



**IES INDOOR REPORT  
PHOTOMETRIC FILENAME : HAZ4150.IES**

**DESCRIPTION INFORMATION (From Photometric File)**

IESNA:LM-63-2002  
 LUMINAIRE: HAZLUX H1  
 LAMP: 50-150 WATT HPS  
 IES TYPE: V  
 DESCRIPTION: TYPE V GLASS REFRACTOR

Note: Candela values converted from Type-B to Type-C

**CHARACTERISTICS**

Lumens Per Lamp	16000 (1 lamp)
Total Lamp Lumens	16000
Luminaire Lumens	5074
Total Luminaire Efficiency	32 %
Luminaire Efficacy Rating (LER)	34
Total Luminaire Watts	150
Ballast Factor	1.00
CIE Type	Direct
Spacing Criterion (0-180)	0.02
Spacing Criterion (90-270)	N.A.
Spacing Criterion (Diagonal)	369.58
Basic Luminous Shape	Point
Luminous Length (0-180)	0.00 ft
Luminous Width (90-270)	0.00 ft
Luminous Height	0.00 ft

**LUMINANCE DATA (cd/sq.m)**

Angle In Degrees	Average 0-Deg	Average 45-Deg	Average 90-Deg
45	0	0	0
55	0	0	0
65	0	0	0
75	0	0	0
85	0	0	0

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**CANDELA TABULATION**

	<u>0.0</u>	<u>2.5</u>	<u>5.0</u>	<u>7.5</u>	<u>10.0</u>	<u>12.5</u>	<u>15.0</u>	<u>17.5</u>	<u>20.0</u>	<u>22.5</u>
<b>0.0</b>	0	0	0	0	0	0	0	0	0	0
<b>2.5</b>	0	2	5	7	9	11	14	16	18	20
<b>5.0</b>	0	5	9	14	19	23	28	32	37	41
<b>7.5</b>	0	7	14	21	28	35	42	48	55	62
<b>10.0</b>	0	9	19	28	37	46	55	64	73	82
<b>12.5</b>	0	12	23	35	46	58	69	80	91	102
<b>15.0</b>	0	14	28	41	55	69	82	95	109	122
<b>17.5</b>	0	16	32	48	64	80	96	111	127	142
<b>20.0</b>	0	18	37	55	73	92	110	127	145	162
<b>22.5</b>	0	21	41	62	83	103	123	143	163	182
<b>25.0</b>	0	23	46	69	92	114	137	159	181	202
<b>27.5</b>	0	27	54	80	107	132	157	181	204	227
<b>30.0</b>	0	31	62	93	123	153	182	209	236	262
<b>32.5</b>	0	36	71	106	141	174	207	239	270	300
<b>35.0</b>	0	40	80	120	159	197	235	271	306	339
<b>37.5</b>	0	44	88	132	176	218	260	301	341	380
<b>40.0</b>	0	48	97	145	192	239	285	330	374	416
<b>42.5</b>	0	53	105	157	209	260	310	359	407	454
<b>45.0</b>	0	57	114	170	226	282	336	389	441	492
<b>47.5</b>	0	65	129	193	256	316	375	431	484	534
<b>50.0</b>	0	73	146	218	288	357	424	488	549	606
<b>52.5</b>	0	91	180	268	353	433	508	577	639	692
<b>55.0</b>	0	109	217	324	427	525	619	706	786	856
<b>57.5</b>	0	135	268	398	525	645	758	863	957	1039
<b>60.0</b>	0	161	321	478	631	778	918	1049	1170	1279
<b>62.5</b>	0	177	353	527	700	870	1036	1197	1354	1504
<b>65.0</b>	0	185	369	553	737	919	1099	1278	1455	1629
<b>67.5</b>	0	188	377	565	753	941	1129	1316	1503	1690
<b>70.0</b>	0	189	378	567	756	945	1135	1326	1517	1709
<b>72.5</b>	0	181	362	544	728	912	1099	1288	1480	1676
<b>75.0</b>	0	162	325	489	655	824	997	1174	1356	1545
<b>77.5</b>	0	138	277	418	560	706	855	1008	1168	1333
<b>80.0</b>	0	118	237	356	477	600	726	854	987	1123
<b>82.5</b>	0	102	204	307	411	516	623	731	842	955
<b>85.0</b>	0	91	181	272	363	455	548	641	736	832
<b>87.5</b>	0	82	164	246	329	411	494	577	660	744
<b>90.0</b>	0	73	147	220	293	366	440	513	586	659

