro cell with frosted walls and with lid	Semi-Micro cell with frosted walls and Teflon stopper	Micro cell with black walls and lid



			
<p><b>Micro cell with frosted walls and lid</b></p>	<p><b>Self-masking flow cell</b></p>	<p><b>Self-masking flow cell</b></p>	<p><b>Self-masking flow cell</b></p>
			
<p><b>Lovibond Tintometer cell</b></p>		<p><b>Cylindrical cell</b></p>	



## 1D. Karaltay Offers 2 Matched Cells





For all Type 1 cells with a 10mm path length, Karaltay offers sets with 2 cells matched for transmittance < 3%. This offer includes all glass types G, Q and I.



### 1E. Complete List of Cell Part Numbers Available



Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Standard cell with lid	45 x 12.5 x 3.5	1	10	0.35	Q-1	I -1	G-1
	45 x 12.5 x 4.5	2	10	0.70	Q-2	I -2	G-2
	45 x 12.5 x 7.5	5	10	1.7	Q-3	I -3	G-3
	45 x 12.5 x 12.5	10	10	3.5	Q-4	I -4	G-4
	45 x 12.5 x 22.5	20	10	7.0	Q-5	I -5	G-5
	45 x 12.5 x 32.5	30	10	10.5	Q-6	I -6	G-6
	45 x 12.5 x 42.5	40	10	14	Q-7	I -7	G-7
	45 x 12.5 x 52.5	50	10	17.5	Q-8	I -8	G-8
	45 x 12.5 x 102.5	100	10	35.0	Q-9	I -9	G-9
 Standard cell with teflon stopper	45 x 12.5 x 7.5	5	10	1.7	Q-13	I -13	G-13
	45 x 12.5 x 12.5	10	10	3.5	Q-14	I -14	G-14
	45 x 12.5 x 22.5	20	10	7.0	Q-15	I -15	G-15
	45 x 12.5 x 32.5	30	10	10.5	Q-16	I -16	G-16
	45 x 12.5 x 42.5	40	10	14.0	Q-17	I -17	G-17
	45 x 12.5 x 52.5	50	10	17.5	Q-18	I -18	G-18
	45 x 12.5 x 102.5	100	10	35.0	Q-19	I -19	G-19



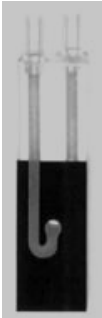
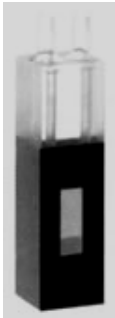
 <b>Sem I -Micro cell with black walls and with lid</b>	45 x 12.5 x 7.5	5	4	0.7	Q-23	I -23	G-23
	45 x 12.5 x 12.5	10	4	1.4	Q-24	I -24	G-24
	45 x 12.5 x 22.5	20	4	2.8	Q-25	I -25	G-25
	45 x 12.5 x 32.5	30	4	4.2	Q-26	I -26	G-26
	45 x 12.5 x 42.5	40	4	5.6	Q-27	I -27	G-27
	45 x 12.5 x 52.5	50	4	7	Q-28	I -28	G-28
	45 x 12.5 x102.5	100	4	14	Q-29	I -29	G-29
 <b>Sem I -Micro cell with black walls and teflon stopper</b>	45 x 12.5 x 7.5	5	4	0.7	Q-33	I -33	G-33
	45 x 12.5 x 12.5	10	4	1.4	Q-34	I -34	G-34
	45 x 12.5 x 22.5	20	4	2.8	Q-35	I -35	G-35
	45 x 12.5 x 32.5	30	4	4.2	Q-36	I -36	G-36
	45 x 12.5 x 42.5	40	4	5.6	Q-37	I -37	G-37
	45 x 12.5 x 52.5	50	4	7	Q-38	I -38	G-38
	45 x 12.5 x102.5	100	4	14	Q-39	I -39	G-39







Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Micro cell with black walls and with lid	45 x 12.5 x 7.5	5	2	0.35	Q-43	I -43	G-43
	45 x 12.5 x 12.5	10	2	0.7	Q-44	I -44	G-44
	45 x 12.5 x 22.5	20	2	1.4	Q-45	I -45	G-45
	45 x 12.5 x 32.5	30	2	2.1	Q-46	I -46	G-46
	45 x 12.5 x 42.5	40	2	2.8	Q-47	I -47	G-47
	45 x 12.5 x 52.5	50	2	3.5	Q-48	I -48	G-48
	45 x 12.5 x 102.5	100	2	7	Q-49	I -49	G-49
 Micro cell with black walls and telfon stopper	45 x 12.5 x 7.5	5	2	0.35	Q-53	I -53	G-53
	45 x 12.5 x 12.5	10	2	0.7	Q-54	I -54	G-54
	45 x 12.5 x 22.5	20	2	1.4	Q-55	I -55	G-55
	45 x 12.5 x 32.5	30	2	2.1	Q-56	I -56	G-56
	45 x 12.5 x 42.5	40	2	2.8	Q-57	I -57	G-57
	45 x 12.5 x 52.5	50	2	3.5	Q-58	I -58	G-58
	45 x 12.5 x 102.5	100	2	7	Q-59	I -59	G-59





 <p><b>Self masking continuous flowthrough cell</b></p>	45 x 12.5 x 7.5	5	φ3	0.035	Q-63	I -63	G-63
	45 x 12.5 x 12.5	10	φ3	0.07	Q-64	I -64	G-64
	45 x 12.5 x 22.5	20	φ3	0.14	Q-65	I -65	G-65
	45 x 12.5 x 32.5	30	φ3	0.21	Q-66	I -66	G-66
	45 x 12.5 x 7.5	5	φ2	0.015	Q-67	I -67	G-67
	45 x 12.5 x 12.5	10	φ2	0.03	Q-68	I -68	G-68
	45 x 12.5 x 22.5	20	φ2	0.06	Q-69	I -69	G-69
	45 x 12.5 x 12.5	10	φ1.5	0.018	Q-70	I -70	G-70
 <p><b>Self masking continuous flowthrough cell</b></p>	45 x 12.5 x 7.5	5	4x12	0.24	Q-73	I -73	G-73
	45 x 12.5 x 12.5	10	4x12	0.48	Q-74	I -74	G-74
	45 x 12.5 x 22.5	20	4x12	1.0	Q-75	I -75	G-75
	45 x 12.5 x 32.5	30	4x12	1.5	Q-76	I -76	G-76
	45 x 12.5 x 7.5	5	2x12	0.12	Q-79	I -79	G-79
	45 x 12.5 x 12.5	10	2x12	0.24	Q-80	I -80	G-80


