Sample processing in the laboratory

Size reduction

Analysis screens

Dividing & Splitting

SIEBTECHNIK

Size Reduction Machines

Jaw crusher EB 200x125 - L

Jaw crusher

Jaw crushers are used only for rough comminution of brittle, medium-hard to hard materials up to a Mohs hardness of approx. 8.5. Comminution levels of up to 1:100 are possible, depending on the model.
Comminution in the Jaw crusher is done in a wedge-shaped crushing chamber between a stationary and a moving crushing jaw.

The following features in particular are to be emphasised:

- Stationary crushing jaw constructed as a door so that the jaw can be opened without tools and the crushing chamber quickly and fully controllably cleaned.
- Comminution levels of 1:100 and more, with end finenesses of d85 < 2 mm, are possible, depending on the type.
- The steplessly adjustable discharge opening can be easily checked on the scale fixed to the housing and enables zero setting according to the level of wear on the crushing jaws.
- Crushing jaws which are rotatable through 180° and enable further use in the main wear area of the smallest gap and so almost halve the cost of wearing parts.
- Reduction of product contamination thanks to sealed and lifetime-lubricated bearings for types EB 50 x 40 to EB 200 x 125.
- Tamper-proof feeding funnel with connecting flange for fitting a factory-side dust extraction unit.
- Fully-wired design with control system integrated into the housing and also containing safety-monitoring equipment for the sample-collecting box.
- Crushing jaws available in hard cast steel, tungsten carbide, zirconium oxide or stainless steel.

Jaw crusher		EB 50x40 - L	EB 100x80 - L	EB 150x100 - L	EB 200x125 - L	EB 300x250 - L
Dimensions (W x H x D)	mm	385x510x720	390x880x800	450x1100x900	700x1320x1100	880x1880x1720
Weight	kg	84	230	340	785	2170
Motor	kW	1.1	2.2	4.0	7.5	18.5
Feed opening	mm	50 x 40	100 x 80	150 x 100	200 x 125	300 x 250
Min. gap of feed opening	mm	0,5	1,2	1,4	1,4	2,0
Discharge opening	mm	0 - 10	0 - 12	0 - 15	0 - 28	0 - 30
Max. feed grain size by manual feeding	mm	30	70	90	110	240
Capacity	kg/h	10 - 50	50 - 350	75 - 500	250 - 2000	400 - 3500
Connection			400 V, 3/N/PE, 50 Hz			

The throughput depends on the size of the discharge slot, the bulk density and the characteristics of the material to be crushed.
The degree of fineness is primarily determined by the setting of the discharge slot. We reserve the right for technical changes.

Double-roller mill

The double-roller mill can be used to comminute all brittle materials such as ores, slags, limestone, gypsum, aluminium oxide, glass, etc. up to a Mohs hardness of approx. 8.5.
Comminution is done mainly by pressure and shearing action between two contra-rotating rollers. The smooth grinding rollers are opposed to each other, one being fixed stationarily to the housing and the other being moveable. The moveable grinding roller can be displaced by means of a spindle so as to be able to steplessly adjust the gap between the two rollers.
To be able to avoid unwanted materials the moveable roller is supported by spring packs which can be adjusted in pretension to meet the requirements.
The two grinding rollers are driven by means of a belt-drive and attached geared motor.
To prevent cross-contamination between samples, the complete upper part of the housing can be swung open after the quick-release fastener is operated to enable the crushing chamber to be quickly inspected and/or cleaned.
The double-roller mill is fitted with a tamper-proof feeding funnel, a safety-monitored collecting box integrated into the base frame and the fully-wired control system integrated into the housing.
The crusher rollers are available in different materials (cast steel, tungsten carbide and aluminium oxide).

Double-roller mill WS 250x150 - L

Double-roller mill			WS 250x150 - L	WS 400x200 - L
Dimensions (W x H x D)		mm	675 x 1360 x 1360	850 x 1360 x 1360
Weight		kg	495	1320
Motor		kW	3.0	2 x 5,5
Grinding roller	(diameter x width)	mm	250 x 150	400 x 200
Discharge opening		mm	0.2 - 5.0	0,5 - 15,0
Feed grain size (max.)		mm	12	20
Capacity		kg/h	50 - 2000	75 - 6000
Connection			400 V, 3/N/PE, 50 Hz	

The throughput depends on the size of the discharge slot, the bulk density and the characteristics of the material to be crushed.
The degree of fineness is primarily determined by the setting of the discharge slot. We reserve the right for technical changes.

