

Project Number
17.00648



Date
3/13/2017

LAB 5
Sphere

Test Sample Description

Catalog Number: P7105-0930K9

Description: 1-Lt. Led Wall Sconce w/AC LED. Use 17W SAMPLE 'A' WITH CLEAR LENS.

Photometry

Test Method: IES LM-79-08 § 10

Preburn Time: 0:45

Time To Stabilize: 3:00

Total Operating Time: 4:00

Input Voltage (Volts): 120.3

Input Current (Amps): 0.148

Input Wattage (Watts): 17.6

Ambient Temp (°C): 25.6

Sphere

Test Method: IES LM-79-08 § 9.1 & 12.1

Preburn Time: 1:00

Time To Stabilize: 1:03

Total Operating Time: 2:03

Input Voltage (Volts): 120.0

Input Current (Amps): 0.147

Input Wattage (Watts): 17.3

Ambient Temp (°C): 24.1

PF @ 120V: 0.976

THD @ 120V (%): 17.5



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Greenville, SC 29607
www.hubbellighting.com

Checked (sphere): B. LEE
Checked (photometry): R. WILLIAMS
Approved: D. BLACK



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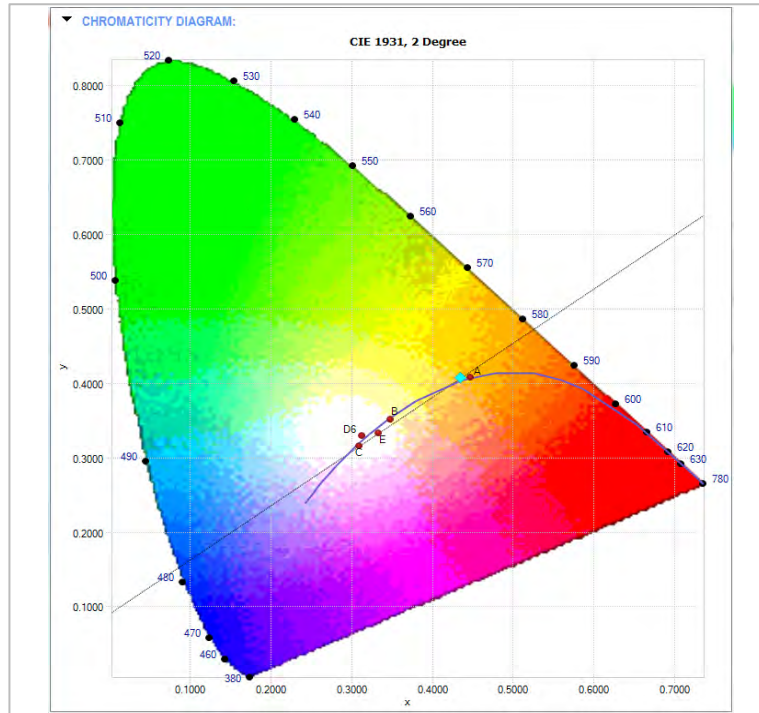