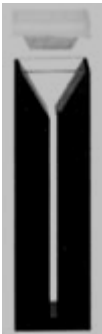


Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 <p><b>Cylindrical cell</b></p>	φ 22 x 12.5	10	φ19	2.8	Q-85	I -85	G-85
	φ 22 x 22.5	20	φ19	5.7	Q-86	I -86	G-86
	φ 22 x 52.5	50	φ19	14.0	Q-87	I -87	G-87
	φ22 x 102.5	100	φ19	28.0	Q-88	I -88	G-88
 <p><b>Cylindrical cell one stopper</b></p>	φ 22 x 12.5	10	φ19	2.8	Q-95	I -95	G-95
	φ 22 x 22.5	20	φ19	5.7	Q-96	I -96	G-96
	φ 22 x 52.5	50	φ19	14.0	Q-97	I -97	G-97
	φ22 x 102.5	100	φ19	28.0	Q-98	I -98	G-98

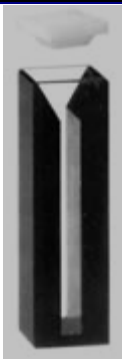
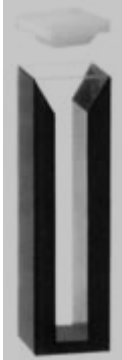


 Standard cell with lid and with round bottom	45 x 12.5 x 3.5	1	10	0.35	Q-101	I -101	G-101
	45 x 12.5 x 4.5	2	10	0.7	Q-102	I -102	G-102
	45 x 12.5 x 7.5	5	10	1.7	Q-103	I -103	G-103
	45 x 12.5 x 12.5	10	10	3.5	Q-104	I -104	G-104
	45 x 12.5 x 22.5	20	10	7.0	Q-105	I -105	G-105
	45 x 12.5 x 32.5	30	10	10.5	Q-106	I -106	G-106
	45 x 12.5 x 42.5	40	10	14.0	Q-107	I -107	G-107
	45 x 12.5 x 52.5	50	10	17.5	Q-108	I -108	G-108
	45 x 12.5 x 102.5	100	10	35.0	Q-109	I -109	G-109
 Standard cell with teflon stopper and with round bottom	45 x 12.5 x 3.5	1	10	0.35	Q-111	I -111	G-111
	45 x 12.5 x 4.5	2	10	0.7	Q-112	I -112	G-112

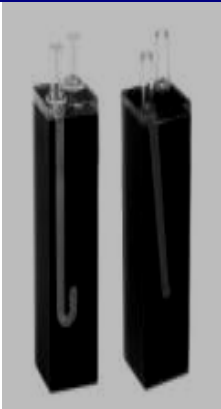
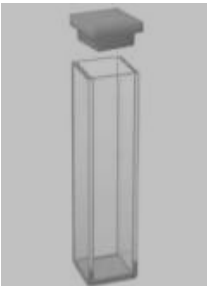


Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 <p>Standard cell with teflon stopper and with round bottom</p>	45 x 12.5 x 7.5	5	10	1.7	Q-113	I -113	G-113
	45 x 12.5 x 12.5	10	10	3.5	Q-114	I -114	G-114
	45 x 12.5 x 22.5	20	10	7.0	Q-115	I -115	G-115
	45 x 12.5 x 32.5	30	10	10.5	Q-116	I -116	G-116
	45 x 12.5 x 42.5	40	10	14.0	Q-117	I -117	G-117
	45 x 12.5 x 52.5	50	10	17.5	Q-118	I -118	G-118
	45 x 12.5 x 102.5	100	10	35.0	Q-119	I -119	G-119
 <p>Micro cell with black walls and with lid</p>	45 x 12.5 x 7.5	5	1	0.17	Q-123	I -123	G-123
	45 x 12.5 x 12.5	10	1	0.35	Q-124	I -124	G-124
	45 x 12.5 x 22.5	20	1	0.7	Q-125	I -125	G-125
	45 x 12.5 x 32.5	30	1	1	Q-126	I -126	G-126
	45 x 12.5 x 42.5	40	1	1.4	Q-127	I -127	G-127
	45 x 12.5 x 52.5	50	1	1.75	Q-128	I -128	G-128
	45 x 12.5 x 102.5	100	1	3.5	Q-129	I -129	G-129





 Micro cell with black walls and with lid	45 x 12.5 x 7.5	5	3	0.50	Q-133	I -133	G-133
	45 x 12.5 x 12.5	10	3	1.0	Q-134	I -134	G-134
	45 x12.5 x22.5	20	3	2.1	Q- 135	I -135	G- 135
	45 x 12.5 x32.5	30	3	3.15	Q-136	I -136	G-136
	45 x12.5 x 42.5	40	3	4.2	Q-137	I -137	G-137
	45 x 12.5 x 52.5	50	3	5.25	Q-138	I -138	G-138
 Semi-Micro cell with black walls and with lid	45 x12.5 x 7.5	5	5	0.85	Q-143	I -143	G-143
	45 x12.5 x 12.5	10	5	1.75	Q-144	I -144	G-144
	45 x12.5 x22.5	20	5	3.5	Q-145	I -145	G-145
	45 x12.5 x 32.5	30	5	5.25	Q-146	I -146	G-146
	45 x 12.5 x 42.5	40	5	7	Q-147	I -147	G-147
	45 x12.5 x 52.5	50	5	8.75	Q-148	I -148	G-148
	45 x12.5 x 102.5	100	5	17.5	Q-149	I -149	G-149



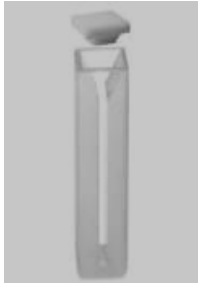

Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Self masking continuous flow cell	45 x 12.5 x 12.5	10	φ1	0.01	Q-154	I -154	G-154
	45 x 12.5 x 22.5	20	φ1	0.016	Q-155	I -155	G-155
	45 x 12.5 x 32.5	30	φ1	0.025	Q-156	I -156	G-156
	45 x 12.5 x 12.5	10	φ1.5	0.018	Q-164	I -164	G-164
	45 x 12.5 x 22.5	20	φ1.5	0.036	Q-165	I -165	G-165
	45 x 12.5 x 32.5	30	φ1.5	0.055	Q-166	I -166	G-166
	45 x 12.5 x 12.5	10	φ2	0.03	Q-174	I -174	G-174
	45 x 12.5 x 22.5	20	φ2	0.06	Q-175	I -175	G-175
	45 x 12.5 x 32.5	30	φ2	0.09	Q-176	I -176	G-176
 Standard fluorometer cell with lid	45 x 12.5 x 7.5	5	10	1.7	Q-203	I -203	G-203
	45 x 12.5 x 12.5	10	10	3.5	Q-204	I -204	G-204
	45 x 12.5 x 22.5	20	10	7.0	Q-205	I -205	G-205
	45 x 12.5 x 32.5	30	10	10.5	Q-206	I -206	G-206
	45 x 12.5 x 42.5	40	10	14.0	Q-207	I -207	G-207
	45 x 12.5 x 52.5	50	10	17.5	Q-208	I -208	G-208
	45 x 12.5 x 102.5	100	10	35.0	Q-209	I -209	G-209