Size Reduction Machines

Cone crusher KM 65 with divider

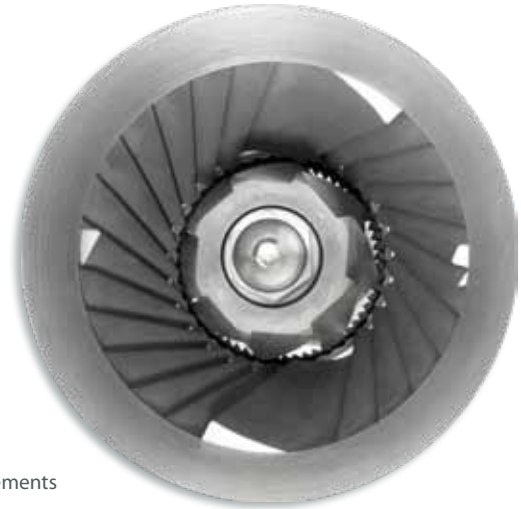
Cone crusher

Cone crushers, slow-operation size reduction machines, are perfectly suited to produce cubic particle or to reduce heat-sensitive materials or very hard materials (such as corundum, ferrous Silicium, ore iron ores).

The feed material is crushed between the slowly rotating cone and the static outer grinding ring. By rotating the feed funnel, the size of the slot between cone and ring can be adjusted as required, therefore achieving the fineness of material requested. Maximum final particle sizes of < 2 mm can be achieved due to the tooth system of the fine cone.

There is the option of an installed sample divider for the cone crusher KM 65, so that samples can be both crushed and divided in one step, thereby facilitating laboratory work. The partial volume continuously divided can be chosen to be either 1:2, 1:4 or 1:8.

All grinding elements are made of tungsten carbide, thereby ensuring a long service life.



Tungsten carbide grinding elements

Cone crusher			KM 65	KM 170
Dimensions (W x H x D)	without sample divider	mm	500 x 1270 x 435	1010 x 1680 x 750
	with sample divider	mm	710 x 1270 x 435	-
Weight	without sample divider	kg	120	650
	with sample divider	kg	130	-
Motor		kW	1.5	4.0
Feed particle size		mm	25	25
Final particle size		mm	2 - 10	2 - 10
Throughput		kg/h	60	200
Connection			400 V, 3/N/PE, 50 Hz	

