- Fine (No. 60): All particles pass through a No. 60 sieve, and not more than 40% pass through a No. 100 sieve.
- Very fine (No. 80): All particles pass through a No. 80 sieve. There is no limit to greater fineness.

Granules typically fall within the range of 4- to 12-sieve size, although granulations of powders prepared in the 12- to 20-sieve range are sometimes used in tablet making.

- Dissolution rate of particles intended to dissolve; drug micronization can increase the rate of drug dissolution and its bioavailability.
- Suspendability of particles intended to remain undissolved but uniformly dispersed in a liquid vehicle (e.g., fine dispersions have particles ~0.5 to 10 μm)
- Uniform distribution of a drug substance in a powder mixture or solid dosage form to ensure dose-to-dose content uniformity (3)
- Penetrability of particles intended to be inhaled for deposition deep in the respiratory tract (e.g., 1 to 5 μm) (4)
- Lack of grittiness of solid particles in dermal ointments, creams, and ophthalmic preparations (e.g., fine powders may be 50 to 100 μm in size)

A number of methods exist for the determination of particle size, including the following (Physical Pharmacy Capsule 6.1):

PHYSICAL PHARMACY CAPSULE 6.1

Micromeritics

Micromeritics is the science of small particles; a particle is any unit of matter having defined physical dimensions. It is important to study particles because most drug dosage forms are solids, solids are not static systems, the physical state of particles can be altered by physical manipulation, and particle characteristics can alter therapeutic effectiveness.

Micromeritics is the study of a number of characteristics, including particle size and size distribution, shape, angle of repose, porosity, true volume, bulk volume, apparent density, and bulkiness.

PARTICLE SIZE

A number of techniques can be used to determine particle size and size distributions. Particle size determinations are complicated by the fact that particles are not uniform in shape. Only two relatively simple examples are provided for a detailed calculation of the average particle size of a powder mixture. Other methods are generally discussed. The techniques used include the microscopic method and the sieving method.

The microscopic method can include not fewer than 200 particles in a single plane using a calibrated ocular on a microscope. Given the following data, what is the average diameter of the particles?

SIZE OF COUNTED PARTICLES (μM)	MIDDLE VALUE μM "D"	NO. OF PARTICLES PER GROUP "N"	"ND"
40–60	50	15	750
60–80	70	25	1,750
80–100	90	95	8,550
100–120	110	140	15,400
120–140	130	80	10,400
		$\sum n = 355$	$\sum nd = 36,850$