Lamp Cat#: 93047261-5130
Lamp Desc: 40 - Nichia 3000K LEDs
Driver Desc: n/a

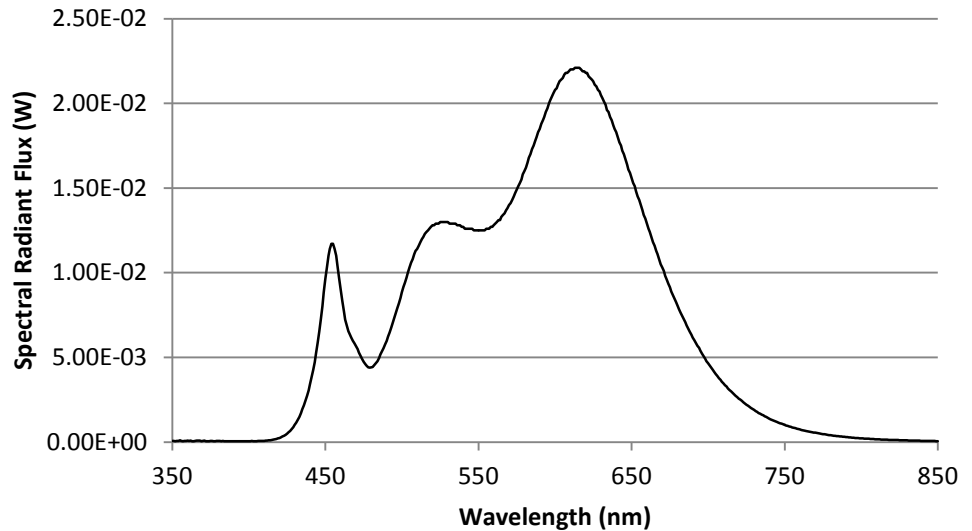
Efficacy: 61.2 LPW S/P Ratio: 1.5 LM/LM

Spectral Results

| Name | Value | Unit |
|----------------------|-------------|--------|
| Φ | 3.46 | watts |
| $\Phi(v)$ | 1058 | lumens |
| $\Phi(v')$ | 1564 | lm' |
| Chrom x | 0.4352 | |
| Chrom y | 0.4074 | |
| Chrom u | 0.248 | |
| Chrom v | 0.3483 | |
| Duv | 0.0015 | |
| Chrom u' | 0.248 | |
| Chrom v' | 0.5224 | |
| CCT | 3055 | K |
| Purity | 52.9 | % |
| λ (dom) | 582.0 | nm |
| FWHM | 159.1 | nm |
| λ (peak) | 614.3 | nm |
| λ (center) | 587.5 | nm |
| λ (centroid) | 587.2 | nm |
| SDCM | Cool White | |
| RA | 95 | |
| Corr. Coef. | 0.001570824 | |
| Correlation | 0.0054 | |
| R1 | 97.2 | |
| R2 | 99.1 | |
| R3 | 98.5 | |
| R4 | 99.3 | |
| R5 | 97.7 | |
| R6 | 96.0 | |
| R7 | 91.3 | |
| R8 | 80.6 | |
| R9 | 55.5 | |
| R10 | 97.8 | |
| R11 | 94.6 | |
| R12 | 84.9 | |
| R13 | 98.5 | |
| R14 | 99.2 | |



Spectral Distribution of Radiant Flux



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REPORT NUMBER: 17.00648

PAGE: 3 OF 9

ISSUE DATE: 03/09/17

PREPARED FOR: PROGRESS

CATALOG NUMBER: P7105-0930K9

LUMINAIRE: 1-Lt. Led Wall Sconce w/AC LED

LAMP CAT. NO.: 93047261-5130

LAMP: 40 - 3000K Nichia LEDs

MOUNTING: Wall

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.



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REPORT NUMBER: 17.00648

PAGE: 4 OF 9

ISSUE DATE: 03/09/17

PREPARED FOR: PROGRESS

CATALOG NUMBER: P7105-0930K9

CANDELA DISTRIBUTION

| | 0.0 | 45.0 | 90.0 | 135.0 | 180.0 |
|-----|-----|------|------|-------|-------|
| 0 | 56 | 56 | 56 | 56 | 56 |
| 5 | 62 | 60 | 56 | 55 | 55 |
| 15 | 85 | 73 | 55 | 58 | 62 |
| 25 | 101 | 83 | 52 | 60 | 69 |
| 35 | 111 | 87 | 45 | 61 | 76 |
| 45 | 120 | 90 | 37 | 70 | 80 |
| 55 | 128 | 93 | 30 | 82 | 84 |
| 65 | 137 | 96 | 25 | 92 | 87 |
| 75 | 142 | 99 | 20 | 98 | 89 |
| 85 | 144 | 99 | 16 | 98 | 89 |
| 90 | 145 | 99 | 16 | 98 | 89 |
| 95 | 145 | 100 | 16 | 98 | 89 |
| 105 | 144 | 99 | 20 | 97 | 88 |
| 115 | 139 | 98 | 24 | 94 | 87 |
| 125 | 132 | 94 | 29 | 86 | 82 |
| 135 | 124 | 92 | 37 | 75 | 74 |
| 145 | 117 | 89 | 46 | 65 | 70 |
| 155 | 106 | 84 | 53 | 61 | 65 |
| 165 | 86 | 68 | 51 | 59 | 56 |
| 175 | 2 | 5 | 12 | 10 | 4 |
| 180 | 2 | 2 | 2 | 2 | 2 |