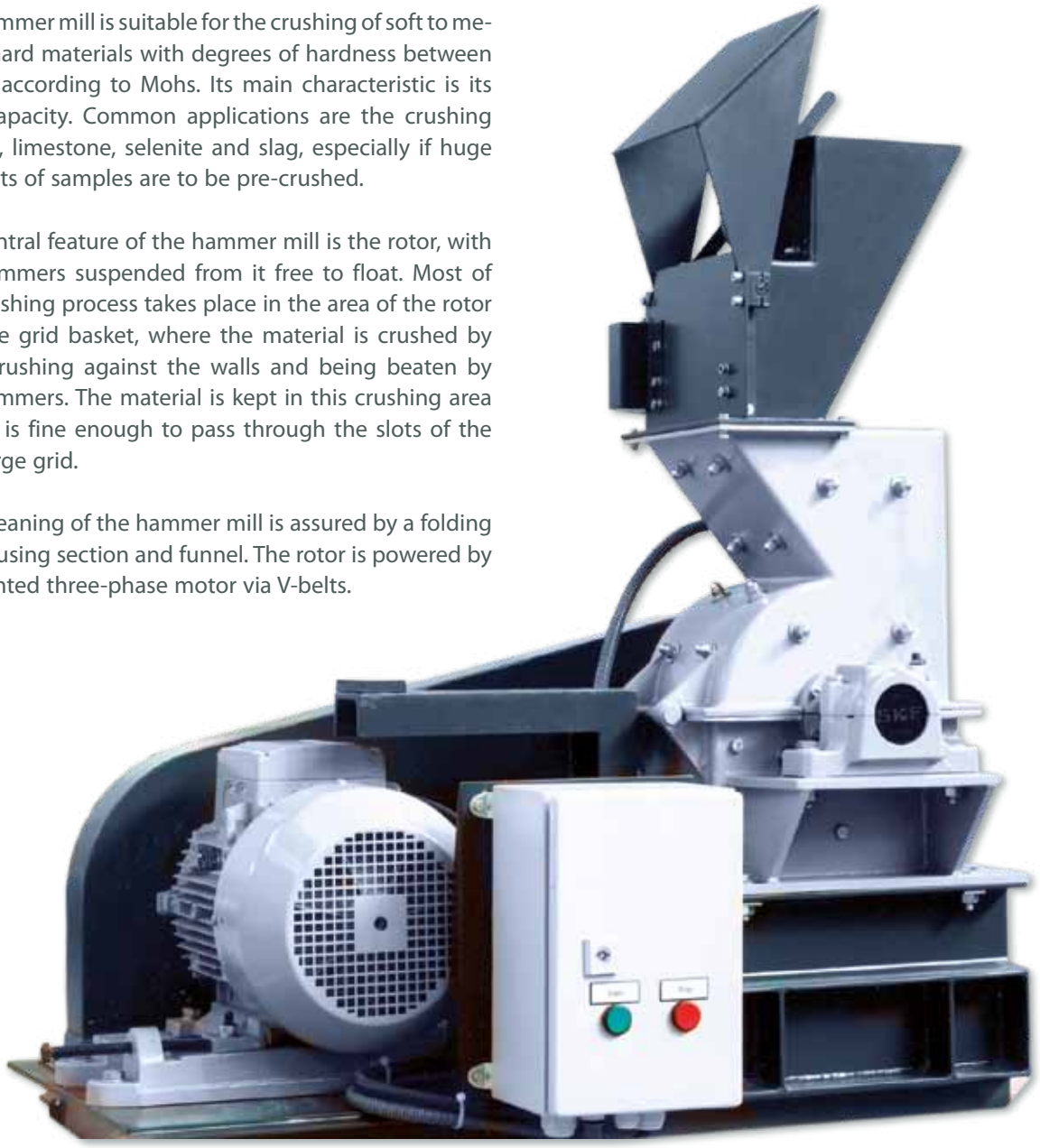
The throughput depends on the size of the discharge slot, the bulk density and the characteristics of the material to be crushed.
The degree of fineness is primarily determined by the setting of the discharge slot. We reserve the right for technical changes.

Hammer mill

The hammer mill is suitable for the crushing of soft to medium hard materials with degrees of hardness between 2 to 5 according to Mohs. Its main characteristic is its high capacity. Common applications are the crushing of coal, limestone, selenite and slag, especially if huge amounts of samples are to be pre-crushed.

The central feature of the hammer mill is the rotor, with the hammers suspended from it free to float. Most of the crushing process takes place in the area of the rotor and the grid basket, where the material is crushed by both crushing against the walls and being beaten by the hammers. The material is kept in this crushing area until it is fine enough to pass through the slots of the discharge grid.

Easy cleaning of the hammer mill is assured by a folding top housing section and funnel. The rotor is powered by a mounted three-phase motor via V-belts.