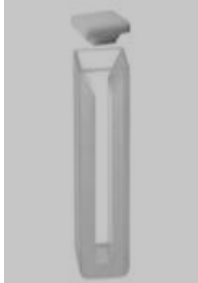
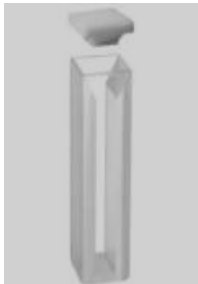
 Standard fluorometer cell with teflon stopper	45 x 12.5 x 7.5	5	10	1.7	Q-213	I -213	G-213
	45 x 12.5 x 12.5	10	10	3.5	Q-214	I -214	G-214
	45 x 12.5 x 22.5	20	10	7.0	Q-215	I -215	G-215
	45 x 12.5 x 32.5	30	10	10.5	Q-216	I -216	G-216
	45 x 12.5 x 42.5	40	10	14.0	Q-217	I -217	G-217
	45 x 12.5 x 52.5	50	10	17.50	Q-218	I -218	G-218
	45 x 12.5 x 102.5	100	10	35.0	Q-219	I -219	G-219
 Micro cell with frosted walls and with lid	45 x 12.5 x 7.5	5	1	0.17	Q-233	I -233	G-233
	45 x 12.5 x 12.5	10	1	0.35	Q-234	I -234	G-234
	45 x 12.5 x 22.5	20	1	0.70	Q-235	I -235	G-235
	45 x 12.5 x 32.5	30	1	1	Q-236	I -236	G-236
	45 x 12.5 x 42.5	40	1	1.4	Q-237	I -237	G-237
	45 x 12.5 x 52.5	50	1	1.75	Q-238	I -238	G-238
	45 x 12.5 x 102.5	100	1	3.5	Q-239	I -239	G-239







Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 <p>Micro cell with frosted walls and with lid</p>	45 x 12.5 x 7.5	5	2	0.35	Q-243	I -243	G-243
	45 x 12.5 x 12.5	10	2	0.7	Q-244	I -244	G-244
	45 x 12.5 x 22.5	20	2	1.4	Q-245	I -245	G-245
	45 x 12.5 x 32.5	30	2	2.1	Q-246	I -246	G-246
	45 x 12.5 x 42.5	40	2	2.8	Q-247	I -247	G-247
	45 x 12.5 x 52.5	50	2	3.5	Q-248	I -248	G-248
	45 x 12.5 x 102.5	100	2	7.0	Q-249	I -249	G-249
 <p>Micro cell with frosted walls and with lid</p>	45 x 12.5 x 7.5	5	3	0.5	Q-253	I -253	G-253
	45 x 12.5 x 12.5	10	3	1	Q-254	I -254	G-254
	45 x 12.5 x 22.5	20	3	2.1	Q-255	I -255	G-255
	45 x 12.5 x 32.5	30	3	3.15	Q-256	I -256	G-256
	45 x 12.5 x 42.5	40	3	4.2	Q-257	I -257	G-257
	45 x 12.5 x 52.5	50	3	5.25	Q-258	I -258	G-258
	45 x 12.5 x 102.5	100	3	10.5	Q-259	I -259	G-259





 <p>Semi-Micro cell with frosted walls and with lid</p>	45 x 12.5 x 7.5	5	4	0.7	Q-263	I -263	G-263
	45 x 12.5 x 12.5	10	4	1.4	Q-264	I -264	G-264
	45 x 12.5 x 22.5	20	4	2.8	Q-265	I -265	G-265
	45 x 12.5 x 32.5	30	4	4.2	Q-266	I -266	G-266
	45 x 12.5 x 42.5	40	4	5.6	Q-267	I -267	G-267
	45 x 12.5 x 52.5	50	4	7	Q-268	I -268	G-268
	45 x 12.5 x 102.5	100	4	14.0	Q-269	I -268	G-269
 <p>Semi-Micro cell with frosted walls and with lid</p>	45 x 12.5 x 7.5	5	5	0.85	Q-273	I -273	G-273
	45 x 12.5 x 12.5	10	5	1.7	Q-274	I -274	G-274
	45 x 12.5 x 22.5	20	5	3.5	Q-275	I -275	G-275
	45 x 12.5 x 32.5	30	5	5.2	Q-276	I -276	G-276
	45 x 12.5 x 42.5	40	5	7	Q-277	I -277	G-277
	45 x 12.5 x 52.5	50	5	8.75	Q-278	I -278	G-278
	45 x 12.5 x 102.5	100	5	17.5	Q-279	I -279	G-279





Picture and Name	Outside Dim mm	HxWxD	Path Length mm	Inside Width mm	Volume ml	Product Number		
						ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Micro cell with frosted walls and with teflon stopper	45 x 12.5 x 7.5		5	2	0.35	Q-283	I -283	G-283
	45 x 12.5 x 12.5		10	2	0.7	Q-284	I -284	G-284
	45 x 12.5 x 22.5		20	2	1.4	Q-285	I -285	G-285
	45 x 12.5 x 32.5		30	2	2.1	Q-286	I -286	G-286
	45 x 12.5 x 42.5		40	2	2.8	Q-287	I -287	G-287
	45 x 12.5 x 52.5		50	2	3.5	Q-288	I -288	G-288
	45 x 12.5 x 102.5		100	2	7.0	Q-289	I -289	G-289
 Semi-Micro cell with frosted walls and with teflon stopper	45 x 12.5 x 7.5		5	4	0.7	Q-293	I -293	G-293
	45 x 12.5 x 12.5		10	4	1.4	Q-294	I -294	G-294
	45 x 12.5 x 22.5		20	4	2.8	Q-295	I -295	G-295
	45 x 12.5 x 32.5		30	4	4.2	Q-296	I -296	G-296
	45 x 12.5 x 42.5		40	4	5.6	Q-297	I -297	G-297
	45 x 12.5 x 52.5		50	4	7	Q-298	I -298	G-298
	45 x 12.5 x 102.5		100	4	14.0	Q-299	I -299	G-299





 <p>Large cell</p>	40x20x 10.4	6.35	16	3.5	Q-321	I -321	G-321
	40x20x16.7	12.7	16	7.1	Q-322	I -322	G-322
	40x20x29.4	25.4	16	14.2	Q-323	I -323	G-323
	40x20x54.8	50.8	16	28.4	Q-324	I -324	G-324
	40 x 20 x 137.4	133.35	16	74.6	Q-325	I -325	G-325
	40 x 20 x 14	10	16	5.6	Q-326	I -326	G-326
	40 x 20 x 104	100	16	56.0	Q-327	I -327	G-327
 <p>Micro cell with frosted walls and with teflon stopper</p>	45 x 12.5 x 7.5	5	1	0.17	Q-373	I -373	G-373
	45 x 12.5 x 12.5	10	1	0.35	Q-374	I -374	G-374
	45 x 12.5 x 22.5	20	1	0.7	Q-375	I -375	G-375
	45 x 12.5 x 32.5	30	1	1	Q-376	I -376	G-376
	45 x 12.5 x 42.5	40	1	1.4	Q-377	I -377	G-377
	45 x 12.5 x 52.5	50	1	1.75	Q-378	I -378	G-378
	45 x 12.5 x 102.5	100	1	3.5	Q-379	I -379	G-379





Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Micro cell with frosted walls and with teflon stopper	45 x 12.5 x 7.5	5	3	0.5	Q-383	I -383	G-383
	45 x 12.5 x 12.5	10	3	1	Q-384	I -384	G-384
	45 x 12.5 x 22.5	20	3	2.1	Q-385	I -385	G-385
	45 x 12.5 x 32.5	30	3	3.15	Q-386	I -386	G-386
	45 x 12.5 x 42.5	40	3	4.2	Q-387	I -387	G-387
	45 x 12.5 x 52.5	50	3	5.25	Q-388	I -388	G-388
	45 x 12.5 x 102.5	100	3	10.5	Q-389	I -389	G-389
 Semi-Micro cell with frosted walls and with teflon stopper	45 x 12.5 x 7.5	5	5	0.85	Q-393	I -393	G-393
	45 x 12.5 x 12.5	10	5	1.7	Q-394	I -394	G-394
	45 x 12.5 x 22.5	20	5	3.5	Q-395	I -395	G-395
	45 x 12.5 x 32.5	30	5	5.2	Q-396	I -396	G-396
	45 x 12.5 x 42.5	40	5	7.0	Q-397	I -397	G-397
	45 x 12.5 x 52.5	50	5	8.75	Q-398	I -398	G-398
	45 x 12.5 x 102.5	100	5	17.5	Q-399	I -399	G-399





 <p>Standard cell with lid and level bottom</p>	45 x 12.5 x 3.5	1	10	0.35	Q-401	I -401	G-401
	45 x 12.5 x 4.5	2	10	0.70	Q-402	I -402	G-402
	45 x 12.5 x 7.5	5	10	0.17	Q-403	I -403	G-403
	45 x 12.5 x 12.5	10	10	3.5	Q-404	I -404	G-404
	45 x 12.5 x 22.5	20	10	7.0	Q-405	I -405	G-405
	45 x 12.5 x 32.5	30	10	10.5	Q-406	I -406	G-406
	45 x 12.5 x 42.5	40	10	14	Q-407	I -407	G-407
	45 x 12.5 x 52.5	50	10	17.5	Q-408	I -408	G-408
	45 x 12.5 x 102.5	100	10	35	Q-409	I -409	G-409
 <p>Micro cell with black walls and with lid</p>	25 x 12.5 x 12.5	10	1	0.15	Q-424	I -424	G-424
	25 x 12.5 x 12.5	10	2	0.30	Q-434	I -434	G-434
	25 x 12.5 x 12.5	10	3	0.45	Q-444	I -444	G-444
	25 x 12.5 x 12.5	10	4	0.60	Q-454	I -454	G-454





Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 <p>Micro cell with frosted walls and with lid</p>	25 x 12.5 x 12.5	10	1	0.15	Q-464	I -464	G-464
	25 x 12.5 x 12.5	10	2	0.30	Q-474	I -474	G-474
	25 x 12.5 x 12.5	10	3	0.45	Q-484	I -484	G-484
	25 x 12.5 x 12.5	10	4	0.60	Q-494	I -494	G-494
 <p>Micro fluorometer cell</p>	45 x 12.5 x 12.5	10	1	0.35	Q-504	I -504	G-504
	45 x 12.5 x 12.5	10	2	0.7	Q-514	I -514	G-514
	45 x 12.5 x 12.5	10	3	1	Q-524	I -524	G-524
	45 x 12.5 x 12.5	10	4	1.4	Q-534	I -534	G-534
	45 x 12.5 x 12.5	10	5	1.7	Q-544	I -544	G-544



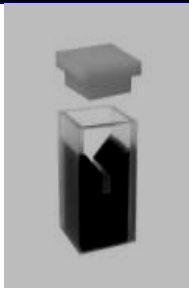
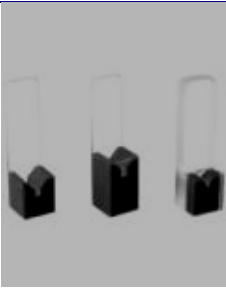
 <p>Micro cell fluorometer cell with teflon stopper</p>	45 x 12.5 x 12.5	10	1	0.35	Q-554	I -554	G-554
	45 x 12.5 x 12.5	10	2	0.7	Q-564	I -564	G-564
	45 x 12.5 x 12.5	10	3	1	Q-574	I -574	G-574
	45 x 12.5 x 12.5	10	4	1.4	Q-584	I -584	G-584
	45 x 12.5 x 12.5	10	5	1.7	Q-594	I -594	G-594
 <p>Self masking continuous flow cell</p>	15 x 12.4x 12.4	10	Φ2	0.03	Q-604	I -604	G-604




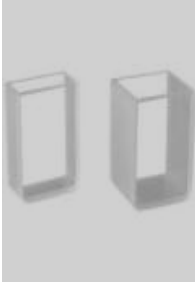


Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 <p>Self masking continuous flow cell</p>	35 x 12.4x 12.4	10	Φ2	0.03	Q-614	I -614	G-614
 <p>Self masking continuous flow cell</p>	35 x 12.5x 12.5	10	Φ2	0.03	Q-624	I -624	G-624

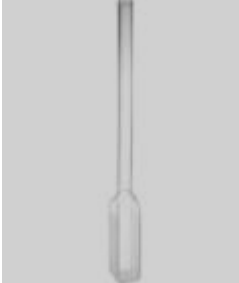
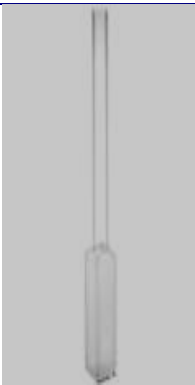


 <p>Micro cell with black walls</p>	20 x 12.75x 12.75	10	2	0.05	Q-634	I -634	G-634
	20 x 12.75x 12.75	10	4	0.01	Q-644	I -644	G-644
 <p>Micro cell with black walls</p>	20 x 12.5x 12.5	10	2	0.05	Q-653	I -653	G-653
	20 x 12.5x 12.5	10	4	0.1	Q-654	I -654	G-654
	19.5 x 12.5x 12.5	10	2	0.05	Q-663	I -663	G-663
	19.5 x 12.5x 12.5	10	4	0.1	Q-664	I -664	G-664





Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Micro cell with black walls	45 x 12.5x 12.5	10	2	0.1	Q-674	I -674	G-674
 Absorptiometer rectangular	45 x 28x 6.5	2.5	25	2.2	Q-682	I -682	G-682
	445 x 28x 9	5	25	4.4	Q-683	I -683	G-683
	45 x 28x 14	10	25	8.8	Q-684	I -684	G-684
	45 x 28x 24	20	25	17.5	Q-685	I -685	G-685
	45 x 28x 44	40	25	35.0	Q-686	I -686	G-686
	45 x 28x 54	50	25	43.8	Q-687	I -687	G-687
	45 x 28x 104	100	25	87.5	Q-688	I -688	G-688
	45 x 28x 204	200	25	175.0	Q-689	I -686	G-689