**Vert. Horizontal Angles**

	<u>25.0</u>	<u>27.5</u>	<u>30.0</u>	<u>32.5</u>	<u>35.0</u>	<u>37.5</u>	<u>40.0</u>	<u>42.5</u>	<u>45.0</u>	<u>47.5</u>
<b>0.0</b>	0	0	0	0	0	0	0	0	0	0
<b>2.5</b>	22	24	26	28	30	32	34	36	37	39
<b>5.0</b>	45	50	54	58	61	65	69	72	75	79
<b>7.5</b>	68	74	81	87	93	98	104	109	114	119
<b>10.0</b>	90	99	107	115	123	131	138	145	152	158
<b>12.5</b>	113	123	133	143	153	163	172	181	189	197
<b>15.0</b>	134	147	159	171	183	194	205	216	226	236
<b>17.5</b>	156	171	185	199	212	226	238	251	263	274
<b>20.0</b>	179	195	211	227	243	257	272	285	299	312
<b>22.5</b>	201	220	238	256	273	290	306	321	336	351
<b>25.0</b>	224	244	265	284	304	322	340	357	374	390
<b>27.5</b>	247	269	291	313	334	354	374	393	412	429
<b>30.0</b>	286	309	330	350	367	387	408	429	449	469

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**CANDELA TABULATION - (Cont.)**

32.5	327	354	378	400	420	438	454	467	487	508
35.0	371	401	428	454	477	498	516	530	542	551
37.5	417	450	482	511	537	561	581	598	612	622
40.0	457	497	534	569	600	627	650	670	686	698
42.5	498	541	583	621	658	692	722	746	764	778
45.0	541	588	632	675	715	752	786	817	845	863
47.5	584	635	683	730	774	814	852	886	917	943
50.0	659	708	751	789	834	878	920	957	991	1020
52.5	743	800	851	896	934	965	989	1030	1068	1100
55.0	917	966	1001	1023	1054	1093	1123	1144	1154	1122
57.5	1109	1177	1231	1270	1293	1297	1281	1294	1276	1178
60.0	1374	1452	1513	1552	1575	1599	1601	1580	1413	1262
62.5	1647	1760	1850	1919	1965	1984	1975	1870	1681	1491
65.0	1801	1961	2104	2236	2357	2433	2455	2256	2011	1764
67.5	1876	2060	2234	2403	2568	2724	2781	2601	2395	2138
70.0	1902	2096	2287	2475	2662	2848	2864	2721	2577	2401
72.5	1875	2079	2288	2484	2682	2882	2837	2714	2589	2465
75.0	1741	1946	2160	2380	2590	2806	2720	2638	2525	2413
77.5	1507	1689	1882	2086	2302	2471	2424	2378	2345	2259
80.0	1265	1413	1569	1732	1905	2011	1980	1951	1923	1898
82.5	1071	1191	1316	1445	1580	1635	1589	1546	1511	1478
85.0	929	1029	1130	1233	1340	1363	1314	1264	1215	1166
87.5	829	914	1000	1087	1175	1182	1131	1080	1030	979
90.0	733	806	879	952	1026	1026	977	928	879	830

**Vert. Angles**      **Horizontal Angles**

	<u>50.0</u>	<u>52.5</u>	<u>55.0</u>	<u>57.5</u>	<u>60.0</u>	<u>62.5</u>	<u>65.0</u>	<u>67.5</u>	<u>70.0</u>	<u>72.5</u>
0.0	0	0	0	0	0	0	0	0	0	0
2.5	40	42	43	44	45	46	47	48	49	50
5.0	81	84	87	89	92	94	96	97	99	100
7.5	124	128	132	135	139	142	145	147	149	151
10.0	165	171	176	182	187	191	194	198	200	203
12.5	205	213	220	227	233	239	244	249	252	255
15.0	246	255	263	271	279	286	292	298	304	308
17.5	286	296	306	316	324	333	340	347	354	360
20.0	325	337	349	360	370	379	388	396	404	410
22.5	364	378	391	403	415	426	436	445	453	461
25.0	405	419	433	446	459	472	483	493	503	511
27.5	446	462	476	490	504	517	530	542	552	562
30.0	487	504	520	535	549	562	576	589	601	612
32.5	528	546	564	581	596	610	622	637	650	661
35.0	568	589	608	626	642	657	671	684	698	711
37.5	629	631	651	671	689	705	720	733	746	760
40.0	705	709	708	716	735	753	769	768	754	744
42.5	787	791	791	785	781	771	754	739	724	711
45.0	874	879	879	849	794	744	727	710	695	680
47.5	965	973	924	866	808	751	699	682	665	650
50.0	1045	998	943	882	821	762	703	654	636	620
52.5	1057	1003	950	898	835	772	711	651	607	590
55.0	1065	1009	953	899	845	783	719	656	594	560
57.5	1081	1015	957	900	844	789	727	661	597	535
60.0	1161	1059	962	902	843	786	729	667	600	535
62.5	1299	1135	1030	925	844	783	724	667	604	536
65.0	1550	1350	1148	993	885	782	721	661	602	537
67.5	1879	1619	1385	1176	967	839	728	656	595	536