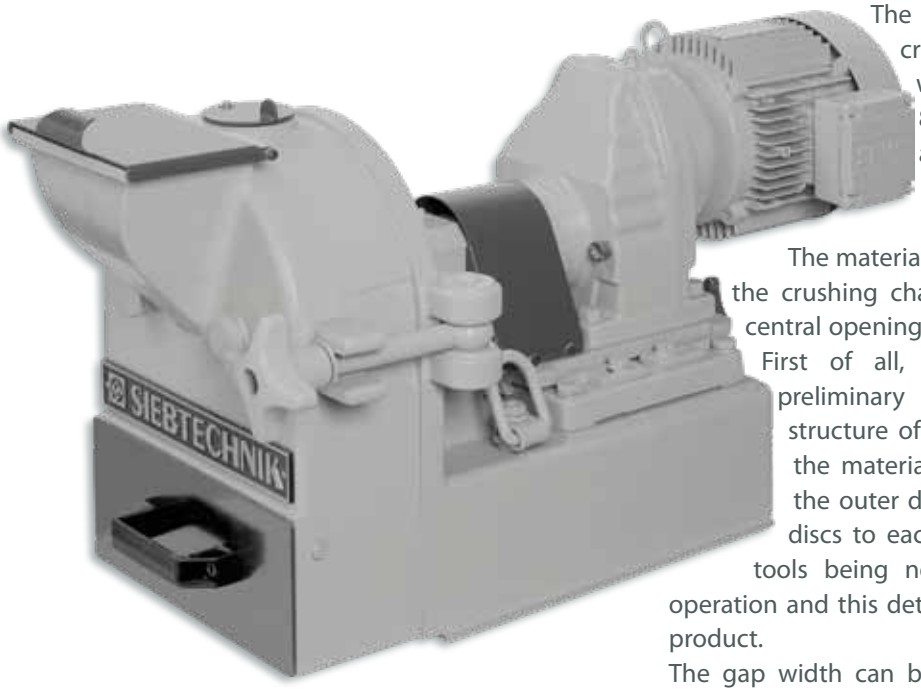
Hammer mill HM 1 with feeding chute and control unit

Hammer mill		HM 1
Dimensions (W x H x D)	mm	570 x 900 x 990
Weight	kg	600
Motor	kW	5.5
Feed particle size (max.)	mm	50
Final particle size	mm	2 - 30
Throughput	kg/h	1000
Connection		400 V, 3/N/PE, 50 Hz

The throughput depends on the size of the discharge slot, the bulk density and the characteristics of the material to be crushed.
We reserve the right for technical changes.

Size Reduction Machines

Disc mill



Disc mill SB 200

The disc mill can be used for finely crushing soft to hard materials with a Moh`s hardness of up to 8. Crushing is done by shearing and friction action between a stationary and a rotating grinding disc.

The material to be crushed is introduced into the crushing chamber between two discs via a central opening in the stationary grinding disc. First of all, the material is subjected to preliminary crushing through the coarse structure of the grinding disc inside, before the material again leaves the two discs on the outer diameter. The distance of the two discs to each other can be set without any tools being needed even during continuous operation and this determines the final fineness of the product.

The gap width can be checked by means of a slide rule through an inspection opening. The crushed material is collected in a container underneath the grinding discs. When the machine is being run continuously, this container must be replaced by an optionally available chute.

The swing-type crushing chamber with the stationary grinding disc enables the crushing chamber to be easily accessible and cleaned. Available as materials for the grinding discs are cast steel, zirconium oxide or tungsten carbide.

Disc mill		SB 200
Dimensions (W x H x D)	mm	400 x 430 x 825
Weight	kg	136
Motor	kW	1.5
Grinding disc diameter	mm	200
Granular feed size (max.)	mm	20
Discharge slot	mm	0.1 - 6
Throughput	kg/h	20 - 150
Connection		400 V, 3/N/PE, 50 Hz

The throughput depends on the size of the discharge slot, the bulk density and the characteristics of the material to be crushed.
The degree of fineness is primarily determined by the setting of the discharge slot. We reserve the right for technical changes.

Multi-purpose mill

The multi-purpose mill UM 150 is used for finely grinding – up to a hardness of approx. 6 on the Mohs scale – dry, brittle, medium-hard materials < 15 mm fed in doses. The grinding effect is based on impact and shear force, caused between the rapidly turning rotor and toothed grinding path.
The fed material is ground until it can pass the slotted screen insert with the exhaust air. This enables any overgrinding of already produced fine material to be eliminated. The ground material removed with the exhaust air is subsequently separated, through a cyclone, in a sample collecting bottle (500 cm^3). Instead of the sample-collecting bottle, a pipe can be optionally screwed into the opening in the housing base, enabling a larger vessel to be installed underneath the machine.
To inspect and clean the machine, its housing cover can be opened, so that the grinding chamber and the cyclone can be fully examined. The damper-supported cover is monitored for the operator's safety, and when it is opened causes an instantaneous emergency stop by the brake motor. When the cover is opened, the slotted filter inserts, that are decisive for the fineness of the final product, can be slid into the appropriate section of the grinding path.