 <p>Rectangular with graded seal</p>	45 x 12.5x 12.5	10	10	3.5	Q-704	I -704	G-704
<p>Tube OD 8mm Overall height 120mm</p>							
 <p>Fluorimeter rectangular with graded seal</p>	45 x 12.5x 12.5	10	10	3.5	Q-714	I -714	G-714
<p>Tube OD 8mm Overall height 120mm</p>							



Picture and Name	Outside Dim HxWxD mm	Path Length mm	Inside Width mm	Volume ml	Product Number		
					ES Quartz Glass 190nm-2500nm	IR Quartz Glass 250nm-3500nm	Optical Glass 340nm-2500nm
 Long outlet cylindrical	Φ22 x 3.5	1	Φ19	0.28	Q-721	I -721	G-721
	Φ22 x 4.5	2	Φ19	0.56	Q-722	I -722	G-722
	Φ22 x 7.5	5	Φ19	1.4	Q-723	I -723	G-723
	Φ22 x 12.5	10	Φ19	2.8	Q-724	I -724	G-724
	Φ22 x 22.5	20	Φ19	5.6	Q-725	I -725	G-725
	Φ22 x 32.5	30	Φ19	8.4	Q-726	I -726	G-726
	Φ22 x 42.5	40	Φ19	11.2	Q-727	I -727	G-727
	Φ22 x 52.5	50	Φ19	14.0	Q-728	I -728	G-728
	Φ22 x 102.5	100	Φ19	28.0	Q-729	I -729	G-729
 Cells for reflection measurements	Φ34 x 25			12.0	Q-731	I -731	G-731
	Φ50 x 30			32.0	Q-732	I -732	G-732
	Φ60 x 40.5			73.0	Q-733	I -733	G-733



 Rectangular with screw cap	56 x 12.5x 12.5	10	10	3.5	Q-744	I -744	G-744
 Large cell	22.5 x 25x 25	20	20	6.0	Q-751	I -751	G-751
	32.5 x 35x 35	30	30	22.5	Q-752	I -752	G-752
	42.5 x 45x 45	40	40	56.0	Q-753	I -753	G-753
	52.5 x 55x 55	50	50	112.5	Q-754	I -754	G-754

# 2

## Instrument Consumables

Karaltay manufactures Deuterium lamps for all brands UV, HPLC, and AA instruments. Karaltay also produces hollow cathode lamps and graphite tubes/contacts for Atomic Absorption Spectrophotometers.



### 2A. Karaltay Advantage

- **High Intensity:** Karaltay lamps are specially designed to emit high intensity at the recommended operating current, resulting in low S/N ratio.
- **Low Operating Current:** Our lamps may be operated at only half the instrument manufacturer's recommended current for sufficient intensity, resulting in long lifetime of the lamps.
- **Design:** Our lamps are specially designed to meet or exceed requirements for various types of AAS, and to provide low detection limits for your most difficult analysis. We also manufacture Argon and/or Neon gas-filled lamps.
- **Quality Control:** Karaltay utilizes Total Quality Control (TQC) to monitor, control and inspect every single step of the hollow cathode lamp manufacturing process. The materials are carefully selected in our manufacturing to avoid spectral interference from the fill gas or impurities in the cathode material.
- **Wide Selection:** Single-element & multi-element lamps.
- **Warranty:** Standard 2-year warranty.

#### 2A.1 Lamp Characteristics

Category	Data
<b>Glowing starting voltage:</b>	300V
<b>Radiation stability:</b>	1% over 30 minutes
<b>Size: 2" for Perkin-Elmer</b>	Diameter: 50 mm, Length: 180 mm
<b>Size: 1.5" lamps</b>	Diameter: 38 mm, Length: 160 mm



## 2A.2 List of Atomic Absorption Spectrophotometer Manufacturers

Karaltay's HCL can be used in Atomic Absorption Spectrometers manufactured by:

**Perkin-Elmer, coded and uncoded**

**Varian**

**BUCK Scientific**

**GBC**

**Hitachi**

**Shimadzu**

**Thermal Jarrel**

**Ash IL**

**Unicom**

**LEEMAN Labs**

**Phillips**

### 2A.2 1.5" Hollow cathode Lamp

- Regular 1.5" lamps for all systems except Perkin Elmer system.
- Self-reversal 1.5" lamps for Shimadzu, Thermal Jarrel Ash, LEEMAN Labs whose AAS system requires self-reversal background correction abilities.
- Even though Varian systems do not require self-reversal lamps, they are suggested and recommended because of longer lifetime and higher intensity.

### 2A.3 2.0" Hollow cathode Lamp

- Uncoded (regular) 2" lamps can be used in all Perkin-Elmer atomic absorption

spectrophotometers. Some models do require different conversion cables.

- The coded lamps are intended for use with instruments such as Models 5100, 4100, 3300, 2100, 1100, series, etc., which can read the lamp coding and automatically set the lamp and element parameters





## 2A.4 List of 1.5” Hollow Cathode Lamp Products

Element	Symbol	1.5” regular P/N	Price \$		1.5” self-reversal P/N	Price \$	
Aluminum	Al	203-101			223-101		
Antimony	Sb	203-102			223-102		
Arsenic	As	203-103			223-103		
Barium	Ba	203-104			223-104		
Beryllium	Be	203-105			223-105		
Bismuth	Bi	203-106			223-106		
Boron	B	203-107			223-107		
Cadmium	Cd	203-108			223-108		
Calcium	Ca	203-109			223-109		
Cerium	Ce	203-163			223-163		
Cesium	Cs	203-164			223-164		
Chromium	Cr	203-110			223-110		
Cobalt	Co	203-111			223-111		
Copper	Cu	203-112			223-112		
Dysprosium	Dy	203-113			223-113		
Erbium	Er	203-114			223-114		
Europium	Eu	203-115			223-115		
Gadolinium	Gd	203-116			223-116		
Gallium	Ga	203-117			223-117		
Germanium	Ge	203-118			223-118		
Gold	Au	203-119			223-119		
Hafnium	Hf	203-120			223-120		
Holmium	Ho	203-121			223-121		
Indium	In	203-122			223-122		
Iridium	Ir	203-123			223-123		
Iron	Fe	203-124			223-124		
Lanthanum	La	203-125			223-125		
Lead	Pb	203-126			223-126		
Lithium	Li	203-127			223-127		
Lutetium	Lu	203-165			223-165		
Magnesium	Mg	203-128			223-128		
Manganese	Mn	203-129			223-129		
Mercury	Hg	203-130			223-130		
Molybdenum	Mo	203-131			223-131		
Neodymium	Nd	203-132			223-132		
Nickel	Ni	203-133			223-133		
Niobium	Nb	203-134			223-134		



