SIEVE SHAKERS & COFFEE

Selecting the right sieve shaker for your coffee needs is fairly simple.

Sieve shakers are used for grading coffee beans by size, using round hole perforated plate sieves, ISO 4150,

and for providing particle size distribution for coffee grinds, using wire mesh sieves ASTM E-11/ISO 3310.

Most of the early coffee grind studies were done using RoTap Sieve Shakers, because that was the technology 50 years ago. The RoTap Sieve Shaker is designed to simulate sieving by hand, because that is the simplest direct standard . They are very effective at separating particles, but require a sound isolation cabinet because of the high noise levels.

Because of that, a number of manufacturers, including the makers of the RoTap, have developed sieve shakers using vibration, as a quieter solution. Many employ advanced digital controls, that allow the user to program the amplitude, and intermittent sieving functions. (Sieve shaker stops and starts, to allow particles to rest, and then be agitated during the process)

If you plan on using a sieve shaker for grading green coffee beans by machine, (Hand Screens are also available for sieving manually) there are 8 inch diameter (200 mm) sieves, and 12 inch (300 mm) available. It takes more time for the same amount of coffee beans to drop through a stack of 8 inch sieves, than a stack of 12 inch sieves, because there is less surface area, and the other beans get more in the way.

However, you can only fit 4 or 5 full height 12 inch sieves on a shaker, so many opt for half height. Half height 8 inch sieves, may not be able to hold enough beans to provide for an effective distribution analysis. No matter what, you have to figure out how many sieves you need to to run at one time, and get a sieve shaker that allows you to do what you need. **Sieve capacities are listed below.**

Another factor in time and accuracy, is how the sieve shaker operates. 3D Motion is a premium vibratory shaker feature, that ensures the particles are moved in a manner that facilitates finding the right hole size. RoTaps use a 2D rotating tapping motion to achieve that result.

Over time, many sieving programs fall by the wayside, either because of noise, banged up sieves, or lapse in understanding the basics of sieve analysis.

The first step is to establish a benchmark, and find the actual endpoint of your sieve analysis. **The way to do this is sieve your material, until with one additional minute of sieving, the amount retained on any one sieve changes less than 1% (.1% for audits)**. Once you have an endpoint you know how long to sieve for. This is important, because when you ask many people, how long they sieve for, you'll hear 5 minutes, or 15 minutes a lot, without any explanation.

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ANALYTICAL EQUIPMENT

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	MFR	MODEL	MAX SIEVE DIAMETER	3-D MOTION	MAX FULL HEIGHT SIEVES	MAX HALF HEIGHT SIEVES	ADVANCED DIGITAL CONTROL	BEANS	GRINDS
BROCHURE	Filtra	IRIS FTS0200	200 mm / 8 inch	Y	7	14	Y	Y	Y
BROCHURE	Filtra	IRIS FTL0200	200 mm / 8 inch	Y	8	16	Y	Y	Y
BROCHURE	Filtra	IRIS FTL0300	300 mm / 12 inch	Y	5	8	Y	Y	Y
BROCHURE	Endecotts	M200	200 mm/ 8 inch	N	8	16	N	Y	Y
BROCHURE	Endecotts	D200	200 mm / 8 inch	Y	8	16	Y	Y	Y
BROCHURE	Endecotts	EFL	300 mm / 12 inch	Y	6	12	Y	Y	Y
BROCHURE	WS Tyler	RX-29	200 mm/8 inch	N	6	13	N	Y	Y
BROCHURE	WS Tyler	RX-30	300 mm/12 inch	N	4	8	N	Y	Y
BROCHURE	WS Tyler	L3P	3.5 inch	Y	6	NA	Y	N	Y

If you are planning on using a sieve shaker for coffee grinds, there are 6 basic sieves generally used.
ASTM 12 16 20 30 40 50 60 . How much coffee is retained on each sieve, determines whether the coffee grinds will provide optimal extraction levels, for different coffee profiles, like regular, drip, AutoDrip Silex, fine, turkish, espresso, etc....
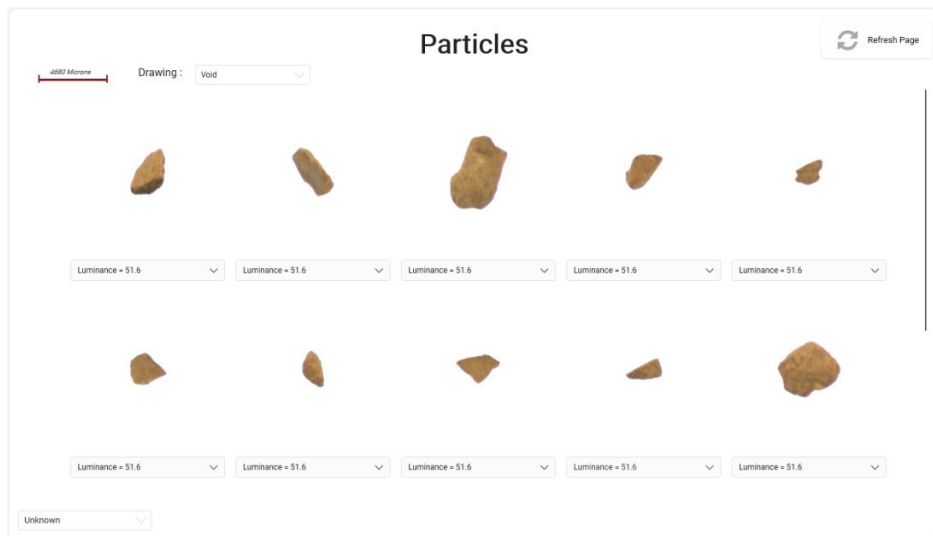
Endpoint determination is especially important here, for each coffee sample type. Advanced digital controls, including programmable adjustable amplitude, and intermittent sieving, will allow the user to program repeatable profiles for different coffee types.

We included the sonic sifter for coffee grinds, as our best (also most expensive) sifter for coffee grinds. From our own testing, it takes about 2 minutes for a test, requires only ten grams of sample, and has small 3.5 inch clear acrylic sieves. You can run 10 tests on this, in the time it takes to run one test on a standard sieve shaker. The results match up with particle size analyzers using digital image analysis, very well.

Digital Image Analysis takes a picture of every particle, and provides shape and size analysis, to provide size parameters.
This allows its' results to match results obtained through sieve analysis.
It also has the capability, of simply counting pixels, which results would match those provide by laser diffraction.

It is important to understand that, like RoTaps, laser diffraction was the earliest method employed, and is is still used by many labs.
Laser diffraction results, differ from sieve analysis results, as well as results obtained from dynamic digital analysis.
The reason for this, is that laser diffraction analyzers are unable to distinguish shape.

Coffee particles are not perfectly round. In the below example, laser diffraction would read the particle size, but if the particle fell through a sieve aperture,
it may fall through on it's narrow side, or even on a diagonal.

See how it works

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