Grinding path with cyklone

Multi-purpose mill UM 150

Multi-purpose mill		UM 150
Dimensions (W x H x D)	mm	480 x 820 x 480
Weight	kg	85
Motor	kW	1,1
Rotation speed of the grinding tools	min-1	2850
Slot widths	µm	150 – 500 µm
Feed granular size (max.)	mm	15
Throughput volume (max.)	kg/h	80
Operating voltage		400 V, 3/N/PE, 50 Hz

The throughput volume depends on the size of the discharge slot, the bulk weight and the size reduction behaviour of the material to be crsuhed.
Subject to technical alterations.

Size Reduction Machines

Vibrating mill

Vibrating mill GSM 06

The vibrating mill GSM is a vibrating mill with exchangeable grinding barrels used to crush brittle and fibrous material down to high degrees of fineness. The size reduction is achieved by impact and friction inside two vibrating grinding barrels which are filled with freely moving grinding balls. The motion of the grinding balls inside the barrels does also entail an intensive homogenization of the material.

The grinding process can be either dry or wet. The size and kind of the grinding balls determines the final particle size. Normally, the grain size of the feed material should be smaller than 2 mm. The final particle size which can be achieved is smaller than 1 µm, depending on the material.

Steel and porcellain grinding barrels with grinding media

As the grinding barrels are exchangeable, their material (steel or ceramics) can be chosen so that contamination by abrasion can mostly be avoided. The exchange of the grinding barrels with help of clamping devices is very user-friendly.

The vibrating frame with the maintenance-free unbalance motor is supported on springs and covered by a housing with sound isolation. The counterweight at the bottom of the housing ensures a solid support and a smooth operation of the machine.

The machine is controlled by a foil protected keyboard which is situated in the opening cover of the machine and offers the function "On/Off" and the possibility to determine the duration of the grinding process.

Vibrating mill			GSM 06
Dimensions (W x H x D)		mm	570 x 374 x 504
Weight		kg	65
Grinding barell volume	total	l	2 x 1
	usable	l	2 x 0.3
Vibration intensity		rpm	1500
Vibration width		mm	0 - 6
Capacity		kW	0.19
Connection			400 V, 3/N/PE, 50 Hz
We reserve the right for technical changes.			

Laboratory disc mill

The laboratory disc mill is used for the quick, dustfree grinding of minerals, organic and ceramic materials, numerous brittle metals to analytical fineness, without loss of fines.

The feed size, depending on grinding barrel size and material should not exceed 5 - 15 mm. Depending on the product, the final particle size for dry grinding is minus 40 µm and down to below 1 µm for wet grinding. Samples up to 250 cm^3 can be processed with the correct grinding barrel.

The material to be ground is put into a grinding barrel chosen to suit the demands of the analysis and sample quantity.

By means of predominantly horizontal vibrations, the material is ground by impact and friction, usually in minutes and at the same time homogenised. With the TS models, the machine will automatically stop when the previously set time has lapsed after which the grinding barrel can be removed. This allows a high degree or repeatability in the sample preparation.

The laboratory disc mill is manufactured in two versions, as T and TS models. The TS version is ready for connecting including all controls, timer and sound absorbing material in a steel housing, mainly for use in the laboratory.

The T-model is the low-cost-version without control-unit and sound proofed housing.

Laboratory disc mill T 750

Laboratory disc mill
TS 750 / 1000

You can chose from the following options, to match the laboratory disc mill to your requirements:

- Pneumatic locking device for grinding barrels (only TS-versions)
- Continuously operating grinding barrels (only T versions)
- Adaptor for using 4 or 6 grinding barrels each with 10 cm^3 at the same time
- Pole changing motors to give two operating speeds allowing the use of both steel and agate grinding barrels (which have to operate at a lower speed)

Laboratory disc mill		T 750	T 1000	TS 750	TS 1000
Dimensions (W x H x D)	mm	530 x 600 x 530		600 x 1125 x 674	
Weight	kg	150	150	300	300
Motor rating	kW	0,55	0,8	0,55	0,8
Connection		400 V, 3/N/PE, 50 Hz			
We reserve the right for technical changes.					