Element	Symbol	1.5" regular P/N	Price \$		1.5" self-reversal P/N	Price \$	
Osmium	Os	203-166			223-166		
Palladium	Pd	203-135			223-135		
Phosphorus	P	203-136			223-136		
Platinum	Pt	203-137			223-137		
Potassium	K	203-138			223-138		
Praseodymium	Pr	203-139			223-139		
Rhenium	Re	203-140			223-140		
Rhodium	Rh	203-141			223-141		
Rubidium	Rb	203-167			223-167		
Ruthenium	Ru	203-142			223-142		
Samarium	Sm	203-143			223-143		
Scandium	Sc	203-144			223-144		
Selenium	Se	203-145			223-145		
Silicon	Si	203-146			223-146		
Silver	Ag	203-147			223-147		
Sodium	Na	203-148			223-148		
Strontium	Sr	203-149			223-149		
Tantalum	Ta	203-150			223-150		
Tellurium	Te	203-151			223-151		
Terbium	Tb	203-152			223-152		
Thallium	Tl	203-153			223-153		
Thulium	Tm	203-154			223-154		
Tin	Sn	203-155			223-155		
Titanium	Ti	203-156			223-156		
Tungsten	W	203-157			223-157		
Vanadium	V	203-158			223-158		
Ytterbium	Yb	203-159			223-159		
Yttrium	Y	203-160			223-160		
Zinc	Zn	203-161			223-161		
Zirconium	Zr	203-162			223-162		
Calcium/Magnesium	Ca/Mg	203-181			223-181		
Copper/Zinc	Cu/Zn	203-182			223-182		
Aluminum/Strontium	Al/Sr	203-183			223-183		
Silver/Cadmium	Ag/Cd	203-184			223-184		
Copper/Beryllium	Cu/Be	203-185			223-185		
Aluminum/Tin	Al/Sn	203-186			223-186		
Platinum/Rhodium	Pt/Rh	203-187			223-187		
Selenium/Tin	Se/Sn	203-188			223-188		
Sodium/Potassium	Na/K	203-189			223-189		



## 2A.5 List of 2.0” Hollow Cathode Lamp Products

Element	Symbol	2” uncoded P/N	Price \$		2” coded P/N	Price \$	
Aluminum	Al	201-101			211-101		
Antimony	Sb	201-102			211-102		
Arsenic	As	201-103			211-103		
Barium	Ba	201-104			211-104		
Beryllium	Be	201-105			211-105		
Bismuth	Bi	201-106			211-106		
Boron	B	201-107			211-107		
Cadmium	Cd	201-108			211-108		
Calcium	Ca	201-109			211-109		
Cerium	Ce	201-163			211-163		
Cesium	Cs	201-164			211-164		
Chromium	Cr	201-110			211-110		
Cobalt	Co	201-111			211-111		
Copper	Cu	201-112			211-112		
Dysprosium	Dy	201-113			211-113		
Erbium	Er	201-114			211-114		
Europium	Eu	201-115			211-115		
Gadolinium	Gd	201-116			211-116		
Gallium	Ga	201-117			211-117		
Germanium	Ge	201-118			211-118		
Gold	Au	201-119			211-119		
Hafnium	Hf	201-120			211-120		
Holmium	Ho	201-121			211-121		
Indium	In	201-122			211-122		
Iridium	Ir	201-123			211-123		
Iron	Fe	201-124			211-124		
Lanthanum	La	201-125			211-125		
Lead	Pb	201-126			211-126		
Lithium	Li	201-127			211-127		
Lutetium	Lu	201-165			211-165		
Magnesium	Mg	201-128			211-128		
Manganese	Mn	201-129			211-129		
Mercury	Hg	201-130			211-130		
Molybdenum	Mo	201-131			211-131		
Neodymium	Nd	201-132			211-132		
Nickel	Ni	201-133			211-133		
Niobium	Nb	201-134			211-134		



Element	Symbol	2" uncoded P/N	Price \$		2" coded P/N	Price \$	
Osmium	Os	201-166			211-166		
Palladium	Pd	201-135			211-135		
Phosphorus	P	201-136			211-136		
Platinum	Pt	201-137			211-137		
Potassium	K	201-138			211-138		
Praseodymium	Pr	201-139			211-139		
Rhenium	Re	201-140			211-140		
Rhodium	Rh	201-141			211-141		
Rubidium	Rb	201-167			211-167		
Ruthenium	Ru	201-142			211-142		
Samarium	Sm	201-143			211-143		
Scandium	Sc	201-144			211-144		
Selenium	Se	201-145			211-145		
Silicon	Si	201-146			211-146		
Silver	Ag	201-147			211-147		
Sodium	Na	201-148			211-148		
Strontium	Sr	201-149			211-149		
Tantalum	Ta	201-150			211-150		
Tellurium	Te	201-151			211-151		
Terbium	Tb	201-152			211-152		
Thallium	Tl	201-153			211-153		
Thulium	Tm	201-154			211-154		
Tin	Sn	201-155			211-155		
Titanium	Ti	201-156			211-156		
Tungsten	W	201-157			211-157		
Vanadium	V	201-158			211-158		
Ytterbium	Yb	201-159			211-159		
Yttrium	Y	201-160			211-160		
Zinc	Zn	201-161			211-161		
Zirconium	Zr	201-162			211-162		
Calcium/Magnesium	Ca/Mg	201-181					
Copper/Zinc	Cu/Zn	201-182					
Aluminum/Strontium	Al/Sr	201-183					
Silver/Cadmium	Ag/Cd	201-184					
Copper/Beryllium	Cu/Be	201-185					
Aluminum/Tin	Al/Sn	201-186					
Platinum/Rhodium	Pt/Rh	201-187					
Selenium/Tin	Se/Sn	201-188					
Sodium/Potassium	Na/K	201-189					



## 2B. Hollow Cathode Lamp Activator

### Do you

- Keep your HCL on the shelf for long?
- Need to warm up your HCL?
- Want to extend your HCL lifetime?



If you answered “YES” to any of the above you need a JH-B HCL Activator in your lab.

The JH-B HCL Activator is a power supply specially designed to activate hollow cathode lamps. In general, the emission intensity and stability of an HCL can diminish after prolonged storage (longer than 3 months), or after prolonged operation. After Treatments with the JH-B HCL Activator, the durability of the lamp and the stability of the emission signal can improve dramatically.

Our HCL activator can be used as a pre-warming device for atomic absorption and atomic fluorescence systems, thereby shortening the pre-warming time required for routine multi-element testing. The activator can be used as a power supply for other stable light sources as well.

The HCL activator utilizes continuously adjustable constant-current circuits. Hollow cathode lamp anodes consist of materials that can collectively absorb undesirable gaseous species internally during HCL excitation/emission. By setting the activator in “Reverse (R)” position, the anode can be heated to absorb these gases, increasing the vacuum inside the lamp, which is critical for optimum performance. Signal intensity and stability can also be maximized by activating the surface of the HCL’s cathode. This can be done by adjusting the activator to “Forward (F)” position.