FLUX

| |
|----|
| 6 |
| 18 |
| 32 |
| 45 |
| 57 |
| 68 |
| 78 |
| 85 |
| 88 |
| 88 |
| 88 |
| 86 |
| 80 |
| 70 |
| 58 |
| 46 |
| 33 |
| 17 |
| 2 |

ZONAL LUMEN SUMMARY

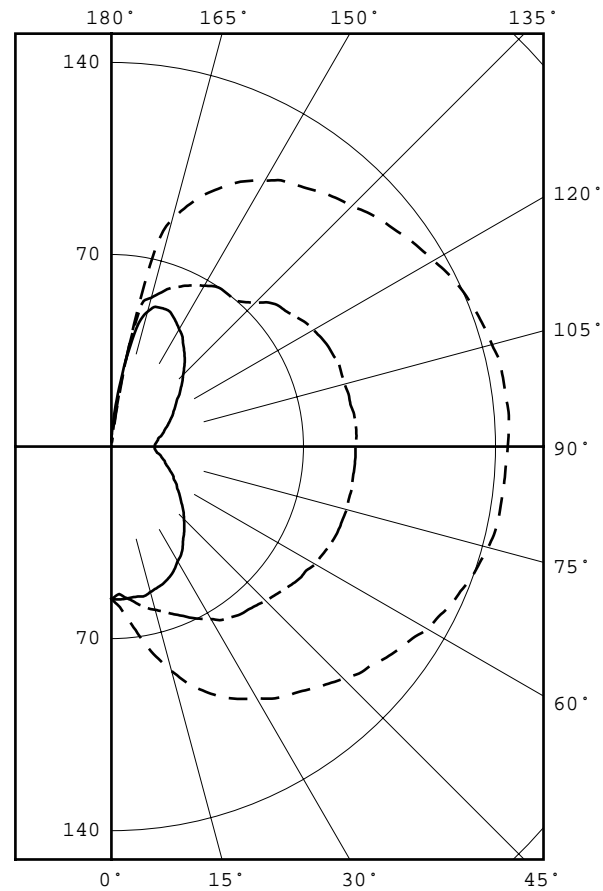
| ZONE | LUMENS | %FIXT |
|--------|--------|-------|
| 0- 30 | 56 | 5.9 |
| 0- 40 | 101 | 10.6 |
| 0- 60 | 226 | 23.6 |
| 0- 90 | 477 | 49.9 |
| 90-120 | 254 | 26.6 |
| 90-130 | 324 | 33.9 |
| 90-150 | 428 | 44.8 |
| 90-180 | 480 | 50.1 |
| 0-180 | 957 | 100.0 |

EFFICACY = 54.4 lm/W

CIE TYPE - GENERAL DIFFUSE

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 2.65 1.29 2.02



LEGEND
 0-deg - - - - -
 90-deg - - - - -
 180-deg - . - . - .



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PREPARED FOR: PROGRESS
CATALOG NUMBER: P7105-0930K9

PAGE: 5 OF 9

PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 3.500 13.000
HEIGHT OF SIDE : 9.000 9.000

LUMINANCE DATA IN CANDELA/SQ M
ANGLE AVERAGE AVERAGE AVERAGE
IN DEG 0-DEG 90-DEG 180-DEG
45 1615. 1065. 1074.
55 1631. 905. 1065.
65 1689. 805. 1078.
75 1765. 735. 1102.
85 1849. 710. 1143.