	Grinding material	Usable volume cm^3
available grinding barrels	chrome steel, 60 HRC	10 50 100 250 cont.
	wolfram carbide	10 20 50 100 250 cont.
	zirconium oxide	100
	agate	50 100

Analytical Screening Machines

LAVIB

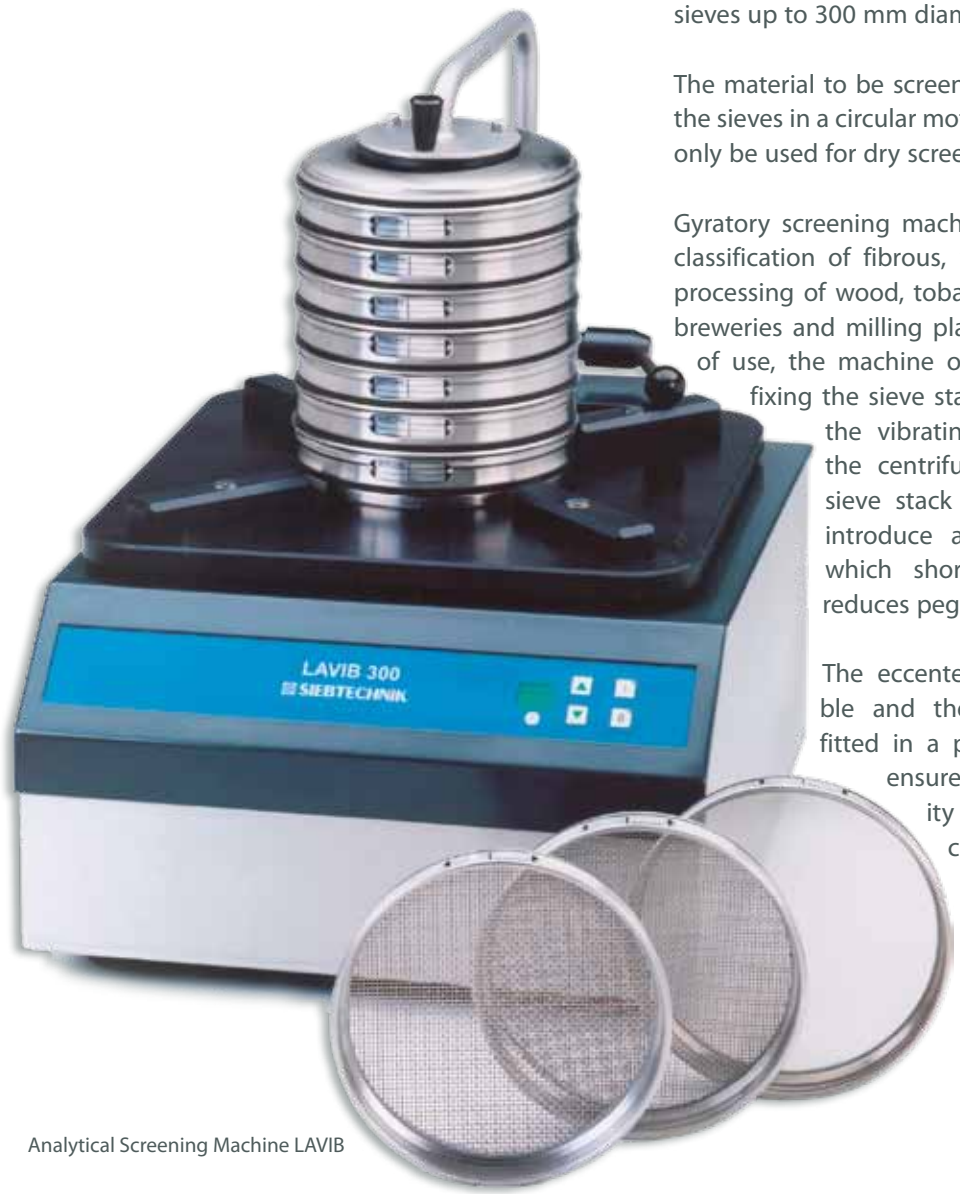
The LAVIB 300 is a screening machine that produces horizontal circular vibrations, suitable for analytical sieves up to 300 mm diameter.

