VIBRATORY SIEVE SHAKER AS 200 CONTROL

Worldwide comparability of results

The microprocessor-controlled measuring and control unit of this model ensures a constant vibration height, allowing for 100% reproducibility of results even among different AS 200 control shakers. One particular characteristic makes this RETSCH product stand out from others: Instead of the vibration height, it is possible to set the sieve acceleration which is independent of the power frequency. Together with the possibility of calibration, this ensures comparable and reproducible sieving results worldwide. Thus, all requirements for the test materials monitoring according to DIN EN ISO 9001 are met.

All sieving parameters – vibration height, time, and interval – are set, displayed and monitored digitally which makes operation of the AS 200 control very convenient and quick. Up to 99 standard operating procedures (SOPs) may be stored for routine analyses.

Through the integrated interface the instrument can be connected to a PC and controlled with the evaluation software EasySieve®. This program enables the user to carry out the whole sieving process and its subsequent documentation with convenience, accuracy and conforming to standards.

Click to view video

Product Video

ACCURACY & EFFICIENCY

- Sieving with 3-D effect
- For sieves up to (Ø) 203 mm
- Suitable for dry and wet sieving
- Measuring range 20 µm to 25 mm
- Memory for 99 Standard Operating Procedures (SOPs)
- Digital setting and control of sieving parameters
- Sieve acceleration independent of power frequency
- Patented electromagnetic drive (EP 0642844)
- Test materials monitoring according to DIN EN ISO 9001

VIBRATORY SIEVE SHAKER AS 200 CONTROL

SAFE AND SIMPLE OPERATION

Operation of the AS 200 control is convenient and easy. All sieving parameters – vibration height, time, interval – are set, displayed and monitored digitally. Up to 99 parameter combinations (SOPs) can be stored for routine analyses. Through the integrated interface the instrument can be connected to a PC and controlled with the evaluation software EasySieve®. This program enables the user to control the whole sieving process and the subsequent documentation with convenience and accuracy.

VIBRATORY SIEVE SHAKER AS 200 CONTROL

WET SIEVING WITH VIBRATORY SIEVE SHAKERS

There are many applications for which wet sieving is the best solution, e.g. when the material to be tested is a suspension or when a very fine sample (< 45 µm) that tends to agglomerate needs to be sieved. All vibratory sieve shakers from RETSCH can be used for wet sieving. There are special accessories like clamping lids with spray nozzle and collecting pans with outlet available. By placing RETSCH's venting rings between the sieves, air cushions can expand without letting liquid or sample material escape.

ACCESSORIES & OPTIONS

The sieve shakers of the control series can be equipped with a variety of accessories to provide for a wealth of application requirements.

Clamping units

With the RETSCH clamping devices the sieves are clamped safely, quickly and conveniently on the sieve shaker. The clamping devices “comfort” are particularly user-friendly and timesaving.

Accessories for test sieves

Collecting pans, intermediate pans, intermediate rings and sieve lids.

Accessories for wet sieving

Clamping lid with nozzle, collecting pans with outlet, venting rings.

Sieving Aids

Chain rings, brushes, cubes, balls (e.g. for reducing agglomerations when sieving particles < 100 µm and keeping the mesh free).

IQ/OQ Documents

We provide IQ/OQ documentation for the „control“ sieve shakers to support IQ/OQ certification by our customers.

Sample Dividers

Meaningful results can only be obtained if the sample represents the original material. Sample dividers produce representative part samples, thus ensuring reproducibility of the analysis.

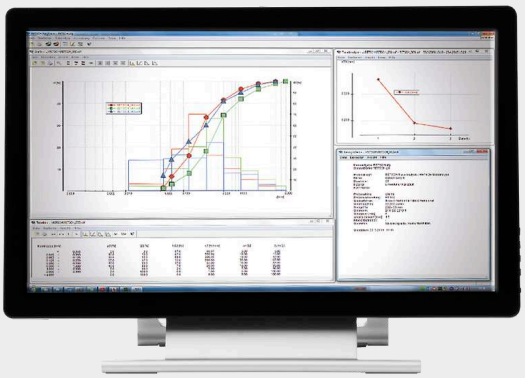
Ultrasonic baths and dryers

Suitable for thorough cleaning of test sieves and for quick, gentle drying of samples and sieves.