### 2B.1 List of HCL Activator Parts

Description	Part Number	Unit Price
JHB-B HCL Activator	206-191	
Coded Lamp Plug Adapter	206-192	
Noncoded Lamp Plug Adapter	206-193	



## 2C. Deuterium Arc Lamp (DAL) Standard Features

- **Design:** Karaltay lamps are specially designed to meet or exceed the requirements for various types of instruments, providing sufficient intensity and stability for your analysis.
- **Quality Control and Testing:** Karaltay utilizes Total Quality Control (TQC) to monitor, control, and inspect every single step of the manufacturing process. The materials are carefully selected and every lamp is thoroughly tested prior to shipment. Under same testing conditions, the radiation intensity of every lamp is equal to or better than those made by other vendors.
- **Warranty:** Every lamp is covered by a standard warranty. We will replace any lamp that does not perform to its specifications. For any specific lamp, please call or email for details. We guarantee 100% customer satisfaction whenever you select our deuterium lamps. Usually, each deuterium lamp carries 1,000 hours with a timer, three months without a timer.





## 2C.1 List of Deuterium Arc Lamp Products

Description	Model Number	Part Numbers Manufacture Part No. Karaltay Part No.		Price \$
Buck Scientific AAS system	210/220 series		707-510	
Cecil UV/Vis systems	Series 2, 1000, 2000, 3000,		711-511	
Hewlett Packard HPLC system	Series 1040, 1050, 1090 DA detector	HP p/n: 9883-600002	710-512	
Perkin-Elmer AAS system	Models 272,280,360,370,372, 373,380	P-E p/n: 0057-0194	701-501	
	Models 460, 560, 2280, 2380, 3030(B)	P-E p/n: 0057-0194	701-501	
	Models 4000, 5000, 5100, 5100PC	P-E p/n: 0047-0385	701-502	
	Models Zeeman 5000, Zeeman5100, Zeeman5100PC	P-E p/n: 0047-0385	701-502	
	Models 4100,2100,1100(B)	P-E p/n: B014-8615 *	701-503 *	
	Models 303,305,306,403,503, 603,703	P-E p/n: 0040-0385	701-504	
	Models 3100,3110 and 3300	P-E p/n: N037-0119*	701-505*	
Perkin-Elmer HPLC system	Models LC-55, 65T, 75, 85, 85B, 95, 135, 235 series	P-E p/n: N235-1125	701-506	
Shimadzu HPLC system	Model 6A	Shimadzu p/n: 062-650 56-03	705-509	
Shimadzu UV-Visible systems	Series UV-120, UV-160, UV-260, etc.	Shimadzu p/n: 062-650 55-05	705-507	
Shimadzu TLC Scanning	Model CS 930		705-508	
TSP/Spectra-Physics/ LDC UV system	Model UV1000, 2000 series	TSP p/n: 9551-0023	709-513	
TSP/Spectra-Physics/ LDC HPLC system	Series 100,200,focus,Linear 200,203,204,206 series	TSP p/n: 9551-0023	709-513	
Varian UV system	Cary 1/3/4/5, DMS	Varian p/n: 56101215-00	702-514	
Waters HPLC system	480, 481, 481AZ series	Waters p/n: WAT099499	708-515	
	484 series	Waters p/n: WAT080357	708-516	
	486 series	Waters p/n: WAT080678	708-517	

\* Supplied with buyer's mounting bracket



## 2D. Graphite Products

- **Product Line:** Our line of graphite products includes pyrolytically-coated graphite tubes, platforms, and contacts used for Atomic Absorption Spectrophotometers, graphite electrode rods and graphite electrode disks used for oil analysis spectrometers, graphite crucibles used for gases analysis inside metals, and also other types of graphite parts.
- **Design:** Karaltay products are specially designed to meet or exceed the requirements of various types of atomic absorption spectrometers, providing long lifetime for your most difficult analysis. We customize and OEM all types of graphite products.
- **Quality Control:** There are many years' experience in research and manufacturing of purity graphite products, both in material preparation, high temperature treatment, chemical purification, chemical vapor deposition and etc. These components are made from high purity graphite, and each one is carefully examined prior to shipment. We guarantee 100% customer satisfaction, high quality, and low prices.







graphite electrode rods and graphite electrode disks  
**OEM for Baird LCD. (USA)- oil analysis spectrometers**



**graphite crucibles**  
**used for gases analysis inside metals**  
**OEM for HORLBA (JAPAN) - Oxygen/Nitrogen Analyzer**

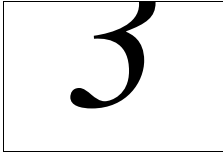
**NOTE:** This product can be used along with the oxygen and nitrogen analyzer and hydrogen decider, which are produced by America LECO, Japan HORLBA and some enterprises from Germany, France and some in China. Our customers have given a good praise for it. In addition, we also can process according to special requirements.



## 2D.1 List of Graphite Furnace Products

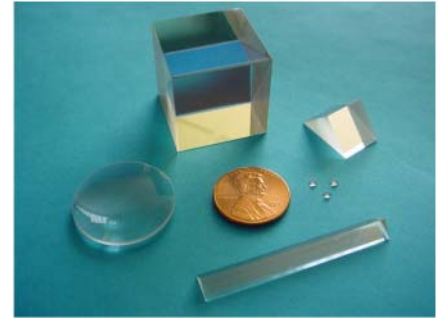
Instrument Manufacturer	Description	Part Numbers		Price \$
		P-E P/N	Karaltay P/N	
Perkin-Elmer type	<b>Graphite</b>	<b>P-E P/N</b>	<b>Karaltay P/N</b>	
	Standard tubes, pyro-coated	B00191504	BJP-01-1504	
	Tube for L'vov platform, coated	B0109322	BJP-02-9322	
	Tube for L'vov platform, uncoated	B0121093	BJP-03-1093	
	L'vov Platform, pyrolytic graphite	B0109324	BJP-04-9324	
	Standard tube, uncoated	B3001253	BJP-05-1253	
	Coated tube with preinserted PyG platform	B0112660	BJP-06-2660	
	Coated tube with preinserted PyG forked platform	B0505057	BJP-07-5057	
	HGA Contact set without sensor hole	B0128495	BJP-08-8495	
	Zeeman Contact set	B0116823	BJP-09-6823	
	HGA Contact set with sensor hole	B0128490	BJP-10-8490	
	Standard THGA Graphite tube with integrated platform	B0300641	BJP-11-0641	
Varian type	<b>Graphite</b>	<b>Varian P/N</b>	<b>Karaltay P/N</b>	
	Plateau tube, pyro-coated	63-100011-00	BJV-01-11-00	
	Partition tube, pyro-coated	63-100012-00	BJV-02-12-00	
	Plateau tube, uncoated	63-100014-00	BJV-03-14-00	
	Partition tube, uncoated	63-100015-00	BJV-04-15-00	
	Electrode	63-100016-00	BJV-06-16-00	
	Shroud	63-100018-00	BJV-08-18-00	
	Partition tube, coated (high purity)	63-100012-HP	BJV-13-12-HP	
	Partition tube, coated (extended lifetime)	63-100012-EL	BJV-14-12-EL	
	Bone platform, pyrolytic graphite (for use in plateau tube)	63-100013-00	BJV-15-13-00	
	Forked platform tube, coated	63-100023-00	BJV-16-23-00	
	Forked platform, pyrolytic graphite	63-100024-00	BJV-17-24-00	
	Coated tube with preinserted forkshaped PyG platform	63-100023-90	BJV-18-23-90	
Shimadzu type	<b>Graphite</b>	<b>Shimadzu P/N</b>	<b>Karaltay P/N</b>	
	Standard tube, pyro-coated	206-699-84-01	BJS-01-84-01	
	Pre-inserted platform tube, pyro-coated	206-825-41-00	BJS-02-41-00	
	Standard tube, pyro-coated	206-699-84-02	BJS-03-84-02	
	Uncoated graphite tube	206-801-53-01	BJS-04-53-01	