The material to be screened is gently transported over the sieves in a circular motion. This type of machine can only be used for dry screening.

Gyratory screening machines are mainly used for the classification of fibrous, platelet type particles in the processing of wood, tobacco and plastics as well as in breweries and milling plants. Depending on the area of use, the machine offers the possibility of either fixing the sieve stack or allowing it to move on the vibrating table. The latter leads to the centrifugal forces pushing the test sieve stack against buffers and thereby introduce additional horizontal impact, which shortens the screen time and reduces pegged material.

The eccenter drive for the vibrating table and the compensation weight are fitted in a practical housing, the weight ensures smooth running and stability of this maintenance free machine.

The keyboard is foil protected and controls the "On/Off" function and the time switch.



Analytical Screening Machine LAVIB

Analytical Screening Machine		LAVIB 300
Dimensions (W x H x D)	mm	474 x 663 x 604
Weight	kg	70
Number of test sieves		max. 8 + cover and collecting box
Test sieve diameter	mm	100 - 300
Test sieve opening size	mm	0,020 - 63
Vibration intensity	min^{-1}	270
Vibration width	mm	30
Drive		gear motor
Connection		230 V, 1/N/PE, 50 Hz
We reserve the right for technical changes.		

Airjet screen

SLS 200 is intended for the requirements of modern laboratories in respect of a quick, exact, and reproducible grain-size analysis of all dry mate- ri- als for sieving.
The range of analysis covers grain sizes of approx. 20 to 4000 µm, the sampling quantity amounts to approx. 100 g depending on the density of the material.
Due to a specially developed pre-warming of the air jet it is also possible to use the SLS 200 for hygroscopic materials.

Airjet screen SLS 200

The airjet which is responsi- ble for the extremely good dispersion is generated by a vacuum cleaner and then con- ducted through a rotating slot nozzle positioned beneath the sieving area. In order to reduce the screening period and to achieve a more exact screening the machine is fitted with a newly developed form of slot nozzle.
Through the screen apertures the fines are drawn into the vacuum cleaner's container where they are collected. The necessary vacuum may be exactly adjusted and is shown on a digital display. The latter also applies to the screening period.

Due to its ergonomically designed stainless-steel housing SLS 200 is suitable for application even under the roughest circumstances.
A wear-resistant and well-planned keyboard covered with foil makes the operation of SLS 200 simple.

The following options are available for the SLS 200:

- Device for pre-warming of the air
- Cyclone to remove the particles before the vacuum cleaner
- Ionisation device for the reduction of electrostatic forces between particles
- conversion kit to use test sieves with a diameter of 400mm

Airjet sieve		SLS 200
Dimensions (W x H x D)	mm	326 x 270 x 425
Weight	kg	17.5
Test sieve diameter	mm	200
Test sieve opening size	µm	20 - 4000
Drive of the slot nozzle		A.C. gear motor
Connection		230 V, 1/N/PE, 50 Hz

Main connection,vacuum cleaner connecting branch and coupler socket for the vacuum cleaner are fitted at the back of the device. We reserve the right for technical changes.

Analytical Screening Machines

ASM

Analytical Screening Machine ASM 200

The ASM 200 is a gravity-screening machine, the three dimensional screening action has a vertical dominance. Due to this motion, the feed material is distributed evenly over the screen area and the vertical dominance ensures quick separation.

The innovative electronic control on the ASM 200, together with the vibration sensor fitted to the vibrating plate, ensures a constant amplitude irrespective of the loading.

All mechanical parts, the electro-magnetic drive with specially tuned double spring system and the electronic controls are all fitted into the stainless steel housing. The sieve set is easily fitted to the vibrating plate and fixed with the quick locking device.
A clear plastic lid enables you view the screening action. Wet screening is possible by using special accessories such as the cover with spray water facility and the collecting pan with spout.

The machine is maintenance free.
The keyboard is foil protected and controls on/off, amplitude, intermittent operation for difficult samples and timer functions.