RETSCH TEST SIEVES AND ACCESSORIES - ENGINEERED FOR SUPERIOR PERFORMANCE

EASYSIEVE / EASYSIEVE CFR EVALUATION SOFTWARE

EasySieve, the software for particle size analyses, exceeds manual evaluation in many aspects. The software is able to automatically control the necessary measurement and weighing procedures – from the registration of the weight of the sieve up to the evaluation of the data. It is simple and convenient to use and is also available in an FDA 21 CFR Part 11-conform version.



VIBRATORY SIEVE SHAKER AS 200 CONTROL

TYPICAL SAMPLE MATERIALS

Vibratory sieve shakers are frequently used for grain size analysis of cement clinker, chemicals, coffee, construction materials, fertilizers, fillers, flours, grains, metals powders, minerals, nuts, plastics, sand, seeds, soils, washing powder, etc.

coffee

soil

cereals

Click to view video

Soy beans

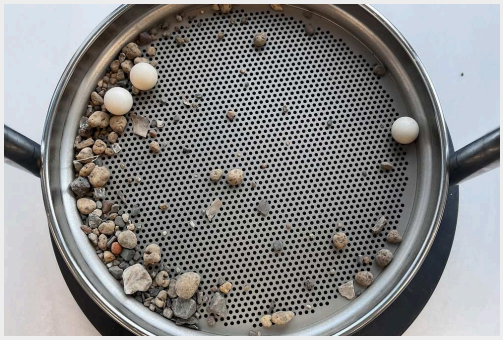
To find the best solution for your sample preparation task, visit our application database.

APPLICATION EXAMPLES

EFFICIENT SEPARATION OF STONES FROM UP TO 9 SOIL SAMPLES WITH THE AS 200 CONTROL

In soil analysis, sieving with the AS 200 control prevents distortion of analytical results, reliably separates rocks from soil samples, and simultaneously minimizes equipment damage. Users achieve time-saving and precise analytical results, while maximizing the service life of their devices.

Unbeatable Together: The AS 200 control in combination with the BB 50 jaw crusher is the proven solution for processing large agglomerates from soil samples and can handle up to nine samples in one batch.



After

A 120 g soil sample with agglomerates up to 15 mm in diameter was processed using a 200 x 25 mm sieve with 2 mm round holes.

APPLICATION AT COLOGNE CATHEDRAL – OPTIMAL PROTECTION FOR HISTORICAL STONE SURFACES

The Cologne Cathedral workshop has relied on the AS 200 control for many years to precisely determine particle size distribution in mortar. Various particle fractions can be accurately separated and combined. The goal is to develop mortar with optimal structure and color that almost perfectly replicates the original stone. The use of the AS 200 control eliminates manual sorting, making mortar production more reproducible and efficient.

The result: mortar with the physical properties to fill cracks and simultaneously prevent water penetration.

BEFORE - AFTER

HIGHEST FOOD QUALITY WITH THE AS 200 CONTROL

At Lebensgarten GmbH, the quality of organic cereal flakes is ensured through precise incoming goods inspections. Sieving analysis separates the flakes into different particle size fractions. Special importance is given to the dust fraction of the product with a particle size < 500 µm. This can impair the sealing of packaging on the one hand and negatively affect the consistency of crunchy products on the other.

The patented electromagnetic drive and the three-dimensional throwing motion of the AS 200 control ensure even distribution and optimal separation. Thanks to flexibly adjustable parameters such as amplitude and hole size, various types of flakes can be precisely sieved – ideal for checking raw material quality regarding dust and fine fractions and ensuring high quality in end products.