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<b>70.0</b>	2213	1974	1703	1432	1190	974	787	674	588	526
<b>72.5</b>	2319	2173	1984	1770	1489	1209	970	749	616	519
<b>75.0</b>	2300	2175	2050	1902	1735	1531	1243	955	729	553
<b>77.5</b>	2180	2101	1990	1881	1756	1623	1469	1265	970	701
<b>80.0</b>	1868	1832	1798	1739	1664	1569	1458	1334	1186	976
<b>82.5</b>	1445	1413	1390	1373	1358	1332	1305	1238	1149	1033
<b>85.0</b>	1123	1083	1044	1005	971	939	914	893	883	865
<b>87.5</b>	929	879	828	779	729	683	637	592	547	509
<b>90.0</b>	781	733	684	635	586	537	488	440	391	342

**Vert. Horizontal Angles**

	<u><b>75.0</b></u>	<u><b>77.5</b></u>	<u><b>80.0</b></u>	<u><b>82.5</b></u>	<u><b>85.0</b></u>	<u><b>87.5</b></u>	<u><b>90.0</b></u>
<b>0.0</b>	0	0	0	0	0	0	0
<b>2.5</b>	50	51	51	52	52	52	52
<b>5.0</b>	101	102	103	103	104	104	104
<b>7.5</b>	153	154	155	156	156	156	156
<b>10.0</b>	205	206	207	208	208	208	208
<b>12.5</b>	257	259	260	261	261	260	259
<b>15.0</b>	310	312	313	313	313	313	311
<b>17.5</b>	364	365	366	367	366	365	363
<b>20.0</b>	416	419	420	420	419	418	415
<b>22.5</b>	468	473	475	474	473	470	467
<b>25.0</b>	519	526	529	528	526	523	519
<b>27.5</b>	570	577	584	583	580	576	571
<b>30.0</b>	621	629	636	638	634	629	622
<b>32.5</b>	672	681	689	693	689	682	674
<b>35.0</b>	722	732	741	748	743	736	726
<b>37.5</b>	772	767	763	760	751	738	726
<b>40.0</b>	737	732	727	724	718	704	692
<b>42.5</b>	703	697	692	689	684	670	657
<b>45.0</b>	669	662	657	653	651	636	623
<b>47.5</b>	636	627	621	617	615	602	588
<b>50.0</b>	605	593	586	582	579	567	553
<b>52.5</b>	574	560	551	546	543	533	519
<b>55.0</b>	543	528	516	511	507	499	484
<b>57.5</b>	513	496	482	475	471	465	450
<b>60.0</b>	483	465	450	440	435	431	415
<b>62.5</b>	470	434	418	405	400	397	380
<b>65.0</b>	469	404	386	371	364	361	346
<b>67.5</b>	468	400	355	339	329	325	311
<b>70.0</b>	467	397	329	307	294	289	277
<b>72.5</b>	456	395	324	275	259	254	242
<b>75.0</b>	448	385	321	250	226	218	208
<b>77.5</b>	487	375	312	245	194	182	173
<b>80.0</b>	677	434	302	239	169	147	138
<b>82.5</b>	894	669	390	227	163	113	104
<b>85.0</b>	821	729	598	350	152	85	69
<b>87.5</b>	474	449	435	409	300	76	35
<b>90.0</b>	293	244	195	147	98	49	0

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**ZONAL LUMEN SUMMARY**

Zone	Lumens	%Lamp	%Fixt
0-30	226.71	1.40	4.50
0-40	536.59	3.40	10.60
0-60	1686.53	10.50	33.20
0-90	5074.27	31.70	100.00
90-120	0.00	0.00	0.00
90-130	0.00	0.00	0.00
90-150	0.00	0.00	0.00
90-180	0.00	0.00	0.00
0-180	5074.27	31.70	100.00

Total Luminaire Efficiency = 31.70%

**ZONAL LUMEN SUMMARY**

Zone	Lumens
0-10	8.47
10-20	59.55
20-30	158.70
30-40	309.87
40-50	470.13
50-60	679.81
60-70	1131.24
70-80	1375.69
80-90	880.81
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