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REPORT NUMBER: 17.00648

PAGE: 6 OF 9

ISSUE DATE: 03/09/17

PREPARED FOR: PROGRESS

CATALOG NUMBER: P7105-0930K9

CANDELA DISTRIBUTION
LATERAL ANGLE

| | 0.0 | 22.5 | 45.0 | 67.5 | 90.0 | 112.5 | 135.0 | 157.5 | 180.0 |
|-------|-----|------|------|------|------|-------|-------|-------|-------|
| 0.0 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 |
| 5.0 | 62 | 62 | 60 | 58 | 56 | 55 | 55 | 55 | 55 |
| 10.0 | 74 | 72 | 67 | 61 | 56 | 55 | 57 | 58 | 59 |
| 15.0 | 85 | 82 | 73 | 63 | 55 | 54 | 58 | 61 | 62 |
| 20.0 | 94 | 90 | 79 | 64 | 54 | 54 | 59 | 63 | 65 |
| 25.0 | 101 | 96 | 83 | 64 | 52 | 53 | 60 | 66 | 69 |
| 30.0 | 106 | 101 | 85 | 63 | 48 | 50 | 60 | 69 | 73 |
| 35.0 | 111 | 105 | 87 | 63 | 45 | 48 | 61 | 73 | 76 |
| 40.0 | 115 | 108 | 88 | 61 | 41 | 44 | 64 | 76 | 78 |
| 45.0 | 120 | 112 | 90 | 60 | 37 | 41 | 70 | 78 | 80 |
| 50.0 | 124 | 115 | 91 | 58 | 34 | 38 | 76 | 81 | 82 |
| 55.0 | 128 | 119 | 93 | 57 | 30 | 35 | 82 | 83 | 84 |
| 60.0 | 133 | 123 | 95 | 57 | 27 | 35 | 88 | 85 | 86 |
| 65.0 | 137 | 126 | 96 | 56 | 25 | 36 | 92 | 88 | 87 |
| 70.0 | 140 | 129 | 98 | 56 | 22 | 37 | 95 | 89 | 88 |
| 75.0 | 142 | 131 | 99 | 55 | 20 | 38 | 98 | 90 | 89 |
| 80.0 | 144 | 132 | 99 | 54 | 18 | 38 | 98 | 90 | 89 |
| 85.0 | 144 | 132 | 99 | 53 | 16 | 38 | 98 | 90 | 89 |
| 90.0 | 145 | 133 | 99 | 53 | 16 | 39 | 98 | 89 | 89 |
| 95.0 | 145 | 133 | 100 | 54 | 16 | 40 | 98 | 90 | 89 |
| 100.0 | 145 | 133 | 100 | 54 | 17 | 41 | 97 | 89 | 89 |
| 105.0 | 144 | 132 | 99 | 55 | 20 | 43 | 97 | 89 | 88 |
| 110.0 | 142 | 131 | 99 | 56 | 22 | 45 | 96 | 90 | 88 |
| 115.0 | 139 | 128 | 98 | 56 | 24 | 44 | 94 | 89 | 87 |
| 120.0 | 136 | 125 | 96 | 56 | 26 | 43 | 90 | 86 | 85 |
| 125.0 | 132 | 122 | 94 | 57 | 29 | 42 | 86 | 84 | 82 |
| 130.0 | 128 | 119 | 93 | 58 | 33 | 42 | 81 | 82 | 80 |
| 135.0 | 124 | 116 | 92 | 59 | 37 | 44 | 75 | 77 | 74 |
| 140.0 | 121 | 113 | 91 | 61 | 42 | 47 | 70 | 73 | 70 |
| 145.0 | 117 | 109 | 89 | 62 | 46 | 51 | 65 | 69 | 70 |
| 150.0 | 112 | 105 | 87 | 64 | 49 | 54 | 62 | 66 | 68 |
| 155.0 | 106 | 100 | 84 | 63 | 53 | 57 | 61 | 64 | 65 |
| 160.0 | 97 | 92 | 79 | 62 | 54 | 58 | 61 | 62 | 61 |
| 165.0 | 86 | 81 | 68 | 56 | 51 | 54 | 59 | 58 | 56 |
| 170.0 | 39 | 39 | 38 | 36 | 35 | 37 | 38 | 38 | 38 |
| 175.0 | 2 | 2 | 5 | 9 | 12 | 12 | 10 | 6 | 4 |
| 180.0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |



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REPORT NUMBER: 17.00648
ISSUE DATE: 03/09/17
PREPARED FOR: PROGRESS
CATALOG NUMBER: P7105-0930K9

PAGE: 7 OF 9

| 5-DEGREE | | |
|----------|-------|---------|
| ZONAL | LUMEN | SUMMARY |
| 0- | 5 | 1 |
| 5- | 10 | 4 |
| 10- | 15 | 8 |
| 15- | 20 | 11 |
| 20- | 25 | 14 |
| 25- | 30 | 18 |
| 30- | 35 | 21 |
| 35- | 40 | 24 |
| 40- | 45 | 27 |
| 45- | 50 | 30 |
| 50- | 55 | 33 |
| 55- | 60 | 35 |
| 60- | 65 | 38 |
| 65- | 70 | 40 |
| 70- | 75 | 42 |
| 75- | 80 | 43 |
| 80- | 85 | 44 |
| 85- | 90 | 44 |
| 90- | 95 | 44 |
| 95- | 100 | 44 |
| 100- | 105 | 44 |
| 105- | 110 | 43 |
| 110- | 115 | 41 |
| 115- | 120 | 39 |
| 120- | 125 | 36 |
| 125- | 130 | 33 |
| 130- | 135 | 31 |
| 135- | 140 | 27 |
| 140- | 145 | 24 |
| 145- | 150 | 21 |
| 150- | 155 | 18 |
| 155- | 160 | 15 |
| 160- | 165 | 11 |
| 165- | 170 | 6 |
| 170- | 175 | 1 |
| 175- | 180 | 0 |

| 10-DEGREE | | |
|-----------|-------|---------|
| ZONAL | LUMEN | SUMMARY |
| 0- | 10 | 6 |
| 10- | 20 | 18 |
| 20- | 30 | 32 |
| 30- | 40 | 45 |
| 40- | 50 | 57 |
| 50- | 60 | 68 |
| 60- | 70 | 78 |
| 70- | 80 | 85 |
| 80- | 90 | 88 |
| 90- | 100 | 88 |
| 100- | 110 | 86 |
| 110- | 120 | 80 |
| 120- | 130 | 70 |
| 130- | 140 | 58 |
| 140- | 150 | 46 |
| 150- | 160 | 33 |
| 160- | 170 | 17 |
| 170- | 180 | 2 |