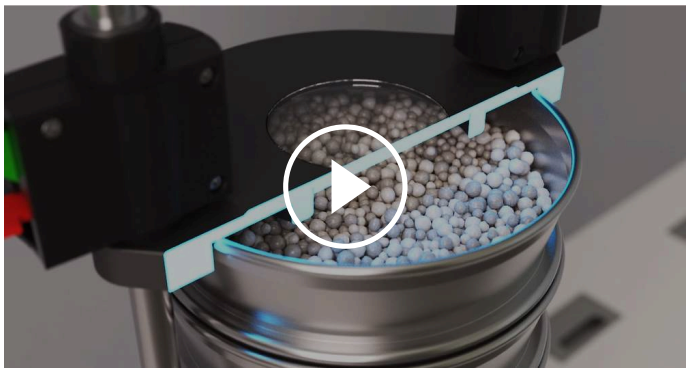




VIBRATORY SIEVE SHAKER AS 200 CONTROL

FUNCTIONAL PRINCIPLE

All sieve shakers of the series AS 200 work with an electromagnetic drive that is patented by RETSCH (EP 0642844). This drive produces a 3D throwing motion that moves the product to be sieved equally over the whole sieving surface. The advantage: high stress capacity, extremely smooth operation and short sieving times with high separation efficiency.



Click to view video

AS 200 CONTROL

TECHNICAL DATA

Applications	separation, fractioning, particle size determination
Field of application	agriculture, biology, chemistry / plastics, construction materials, engineering / electronics, environment / recycling, food, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	powders, bulk materials, suspensions
Measuring range*	20 µm - 25 mm
Sieving motion	throwing motion with angular momentum
Max. batch / feed capacity	3 kg
Max. number of fractions	11 / 22
Max. mass of sieve stack	6 kg
Amplitude	digital, 0.20 – 3.00 mm
Controlled amplitude	Yes
Sieve acceleration	1.0 - 15.1 g
Time display	digital, 1 - 99 min
Interval operation	1 - 99 s
Storable SOPs	99
Suitable for dry sieving	Yes
Suitable for wet sieving	Yes
USB interface	Yes
Including test certificate / can be calibrated	Yes
Suitable sieve diameters	100 mm / 200 mm / 203 mm (8")
Max. height of sieve stack	620 mm
Clamping devices	standard, "comfort", each for wet and dry sieving
Protection code	IP 21
Electrical supply data	100-240 V, 50/60 Hz
Power connection	1-phase
W x H x D	417 x 212 x 384 mm
Net weight	~ 35 kg
Standards	CE

*depending on feed material and instrument configuration/settings

www.retsch.com/as200control

ORDER DATA

VIBRATORY SIEVE SHAKERS AS 200

Vibratory Sieve Shakers AS 200 for test sieves up to 203 mm / 8" Ø
(please order clamping device, test sieves and collecting pan separately)

30.032.0001		AS 200 control, 100–240 V, 50/60 Hz, incl. test report acc. to EN 10204 2.2

other electrical versions available for the same price

CLAMPING DEVICES AS 200

		max. number of fractions, for test sieves Ø
32.662.0002		Clamping device "standard", 9 / 17, 200 / 203 mm Ø
32.662.0001		Clamping device "comfort", 9 / 17, 200 / 203 mm Ø
32.662.0005		Universal clamping device "standard", 9 / 17, 100 – 203 mm Ø
32.662.0004		Universal clamping device "comfort", 9 / 17, 100 – 203 mm Ø
32.662.0034		Universal clamping device "comfort", long,, 11 / 23, 100 – 203 mm Ø (only for AS 200 control)
32.662.0007		Universal wet sieving clamping device "standard", 9 / 17, 100 – 203 mm Ø
32.662.0006		Universal wet sieving clamping device "comfort", 9 / 17, 100 – 203 mm Ø

SIEVE STACKS AND ACCESSORIES AS 200

60.131.000999		Sieve stack consisting of 8 test sieves (ISO 3310-1), 200 mm Ø, 50 mm height (45 µm, 63 µm, 125 µm, 250 µm, 500 µm, 1 mm, 2 mm, 4 mm) and collecting pan
60.150.000999		Sieve stack consisting of 8 test sieves (ASTM E11), 203 mm (8") Ø, 50 mm (2") height (325 mesh, 230 mesh, 120 mesh, 60 mesh, 35 mesh, 18 mesh, 10 mesh, 5 mesh) and collecting pan

ACCESSORIES AS 200

03.243.0001	Rubber disc for sieve plate
99.200.0027	IQ/OQ Documentation for AS 200 control

[LL:iid.retsch.link_test_sieve_range]