	Tube holder	206-801-64-00	BJS-05-64-00	
	Graphite cap	206-801-65-00	BJS-06-65-00	
	Standard tube, pyro-coated	206-508-88	BJS-07-08-88	
	Uncoated graphite tube	206-508-87	BJS-08-08-87	
	Pre-inserted platform tube, pyro-coated	206-508-87-2	BJS-09-87-2	
	Tube holder	206-506-02	BJS-10-06-02	
	Graphite cap	206-506-03	BJS-11-06-03	
<b>GBC type</b>	<b>Graphite</b>	<b>GBC P/N</b>	<b>Karaltay P/N</b>	
	Pyro-coated tube	99-0059-00	BJG-01-59-00	
	Uncoated graphite tube	99-0059-01	BJG-02-59-01	
	Pyro-coated platform	99-0060-00	BJG-03-60-00	
	Contacts	99-0061-00	BJG-04-61-00	
	Shroud	45-0004-00	BJG-05-04-00	
<b>Hitachi type</b>	<b>Graphite</b>	<b>Hitachi P/N</b>	<b>Karaltay P/N</b>	
	Uncoated graphite tube	170-5100	BJH-01-51-00	
	Pyro-coated graphite tube	170-5101	BJH-02-51-01	
	Contacts	170-5102	BJH-03-51-02	
	Uncoated graphite tubes	180-7400	BJH-04-74-00	
	Pyro-coated graphite tube	180-7444	BJH-05-74-44	
	Contacts	180-7401	BJH-06-74-01	
	Standard pyro-coated graphite tube	190-6003	BJH-07-60-03	
	Pre-inserted platform tube	ANO-0028	BJH-08-00-28	
	Contacts	190-7115	BJH-09-71-15	
	Shroud	190-7115-1	BJH-10-11-51	
	Pyro-coated partition graphite tube	190-6007	BJH-11-60-07	
	Pyro-coated forked platform	190-6008	BJH-12-60-08	
	Pyro-coated partition tube with forked platform	190-6009	BJH-13-60-09	



# Optical Components

Karaltay has been manufacturing atomic absorption instruments, assemblies, parts and consumables for many years. As an outgrowth of these manufacturing capabilities, Karaltay is now offering custom optics manufacturing. These products include a wide range of precision optics including spherical lenses, achromats, ball lenses, prisms, windows, beam-splitters and mirrors. In addition to custom optics Karaltay will soon issue a standard parts, precision optics catalog.



## 3A. Karaltay Lens Specifications:

### Singlet, Doublet, Achromat, Ball Lens, Drum Lens, Cylindrical Lens

Tolerance	Commercial	Precision
Diameter (mm)	+0.00/-0.10mm	+0.00/-0.05mm
Center Thickness (mm)	+/-0.20mm	+/-0.05mm
Radius (mm)	+/-0.5%	+/-0.1%
Power-Irregularity (fringe)	3-5	1-3
Wedge Lens (TIM, mm)-Centration	0.05mm	0.010mm
Bevels (Max face width@45°, mm)	0.5mm	0.1mm
Scratch-Dig	80/50	60/40-40/20

Note: 1: The radius tolerance depends on the radius value. For small radii, we manufacture test plates by producing balls, with which we can reach tolerances of +/-1~3 $\mu$ m.

2: We can produce lenses with diameters 1mm~250mm and 0.5mm~20mm for Ball Lenses.

3: We use the Chinese equivalent material to Schott's optical glass and assure the material quality. Other special materials (Fused Silica, Quartz, CaF<sub>2</sub>, etc.) are also frequently used.



### 3B. Karaltay Prism Specifications: Right Angle, Penta, Dove, Amici, Corner Cube

Tolerance	Commercial	Precision
Dimensions (mm)	+/-0.2mm	+/-0.05mm
Surface Figure	1-2 ~	0.5-1~
Angle	1~30 minutes	5~30 seconds
Bevels (Max face width@45°, mm)	0.5mm	0.1mm
Scratch—Dig	80/50	60/40-40/20

- Note: 1: Karaltay manufactures many kinds of prisms according to customers' requirements (drawings, specifications, coating requirements...)
- 2: The limitation for smallest prisms is around 1mm.
- 3: We use the Chinese equivalent material to Schott's optical glass and assure the material quality. Other special materials (Fused Silica, Quartz, CaF<sub>2</sub> etc.) are also frequently used.

### 3C. Karaltay Window Specifications: Windows, Wedges, Mirror Substrates, Coating Witness, Filter Substrates

Tolerance	Commercial	Precision
Dimensions (mm)	+/-0.2mm	+/-0.05mm
Thickness (mm)	+/-0.2mm	+/-0.05mm
Surface Figure	1-2 ~	0.1-1~
Parallelism	minutes	5~30 seconds
Scratch—Dig	80/50	60/40-40/20

- Note: 1: Karaltay manufactures the above components according to customers' requirements (drawings, specifications, coating requirements...)
- 2: We use the Chinese equivalent material to Schott's optical glass and assure the material quality. Other special materials (Fused Silica, Quartz, CaF<sub>2</sub> etc.) are also frequently used.

### 3D. Didymium glass and Holmium glass

#### Didymium glass

##### Didymium glass characteristics

Type	Thickness (mm)	A[2856k]			D65			Chemical stability		ND	a*10-7 (°C)	Tg (°C)	Ts (°C)	S
		x	y	Y	x	y	Y	DA	DW					
<b>PNB586</b>	2	0.453	0.384	52.7	0.297	0.307	52.5	2	1	1.537	90	598	669	2.81

Technical specifications of Didymium glass

Type	Thickness (mm)	586 (nm)
<b>PNB586</b>	2	>=1.0

#### Holmium glass

##### Holmium glass characteristics

Type	Thickness (mm)	A[2856k]			D65			Chemical stability		ND	a*10-7 (°C)	Tg (°C)	Ts (°C)	S
		x	y	Y	x	y	Y	DA	DW					
<b>HOB445</b>	2	0.465	0.427	94.9	0.341	0.377	91.9	1	1	1.523	86	602	668	2.65

##### Technical specifications of Holmium glass

Type	Thickness (mm)	241.5 (nm)	445 (nm)
<b>HOB445</b>	2	>0	<=5.0