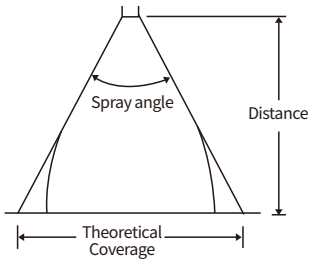
## Spray Angle and Coverage

The spray flow rate increases or decreases in direct proportion to the square root of the spray pressure under the same medium condition, and the flow rate of any nozzle under a certain pressure can be calculated. If the known spray flow rate is Q1 and the corresponding pressure is F1, and if the known pressure is F2, the unknown flow rate Qx is calculated as follows: The theoretical coverage of the spray shape listed in this table is calculated according to the spray Angle and the distance from the nozzle mouth. These values are based on the assumption that the base spray Angle remains constant throughout the spray distance. In practical applications, the spray Angle listed in the table is not applicable to the spray distance, the actual spray coverage data.

The spray Angle included in the table shows approximate spray coverage with water as the basic. In the actual spray, the effective spray Angle is measured by the spray distance surface, if the required spray coverage is critical, specific spray coverage data. When the liquid is compared to water, the spray Angle formed is relatively small (or even forms a liquid column flow), and the Angle depends on the viscosity, nozzle flow rate and injection pressure. A liquid whose surface pressure is lower than water produces a spray Angle that is relatively wider than that listed by water.




| Spray Angle | Theoretical coverage at different distances (cm) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | 15 | 2米 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 100 |
| 5° | 0.4 | 0.9 | 1.3 | 1.8 | 2.2 | 2.6 | 3.5 | 4.4 | 5.2 | 6.1 | 7 | 8.7 |
| 10° | 0.9 | 1.8 | 2.6 | 3.5 | 4.4 | 5.3 | 7 | 8.8 | 10.5 | 12.3 | 14 | 17.5 |
| 15° | 1.3 | 2.6 | 4.0 | 5.3 | 6.6 | 7.9 | 10.5 | 13.2 | 15.8 | 18.4 | 21.1 | 26.3 |
| 20° | 1.8 | 3.5 | 5.3 | 7.1 | 8.8 | 10.6 | 14.1 | 17.6 | 21.2 | 24.7 | 28.2 | 35.3 |
| 25° | 2.2 | 4.4 | 6.7 | 8.9 | 11.1 | 13.3 | 17.7 | 22.2 | 26.6 | 31.0 | 35.5 | 44.3 |
| 30° | 2.7 | 5.4 | 8.0 | 10.7 | 13.4 | 16.1 | 21.4 | 26.8 | 32.2 | 37.5 | 42.9 | 53.6 |
| 35° | 3.2 | 6.3 | 9.5 | 12.6 | 15.8 | 18.9 | 25.2 | 31.5 | 37.8 | 44.1 | 50.5 | 63.1 |
| 40° | 3.6 | 7.3 | 10.9 | 14.6 | 18.2 | 21.8 | 29.1 | 36.4 | 43.7 | 51.0 | 58.2 | 72.8 |
| 45° | 4.1 | 8.3 | 12.4 | 16.6 | 20.7 | 24.9 | 33.1 | 41.4 | 49.7 | 58.0 | 66.3 | 82.8 |
| 50° | 4.7 | 9.3 | 14.0 | 18.7 | 23.3 | 28.0 | 37.3 | 46.6 | 56.0 | 65.3 | 74.6 | 93.3 |
| 55° | 5.2 | 10.4 | 15.6 | 20.8 | 26.0 | 31.2 | 41.7 | 52.1 | 62.5 | 72.9 | 83.3 | 104 |
| 60° | 5.8 | 11.6 | 17.3 | 23.1 | 28.9 | 34.6 | 46.2 | 57.7 | 69.3 | 80.8 | 92.4 | 115 |
| 65° | 6.4 | 12.7 | 19.1 | 25.5 | 31.9 | 38.2 | 51.0 | 63.7 | 76.5 | 89.2 | 102 | 127 |
| 70° | 7.0 | 14.0 | 21.0 | 28.0 | 35.0 | 42.0 | 56.0 | 70.0 | 84.0 | 98.0 | 112 | 140 |
| 75° | 7.7 | 15.4 | 23.0 | 30.7 | 38.4 | 46.0 | 61.4 | 76.7 | 92.1 | 107 | 123 | 153 |
| 80° | 8.4 | 16.8 | 25.2 | 33.6 | 42.0 | 50.4 | 67.1 | 83.9 | 101 | 118 | 134 | 168 |
| 85° | 9.2 | 18.3 | 27.5 | 36.7 | 45.8 | 55.0 | 73.6 | 91.6 | 120 | 128 | 147 | 183 |
| 90° | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 80.0 | 100 | 131 | 140 | 160 | 200 |
| 95° | 10.9 | 21.8 | 32.7 | 43.7 | 54.6 | 65.5 | 87.3 | 109 | 143 | 153 | 175 | 218 |
| 100° | 11.9 | 23.8 | 35.8 | 47.7 | 59.6 | 71.5 | 95.3 | 119 | 171 | 167 | 191 | 238 |
| 110° | 14.3 | 28.6 | 42.9 | 57.1 | 71.4 | 85.7 | 114 | 143 | 208 | 200 | 229 | 286 |
| 120° | 17.3 | 34.6 | 52.0 | 69.1 | 86.6 | 104 | 139 | 173 | 257 | 243 | - | - |
| 130° | 21.5 | 42.9 | 64.3 | 69.3 | 107 | 129 | 172 | 215 | - | - | - | - |
| 140° | 27.5 | 55.0 | 82.4 | 85.8 | 137 | 165 | 220 | 275 | - | - | - | - |
| 150° | 37.3 | 74.6 | 112.0 | 110 | 187 | 224 | 299 | - | - | - | - | - |
| 160° | 56.7 | 113 | 170.0 | 149 | 284 | - | - | - | - | - | - | - |
| 170° | 114 | 229 | - | 227 | - | - | - | - | - | - | - | - |

## Flow and Pressure

The spray flow rate increases or decreases roughly in direct proportion to the square root of the spray pressure under the same medium condition, and the flow rate of any nozzle under a certain pressure can be calculated
For the flow rate of any pressure, let the known spray flow rate be Q and the corresponding pressure be F. When the known pressure is F, the unknown flow rate Q is obtained, and the relationship is as follows

$$\frac{Q_{1流量}(L/min)}{Q_{x流量}(L/min)} = \frac{\sqrt{F_1压力(kg)}}{\sqrt{F_2压力(kg)}} \quad 即 \quad Q_x = Q_1\sqrt{\frac{F_2压力(kg)}{F_1压力(kg)}}$$

## Different materials of nozzle have different effects on the wear resistance of liquid

Due to the high-speed flow of the body at the nozzle mouth, the nozzle part is often subjected to wear, different chemical liquids have different pH and viscosity, the wear of the nozzle will cause different effects, different materials of the same pH and viscosity wear is different, ceramic (SIS) hardness is 7, its wear resistance is 20-30 times that of stainless steel, But the ceramic is easy to break, not easy to make, the wear resistance of the alloy is also quite high, but the production cost is high, the use of stainless steel nozzle is very wide, because its wear resistance is better, although the price is higher than plastic, but far lower than alloy and ceramics, so it has been vigorously promoted. Engineering plastic material has poor wear resistance, but its production cost is low, chemical resistance is particularly good, is the most used class of nozzles.