ACCESSORIES FOR CLAMPING DEVICES AS 200, AS 300, AS 400

CLAMPING LIDS

32.481.0022		Clamping lid with large window of Perspex for test sieves 200/203 mm Ø
32.481.0014		Universal clamping lid with small window for test sieves 100/150/200/203 mm Ø
32.481.0015		Universal wet sieving lid with small window for test sieves 100/150/200/203 mm Ø

CLAMPING ELEMENTS

32.142.0001		Clamping nuts, (2 pieces) for clamping device “standard”
02.654.0004		Quick-clamping elements, (2 pieces) for clamping device “comfort” AS 200/300/400
05.114.0061		O-ring for quick-clamping element for AS 200, 1 piece

CLAMPING RODS

32.248.0002		Threaded rods, (2 pieces) for clamping device “standard”
32.248.0001		Threaded rods, short, (2 pieces) for clamping of max. 5 test sieves for clamping device “standard”
02.741.0057		Rods, smooth, (2 pieces) for clamping device “comfort” AS 200
03.741.0073		Rods, smooth, short, (2 pieces) for clamping of max. 5 test sieves for clamping device “comfort” AS 200
02.741.0088		Rods, smooth, long (2 pieces) for universal clamping device “comfort”, (only for AS 200 control (30.032.0001))

SIEVING AIDS

32.365.0001		Chain ring for test sieves 200 mm and 203 mm Ø to support horizontal sieving
32.050.0001		Brushes, 3 pieces
32.902.0001		Cubes of polyurethane, 12 x 12 x 12 mm, 10 pieces
32.902.0002		Cubes of polyurethane, 20 x 20 x 20 mm, 10 pieces
32.354.0001		Balls of rubber, 20 mm Ø, 5 pieces
32.354.0002		Balls of agate, 10 mm Ø, 10 pieces
32.354.0004		Balls of steatite, 6 mm Ø, 150 g

TEST SIEVE RACK

32.012.0001		Test Sieve Rack for 10 Test Sieves Ø 200 mm/8”, height 50 mm/25 mm

ACCESSORIES FOR TEST SIEVES (PANS, RINGS, LIDS)

FOR TEST SIEVES 200 MM Ø, HEIGHT 50 MM

69.720.0050		Collecting pan	stainless steel	200 mm Ø	height 50 mm
69.220.0050		Intermediate pan	stainless steel	200 mm Ø	height 50 mm
69.121.0050		Intermediate ring	stainless steel	200 mm Ø	height 50 mm
69.520.0051		Sieve lid	stainless steel	200 mm Ø	
69.420.0050		Collecting pan with outlet	stainless steel	200 mm Ø	height 50 mm

69.221.0025		Venting ring for wet sieving	stainless steel	200 mm Ø	height 25 mm
05.114.0174		O-ring for test sieves	200 mm Ø		

FOR TEST SIEVES 200 MM Ø, HEIGHT 25 MM

69.720.0025		Collecting pan, stainless steel, 200 mm Ø, height 25 mm
69.220.0025		Intermediate pan, stainless steel, 200 mm Ø, height 25 mm
69.121.0025		Intermediate ring, stainless steel, 200 mm Ø, height 25 mm
69.520.0051		Sieve lid, stainless steel, 200 mm Ø
69.420.0050		Collecting pan with outlet, stainless steel, 200 mm Ø, height 50 mm
69.221.0025		Venting ring for wet sieving, stainless steel, 200 mm Ø, height 25 mm
05.114.0174		O-ring for test sieves, 200 mm Ø

FOR TEST SIEVES 203 MM Ø / 8” Ø, HEIGHT 2”

69.720.3050		Collecting pan, stainless steel, 8” Ø, height 2”
69.220.3050		Intermediate pan, stainless steel, 8” Ø, height 2”
69.121.3050		Intermediate ring, stainless steel, 8” Ø, height 2”
69.520.3051		Sieve lid, stainless steel, 8” Ø
69.420.3050		Collecting pan with outlet, stainless steel, 8” Ø, height 2”
69.221.3025		Venting ring for wet sieving, stainless steel, 8” Ø, height 1”
05.114.0174		O-ring for test sieves, 8” Ø