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REPORT NUMBER: 17.00648

PAGE: 8 OF 9

ISSUE DATE: 03/09/17

PREPARED FOR: PROGRESS

CATALOG NUMBER: P7105-0930K9

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

| RC | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 | |
|----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | | 10 |
| 0 | 107 | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 | 50 |
| 1 | 93 | 87 | 81 | 76 | 76 | 85 | 80 | 75 | 70 | 66 | 62 | 59 | 54 | 51 | 48 | 42 | 40 | 38 | 33 |
| 2 | 83 | 74 | 66 | 59 | 59 | 76 | 67 | 60 | 54 | 56 | 50 | 45 | 45 | 41 | 37 | 35 | 32 | 29 | 24 |
| 3 | 75 | 63 | 54 | 47 | 47 | 68 | 58 | 50 | 43 | 48 | 41 | 36 | 38 | 34 | 30 | 30 | 26 | 23 | 18 |
| 4 | 68 | 55 | 46 | 39 | 39 | 62 | 50 | 42 | 36 | 42 | 35 | 30 | 33 | 28 | 24 | 26 | 22 | 19 | 15 |
| 5 | 62 | 49 | 39 | 32 | 32 | 56 | 44 | 36 | 30 | 37 | 30 | 25 | 29 | 24 | 20 | 23 | 19 | 16 | 12 |
| 6 | 57 | 43 | 34 | 27 | 27 | 52 | 40 | 31 | 25 | 33 | 26 | 21 | 26 | 21 | 17 | 20 | 16 | 13 | 10 |
| 7 | 52 | 39 | 30 | 24 | 24 | 48 | 35 | 28 | 22 | 29 | 23 | 18 | 24 | 19 | 15 | 18 | 14 | 11 | 9 |
| 8 | 48 | 35 | 26 | 21 | 21 | 44 | 32 | 24 | 19 | 27 | 20 | 16 | 22 | 17 | 13 | 17 | 13 | 10 | 7 |
| 9 | 45 | 32 | 24 | 18 | 18 | 41 | 29 | 22 | 17 | 24 | 18 | 14 | 20 | 15 | 11 | 15 | 12 | 9 | 7 |
| 10 | 42 | 29 | 21 | 16 | 16 | 38 | 27 | 20 | 15 | 22 | 16 | 12 | 18 | 13 | 10 | 14 | 11 | 8 | 6 |

ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS TEST SAMPLE.

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17.00648



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Date
3/13/2017

Goniophotometer Calibration

Calibration Lamp: GE 1000W, 120V, T6, CL (FEL)

Lamp Number: ITL78966-1000-38

Calibration Current: 8.300 Amps DC

Total Luminous Flux: 25889.0 Lumens

Calibration Date: 09/08/2016

Test Equipment Used

| <i>Instrument</i> | <i>Manufacturer / Model</i> | <i>S/N</i> | <i>Calibration Due:</i> |
|------------------------|--------------------------------------|------------|-------------------------|
| <i>Goniophotometer</i> | ITL/HLI LAB 5 - Test Distance: 56.0' | N/A | N/A |
| <i>Power Analyzer</i> | Yokogawa / WT 332 | C2QA27072V | 11/2/2017 |
| <i>Power Source</i> | Voltage-Regulated House Power | N/A | N/A |
| <i>Thermometer</i> | National Instruments / USB-TC01 | 1912722 | 11/2/2017 |

Sphere Calibration

Calibration Lamp: EIKO 28V75W/E10

Lamp Number: SCL-1400-J136

Calibration Current: 2.679 Amps

Total Luminous Flux: 1427 Lumens

Test Equipment Used - Color & SPD; THD & Power Factor

| <i>Instrument</i> | <i>Manufacturer / Model</i> | <i>S/N</i> | <i>Calibration Due:</i> |
|----------------------------|---------------------------------|--------------|-------------------------|
| <i>3-Meter Sphere</i> | Labsphere / LMS-3M | N/A | Calibrated Weekly |
| <i>Thermometer</i> | National Instruments / USB TC01 | 1912751 | 11/2/2017 |
| <i>LAMP Power Meter</i> | Yokogawa / WT332 | C2QA27075V | 11/1/2017 |
| <i>Power Supply</i> | Chroma / 61602 | 616020002113 | N/A |
| <i>Power Supply PF/THD</i> | Voltage-Regulated House Power | N/A | N/A |
| <i>Aux Lamp Supply</i> | Labsphere / LPS-100-0833 | 031159372 | 10/31/2017 |
| <i>Cal Lamp Supply</i> | Labsphere / LPS-150-0268 | 1218148505 | 12/1/2017 |
| <i>Spectrometer</i> | Labsphere / CDS 1100 | 0624117792 | N/A |

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