

# MESH SIZE VS MICRON SIZE

A Technical Guide for Irrigation & Water Filtration Professionals

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## WHY MESH VS. MICRON CAUSES CONFUSION

Ask ten people to define mesh and micron, and you'll hear twelve different answers.

Some use the terms interchangeably. Others assume "100 mesh" equals "100 micron."

It doesn't.

Mesh refers to the number of openings per inch in a screen.

Micron is a unit of measurement for particle size.

Because wire diameter, weave style, and filter media all affect real-world performance, the same filtration requirement can be described in very different ways—leading to confusion in specifications, quotes, and system performance.

## PURPOSE OF THIS GUIDE

This guide is built for the field.

It gives you clear, practical explanations and rules of thumb so you can:

- Specify filtration with confidence
- Match filters to real-world conditions
- Avoid pressure drop and clogging issues
- Communicate clearly with customers and teams

By the end, you'll know when to use mesh, when to use micron, and how to translate between them.

## QUICK COMPARISON: MESH VS MICRON

### Mesh Size

- Measures openings per inch in a screen
- Common in screens, strainers, and disc filters
- Best for larger debris, sand, and grit

### Micron Size

- Measures particle size in micrometers ( $\mu\text{m}$ )
- Common in cartridge, bag, and membrane filters
- Best for fine particles, silt, and contaminants

## DEFINITIONS & PRACTICAL MATH

Mesh (M): number of openings per inch

Wire diameter (d): thickness of screen wire

Clear opening (a):  $a \approx (1 / M) - d$

Convert to microns by multiplying inches  $\times 25,400$

Percent Open Area (POA): higher POA results in lower pressure drop

Micron rating:

- Nominal: captures a percentage of particles at a given size
- Absolute: captures approximately 99% at the rated size

## FIELD CONVERSIONS (SIMPLIFIED)

- 20 mesh  $\approx 840 \mu\text{m}$  – Coarse debris, leaves
- 40 mesh  $\approx 420 \mu\text{m}$  – General irrigation
- 60 mesh  $\approx 250 \mu\text{m}$  – Drip pre-filtration
- 80 mesh  $\approx 180 \mu\text{m}$  – Nozzle protection
- 100 mesh  $\approx 150 \mu\text{m}$  – Drip emitters

## KEY RULE: PROTECT THE SMALLEST OPENING

### **Rule of thumb:**

Filter opening should be less than or equal to one-tenth of the smallest downstream orifice.

## PRESSURE DROP ( $\Delta P$ ) MADE SIMPLE

Clean system targets:

- Screens: 1–2 psi
- Cartridges: 2–3 psi

Service threshold:

- Clean or replace at 5–7 psi

If pressure drop is too high:

- Increase filter size
- Increase surface area
- Reduce flow per filter
- Add staged filtration

## CONTAMINANT PROFILES BY SOURCE

**Shallow wells:** Sand, fines, iron bacteria – 40–80 mesh + 100–50 µm cartridge

**Deep wells:** Scale, fine silt – 80–100 mesh + 50–20 µm cartridge

**Surface water:** Leaves, algae, biofilm – 40–60 mesh with auto-flush

**Municipal water:** Low solids with occasional debris – 60–100 mesh + 25–5 µm where needed

## STAGED FILTRATION EXAMPLES

Golf course pump station (3,000 gpm):

- Stage 1: 40 mesh automatic screens
- Stage 2: 100 mesh disc filters

Sports complex drip system (120 gpm):

- Stage 1: 80 mesh strainer
- Stage 2: 100 µm cartridge filters

Well water nursery (60 gpm):

- Stage 1: sand separator
- Stage 2: 60 mesh screen
- Stage 3: 50 µm cartridge

## MATERIALS & DURABILITY

Use 304/316 stainless steel for strength and temperature resistance (316 recommended for chlorides).

Use polymer housings for corrosion resistance.

Verify seal compatibility when using chemicals such as chlorine or acids.