FOR TEST SIEVES 203 MM Ø / 8” Ø, HEIGHT 1”		
69.720.3025		Collecting pan, stainless steel, 8” Ø, height 1”
69.220.3025		Intermediate pan, stainless steel, 8” Ø, height 1”
69.121.3025		Intermediate ring, stainless steel, 8” Ø, height 1”
69.520.3051		Sieve lid, stainless steel, 8” Ø
69.420.3050		Collecting pan with outlet, stainless steel, 8” Ø, height 2”
69.221.3025		Venting ring for wet sieving, stainless steel, 8” Ø, height 1”
05.114.0174		O-ring for test sieves, 8” Ø

FOR TEST SIEVES 100 MM Ø		
60.010.000100		Collecting pan, stainless steel, 100 mm Ø, height 40 mm
60.220.000100		Intermediate pan, stainless steel, 100 mm Ø, height 40 mm
60.935.000100		Intermediate ring, stainless steel, 100 mm Ø, height 40 mm
60.107.000100		Sieve lid, stainless steel, 100 mm Ø
60.010.100100		Collecting pan with outlet, stainless steel, 100 mm Ø, height 40 mm
05.114.0045		O-ring for test sieves, 100 mm Ø

TEST SIEVES Ø 200 MM - 50 MM HEIGHT - ISO 3310/1 - STAINLESS STEEL / WIRE GAUZE

	# mm	# mesh no.	ø	height	standard

60.131.000020	20 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000025	25 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000032	32 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000036	36 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000038	38 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000040	40 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000045	45 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000050	50 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000053	53 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000056	56 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000063	63 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000071	71 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000075	75 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000080	80 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000090	90 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000100	100 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000106	106 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000112	112 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000125	125 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000140	140 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000150	150 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000160	160 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000180	180 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000200	200 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000212	212 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000224	224 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000250	250 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000280	280 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000300	300 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000315	315 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000355	355 µm	-	200 mm	50 mm	ISO 3310/1

60.131.000400	400 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000425	425 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000450	450 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000500	500 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000560	560 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000600	600 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000630	630 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000710	710 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000800	800 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000850	850 µm	-	200 mm	50 mm	ISO 3310/1
60.131.000900	900 µm	-	200 mm	50 mm	ISO 3310/1
60.131.001000	1.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001120	1.12 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001180	1.18 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001250	1.25 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001400	1.40 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001600	1.60 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001700	1.70 mm	-	200 mm	50 mm	ISO 3310/1
60.131.001800	1.80 mm	-	200 mm	50 mm	ISO 3310/1
60.131.002000	2.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.002240	2.24 mm	-	200 mm	50 mm	ISO 3310/1
60.131.002360	2.36 mm	-	200 mm	50 mm	ISO 3310/1
60.131.002500	2.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.002800	2.80 mm	-	200 mm	50 mm	ISO 3310/1
60.131.003150	3.15 mm	-	200 mm	50 mm	ISO 3310/1
60.131.003350	3.35 mm	-	200 mm	50 mm	ISO 3310/1
60.131.003550	3.55 mm	-	200 mm	50 mm	ISO 3310/1
60.131.004000	4.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.004500	4.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.004750	4.75 mm	-	200 mm	50 mm	ISO 3310/1
60.131.005000	5.00 mm	-	200 mm	50 mm	ISO 3310/1

60.131.005600	5.60 mm	-	200 mm	50 mm	ISO 3310/1
60.131.006300	6.30 mm	-	200 mm	50 mm	ISO 3310/1
60.131.006700	6.70 mm	-	200 mm	50 mm	ISO 3310/1
60.131.007100	7.10 mm	-	200 mm	50 mm	ISO 3310/1
60.131.008000	8.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.009000	9.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.009500	9.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.010000	10.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.011200	11.20 mm	-	200 mm	50 mm	ISO 3310/1
60.131.012500	12.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.013200	13.20 mm	-	200 mm	50 mm	ISO 3310/1
60.131.014000	14.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.016000	16.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.018000	18.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.019000	19.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.020000	20.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.022400	22.40 mm	-	200 mm	50 mm	ISO 3310/1
60.131.025000	25.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.026500	26.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.028000	28.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.031500	31.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.035500	35.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.037500	37.50 mm	-	200 mm	50 mm	ISO 3310/1
60.131.040000	40.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.045000	45.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.050000	50.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.053000	53.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.056000	56.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.063000	63.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.071000	71.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.075000	75.00 mm	-	200 mm	50 mm	ISO 3310/1

