

# SPRAY PERFORMANCE CONSIDERATIONS



TECHNICAL  
REFERENCE



## IMPACT

Impact, or the impingement of a spray onto the target surface, can be expressed in several different ways. The most useful impact value with regard to spray nozzle performance is the impact per square inch (cm). Basically, this value depends on the spray pattern distribution and spray angle. To obtain the impact per square inch (cm) [pounds (kg)-force per square inch (cm)] of a given nozzle, first determine the theoretical total impact using the following formula.

$$I = K \times Q \times \sqrt{P}$$

**I:** Total theoretical spray impact

**K:** Constant

**Q:** Flow rate

**P:** Liquid pressure

<b>I</b>	pounds	kilograms
<b>K</b>	.0526	.024
<b>Q</b>	gpm	l/min
<b>P</b>	psi	kg/cm <sup>2</sup>

Then, from the chart on the right, obtain the impact per square inch (cm) as a percent of the theoretical total impact and multiply by the theoretical total. The result is the unit impact in lbs.-f/sq. inch (kg/cm<sup>2</sup>) at 12" (30 cm) distance from the nozzle.

The highest unit impact in lbs.-f/sq. inch (kg/cm<sup>2</sup>) is provided by solid stream nozzles and can be closely approximated by the formula: 1.9 x [spraying pressure, psi (bar)]. As with all spray patterns, the unit impact decreases as the distance from the nozzle increases, thereby increasing the impact area size.

### UNIT IMPACT PER SQ. INCH (CM)\*

Spray Pattern	Spray Angle	Percent of Theoretical Total Impact
Flat Fan	15°	30%
	25°	18%
	35°	13%
	40°	12%
	50°	10%
	65°	7.0%
	80°	5.0%
Full Cone	15°	11%
	30°	2.5%
	50°	1.0%
	65°	0.4%
	80°	0.2%
	100°	0.1%
Hollow Cone	60°, 80°	1.0 to 2.0%

\*At 12" (30 cm) distance from the nozzle.

## OPERATING PRESSURE

The values given in the tabulation sections of this catalog indicate the most commonly used pressure ranges for the associated spray nozzle or accessory. Some spray nozzles and accessories can perform below or above the pressures shown, while others can be modified at our factory or redesigned to accommodate the requirements of specific new applications.

**Contact your local Spraying Systems Co. sales engineer if your application requires pressure ranges beyond those stated in this catalog.**



**Spraying Systems Co.**  
Experts in Spray Technology

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