Section 1 Results

|  |  |
| --- | --- |
| Lab Temperature (K) | 294 |
| Pipe Length (m) | 0.525 |
| Mercury Light Wavelength (m) | 5.461 \* 10-7 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pressure (mbar) | Fringe Order Count 1 (m) | Fringe Order Count 2 (m) | Fringe Order Count 3 (m) | Average Fringe Order Count (m) |
| 20 | 0 | 0 | 0 | 0 |
| 100 | 28 | 20 | 25 | 24.33 |
| 200 | 67 | 45 | 52 | 54.66 |
| 300 | 102 | 68 | 80 | 83.33 |
| 400 | 136 | 92 | 102 | 110 |
| 500 | 165 | 116 | 130 | 137 |
| 600 | 200 | 140 | 154 | 164.66 |
| 700 | 230 | 165 | 179 | 191.33 |
| 800 | 261 | 191 | 204 | 218.66 |
| 900 | 294 | 215 | 230 | 246.33 |
| 1000 | 331 | 243 | 260 | 278 |

Resultant Gradient of = 0.279

Giving in a result for the refractive index of air using equation (3) as 1.0003

Section 2 Results

|  |  |
| --- | --- |
| Delta Degree (°) | 3 |
| Mercury Light Wavelength (m) | 5.461 \* 10-7 |
| Compensator Plate Thickness (m) | 8.02 \* 10-3 |

|  |  |  |  |
| --- | --- | --- | --- |
| Degrees from Initial Inclination | Fringe Orders Passed Count 1 | Fringe Orders Passed Count 2 | Fringe Orders Passed Count 3 |
| 0 | 0 | 0 | 0 |
| 0.5 | 2 | 2 | 2 |
| 1 | 3 | 3 | 2 |
| 1.5 | 2 | 3 | 2 |
| 2 | 3 | 2 | 3 |
| 2.5 | 3 | 3 | 3 |
| 3 | 3 | 2 | 3 |
| Total Counts Passed | 14 | 15 | 16 |
| Average Counts Passed | 15 | | |

Giving a result for the refractive index of the compensator plate glass using equation (4) as

1.5938

Section 3 Results

|  |  |
| --- | --- |
| Pipe Length (m) | 0.525 |
| Mercury Light Wavelength (m) | 5.461 \* 10-7 |
| Compensator Plate Thickness (m) | 8.02 \* 10-3 |

|  |  |
| --- | --- |
| Coloured Fringe Location 1 (θ1) | 20° |
| Coloured Fringe Location 2 (θ2) | 31.5° |
| Number of Fringes Passed between θ1 and θ2 in Mercury Green Light | 270 |

Giving a result for the refractive index of air using white light using equation (5) as

1.0003