60.131.080000	80.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.090000	90.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.100000	100.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.106000	106.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.112000	112.00 mm	-	200 mm	50 mm	ISO 3310/1
60.131.125000	125.00 mm	-	200 mm	50 mm	ISO 3310/1

TEST SIEVES Ø 200 MM - 25 MM HEIGHT - ISO 3310/1 - STAINLESS STEEL /WIRE GAUZE

	# mm	# mesh no.	ø	height	standard
60.122.000020	20 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000025	25 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000032	32 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000036	36 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000038	38 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000040	40 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000045	45 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000050	50 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000053	53 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000056	56 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000063	63 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000071	71 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000075	75 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000080	80 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000090	90 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000100	100 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000106	106 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000112	112 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000125	125 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000140	140 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000150	150 µm	-	200 mm	25 mm	ISO 3310/1

60.122.000160	160 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000180	180 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000200	200 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000212	212 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000224	224 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000250	250 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000280	280 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000300	300 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000315	315 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000355	355 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000400	400 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000425	425 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000450	450 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000500	500 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000560	560 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000600	600 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000630	630 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000710	710 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000800	800 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000850	850 µm	-	200 mm	25 mm	ISO 3310/1
60.122.000900	900 µm	-	200 mm	25 mm	ISO 3310/1
60.122.001000	1.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001120	1.12 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001180	1.18 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001250	1.25 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001400	1.40 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001600	1.60 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001700	1.70 mm	-	200 mm	25 mm	ISO 3310/1
60.122.001800	1.80 mm	-	200 mm	25 mm	ISO 3310/1
60.122.002000	2.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.002240	2.24 mm	-	200 mm	25 mm	ISO 3310/1

60.122.002360	2.36 mm	-	200 mm	25 mm	ISO 3310/1
60.122.002500	2.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.002800	2.80 mm	-	200 mm	25 mm	ISO 3310/1
60.122.003150	3.15 mm	-	200 mm	25 mm	ISO 3310/1
60.122.003350	3.35 mm	-	200 mm	25 mm	ISO 3310/1
60.122.003550	3.55 mm	-	200 mm	25 mm	ISO 3310/1
60.122.004000	4.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.004500	4.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.004750	4.75 mm	-	200 mm	25 mm	ISO 3310/1
60.122.005000	5.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.005600	5.60 mm	-	200 mm	25 mm	ISO 3310/1
60.122.006300	6.30 mm	-	200 mm	25 mm	ISO 3310/1
60.122.006700	6.70 mm	-	200 mm	25 mm	ISO 3310/1
60.122.007100	7.10 mm	-	200 mm	25 mm	ISO 3310/1
60.122.008000	8.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.009000	9.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.009500	9.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.010000	10.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.011200	11.20 mm	-	200 mm	25 mm	ISO 3310/1
60.122.012500	12.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.013200	13.20 mm	-	200 mm	25 mm	ISO 3310/1
60.122.014000	14.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.016000	16.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.018000	18.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.019000	19.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.020000	20.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.022400	22.40 mm	-	200 mm	25 mm	ISO 3310/1
60.122.025000	25.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.026500	26.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.028000	28.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.031500	31.50 mm	-	200 mm	25 mm	ISO 3310/1

60.122.035500	35.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.037500	37.50 mm	-	200 mm	25 mm	ISO 3310/1
60.122.040000	40.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.045000	45.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.050000	50.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.053000	53.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.056000	56.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.063000	63.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.071000	71.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.075000	75.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.080000	80.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.090000	90.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.100000	100.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.106000	106.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.112000	112.00 mm	-	200 mm	25 mm	ISO 3310/1
60.122.125000	125.00 mm	-	200 mm	25 mm	ISO 3310/1