Coefficient of Friction

Valve 1

Distance (m) | Avg  | St. Dev. | 95% Conf.
--- | --- | --- | ---
10 | 0.08 | 0.03 | ±0.03
20 | 0.08 | 0.05 | ±0.05
30 | 0.06 | 0.04 | ±0.05
40 | 0.08 | 0.09 | ±0.09
50 | 0.10 | 0.08 | ±0.09
60 | 0.10 | 0.10 | ±0.10
70 | 0.09 | 0.10 | ±0.11
80 | 0.13 | 0.08 | ±0.09
90 | 0.13 | 0.11 | ±0.12

Valve 2

Distance (m) | Avg  | St. Dev. | 95% Conf.
--- | --- | --- | ---
10 | 0.08 | 0.09 | ±0.10
20 | 0.10 | 0.10 | ±0.11
30 | 0.06 | 0.02 | ±0.02
40 | 0.07 | 0.06 | ±0.07
50 | 0.08 | 0.02 | ±0.02
60 | 0.08 | 0.05 | ±0.06
70 | 0.06 | 0.05 | ±0.05
80 | 0.04 | 0.04 | ±0.05
90 | 0.06 | 0.06 | ±0.06

Overall Average Below Computed From All Data Points Regardless of Distance

Valve 1 Coef. Of Friction

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<td>0.03</td>
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Valve 2 Coef. Of Friction

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<tr>
<td>95% Conf.</td>
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<tr>
<td>Sample</td>
<td>Valve 1</td>
<td>Valve 2</td>
<td></td>
</tr>
<tr>
<td>----------</td>
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<td>---------</td>
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<tr>
<td>Avg</td>
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<td>7177</td>
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<tr>
<td>St. Dev.</td>
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<tr>
<td>95% Conf.</td>
<td>± 9.183</td>
<td>±64.31</td>
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**Wear Depth Histogram (Bin Size = 60nm)**

- **Wear Depth**
- **Counts**
- **Maximum Wear Depth (nm)**

![Wear Depth Histogram](image)
Hardness

**Hardness at 200nm (Bin = 0.5GPa)**

Counts

Hardness (GPa)

- Valve 1 - 200nm
- Valve 2 - 200nm

**Hardness at 300nm (Bin = 0.5GPa)**

Counts

Hardness (GPa)

- Valve 1 - 300nm
- Valve 2 - 300nm

**Hardness at 500nm (Bin = 0.5GPa)**

Counts

Hardness (GPa)

- Valve 1 - 500nm
- Valve 2 - 500nm
Valve 1 | H (GPa) @ indentation depth
--- | --- | --- | ---
Test | 200 nm | 300 nm | 500 nm
Avg | 3.6 | 3.6 | 3.9
St. Dev. | 1.0 | 0.8 | 0.5
95% Conf. | ±0.7 | ±0.6 | ±0.4

Valve 2 | H (GPa) @ indentation depth
--- | --- | --- | ---
Test | 200 nm | 300 nm | 500 nm
Avg | 3.8 | 4.0 | 4.0
St. Dev. | 0.6 | 0.3 | 0.3
95% Conf. | ±0.4 | ±0.2 | ±0.2

Overall Average Below Computed From All Data Points Regardless of Indentation Depth.

Valve 1 | Hardness (GPa)
--- | ---
Avg | 3.7
St. Dev. | 1.1
95% Conf. | 0.4

Valve 2 | Hardness (GPa)
--- | ---
Avg | 3.9
St. Dev. | 0.9
95% Conf. | 0.4