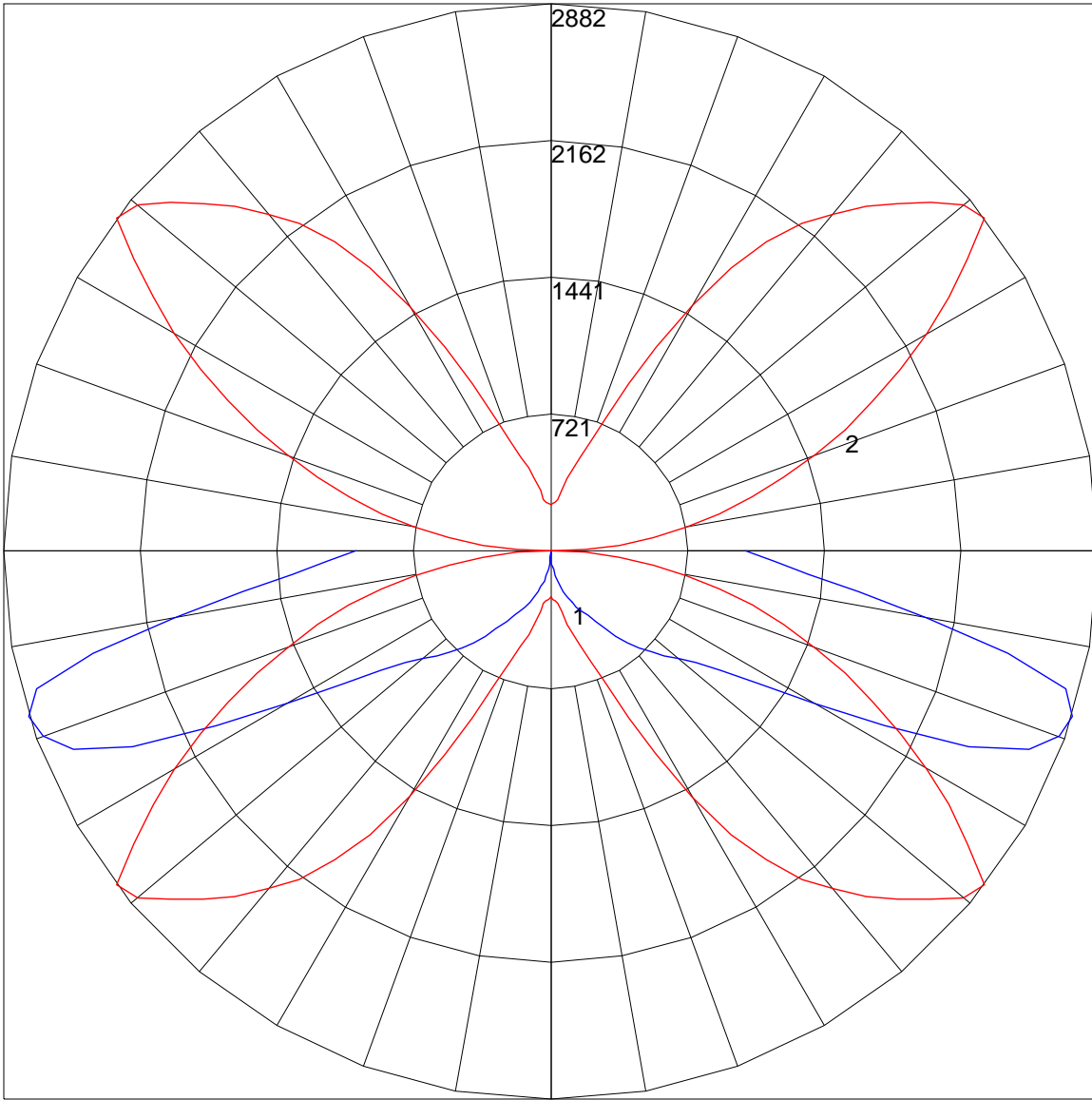
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**COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD**

Effective Floor Cavity Reflectance 0.20

RC RW	80				70				50			30			10			0
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	
0	38	38	38	38	37	37	37	37	35	35	35	34	34	34	32	32	32	32
1	31	28	25	23	30	27	25	23	26	24	22	24	23	21	23	22	20	20
2	27	22	19	15	26	21	18	15	20	17	15	19	17	14	18	16	14	13
3	23	18	14	11	22	18	14	11	16	13	11	15	13	10	14	12	10	9
4	21	15	11	8	20	15	11	8	14	11	8	13	10	8	12	10	8	7
5	19	13	9	6	18	13	9	6	12	9	6	11	8	6	11	8	6	5
6	17	12	8	5	16	11	8	5	11	7	5	10	7	5	9	7	5	4
7	16	10	7	4	15	10	7	4	9	6	4	9	6	4	8	6	4	3
8	14	9	6	4	14	9	6	4	8	6	3	8	5	3	8	5	3	3
9	13	8	5	3	13	8	5	3	8	5	3	7	5	3	7	5	3	2
10	13	8	5	3	12	7	5	3	7	4	3	7	4	3	6	4	3	2

POLAR GRAPH



Maximum Candela = 2882 Located At Horizontal Angle = 37.5, Vertical Angle = 72.5  
# 1 - Vertical Plane Through Horizontal Angles (37.5 - 217.5) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (72.5) (Through Max. Cd.)