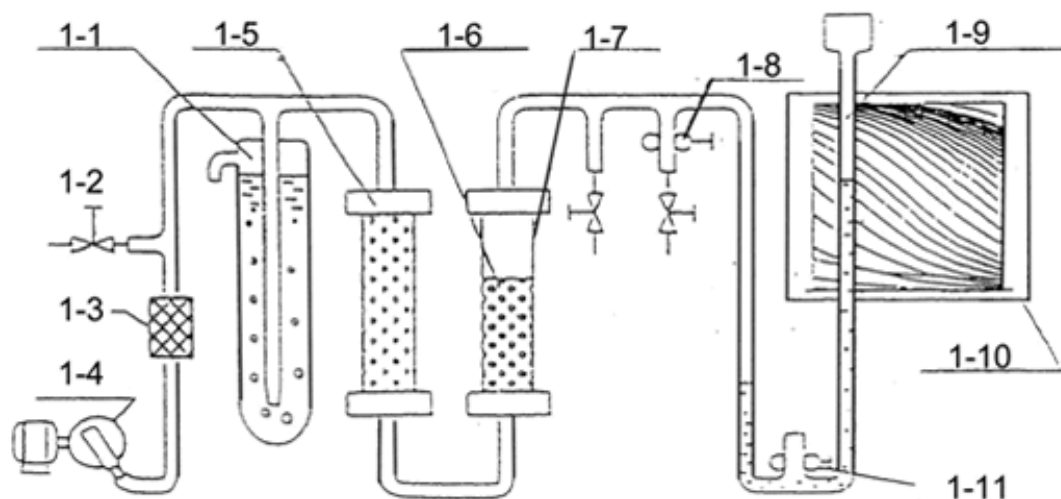


Fisher Sub Sieve Sizer Principle and Results Calculation

HMK-22 Fisher Sub-Sieve Sizer consists of air pump, air filter, constant pressure regulator, pressure control, sample tube, high needle valve, low needle valve, manometer, calculator chart and sub-sieve sizer calibrator etc.

Turn on HMK-22, the air pump generates compressed air and the air passes air filter to filter out impurities, after constant pressure regulator, the air goes through the dryer made up of allochroic silicagel to dehydrate, then the air enters sample tube, after passing through the packed powder sample, part of compressed air enters manometer, read on the calculator chart average particle size (Fisher Number) according to the water level height in manometer, excessive air exits via high needle valve. There is void among tested particles, pressure drop ΔP is generated after passing the tested powders, when the mass of powder is fixed, the bigger the particle is, the bigger the void among particles is therefore more easily the air passes the powder and the smaller pressure drop is and the higher the manometer water level is and the bigger the size on the calculator chart is, vice versa. The obtained value is averaged particle diameter of surface area of tested powders.



- 1-1 Constant Pressure Regulator
- 1-2 Pressure Control
- 1-3 Air Filter
- 1-4 Air Pump
- 1-5 Dryer
- 1-6 Packed Powder Sample
- 1-7 Sample Tube
- 1-8 Range Control
- 1-9 Manometer
- 1-10 Calculator Chart
- 1-11 Manometer Level Control

$$d_{vs} = 6 \times 10^4 \cdot \sqrt{k \cdot \frac{(1-\epsilon)^2}{g \epsilon^3} \cdot \frac{\eta L u}{\Delta P}}$$

d_{vs} (Fisher Number)- average diameter in microns (one micron = 10⁻⁶ meters)

k- shape factor

g- acceleration of gravity

ϵ - powder porosity (percentage of voids of tested sample)

η - viscosity of air

L- length or height of compacted sample in cm (measured by operator)

u- flow rate passing sample layer in cm/second

[HMK-22 Fisher Sub-Sieve Sizer](#)