Analytical Screening Machine		ASM 200
Dimensions (W x H x D)	mm	470 x 630 x 435
Weight	kg	45
Test sieve diameter	mm	200
Number of test sieves		max. 10 incl. collecting box
Test sieve opening size	mm	0.020 - 25
Vibration intensity	min^{-1}	3000
Vibration width	mm	0 - 2.5
Drive		electro-magnetic
Connection		230 V, 1/N/PE, 50 Hz
Special accessories for wet screening available. We reserve the right for technical changes.		

ASM

The ASM 400 is a gravity-screening machine with a dominantly vertical screening action, which is generated by a double-eccentric motor drive.

All mechanical components, drive and control electronics are enclosed in a housing mainly made of stainless steel. The sieve set is easily fitted to the vibrating plate and fixed with a quick locking device.

Wet screening is possible by using accessories such as the cover with spray water facility and the collecting pan with spout.

The machine is maintenance free. The keyboard is foil protected and controls on/off and timer functions.

Analytical Screening Machine ASM 400

Analytical Screening Machine		ASM 400
Dimensions (W x H x D)	mm	510 x 1400 x 600
Weight	kg	85
Test sieve diameter	mm	400
Number of test sieves		max. 11* incl. collecting box
Test sieve opening size	mm	0,063 - 90
Vibration intensity	min^{-1}	3000
Vibration width	mm	max. 3
Drive		2 eccentric motors
Connection		400 V, 3/N/PE, 50 Hz

* Through optional adapters it is possible to install max. 13 test sieves incl. collecting box.
Special accesories for wet screening available. We reserve the right for technical changes.

Large Analytical Screening Machines

GAS

The large analytical screening machines are designed for analysing grain sizes above 40 mm to generate a sufficient material layer to achieve a representative screening analysis.

For this purpose we have machines with sieve areas of 500 x 500 mm and 1000 x 1000 mm.

The GAS is equipped with a maintenance free double eccenter motor which generates linear vibrations vertically to the screen surface.
The amplitude can be infinitely adjusted by repositioning the eccentric weights on the motor when the machine is not in operation.

The test sieve set is rigidly held on the vibrating table by the tensioning device, which can also be supplied as a lifting and tilting device.

This lifting and tilting device makes emptying the test sieves easier as it can be lifted by a hoist and the lowest test sieve only requires tilting for emptying.

GAS 500 and 1000 can be used as vibrating tables without the test sieve set.

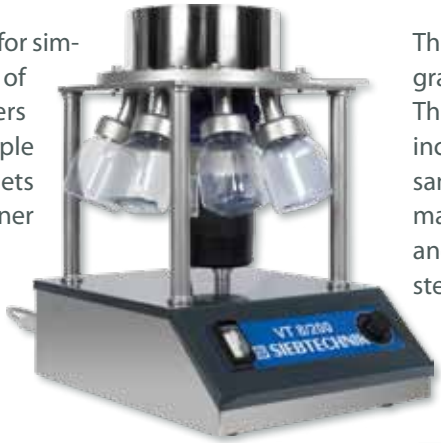
Large Analytical Screening Machines
GAS 500 (left) and GAS 1000 (right)

Large Analytical Screening Machine			GAS 500	GAS 1000
Stand base		mm	600 x 600	1000 x 1130
Height	without screens	mm	350	400
	with lift-off nad tilt device	mm	570	790
Weight	without screens	kg	150	350
Drive motor			2 imbalance drives	2 imbalance drives
	capacity	kW	2 x 0.150	2 x 0.750
	vibration intensity	min^{-1}	1000	1000
Vibration width		mm	approx. 3.7	approx. 3.7
Material volume		dm^3	max. 50	max. 100
Test sieve opening sizes		mm	0,2 - 125	4 - 125
Sieve area		mm	approx. 500 x 500	approx. 1000 x 1000
Number of test sieves	without cover and collector		max. 9	max. 9
Connection			400 V, 3/N/PE, 50 Hz	
We reserve the right for technical changes.				

Splitter and Testing drums

Splitter

This splitter is suitable for simple, rapid separation of freely flowing powders and pellets into 8 sample collectors. The outlets from the feed container can be sealed with a lever to allow the material to be filled, mixed and subsequently separated.



Splitter			8/200
Dimensions (W x H x D)		mm	260 x 360 x 260
Weight		kg	approx. 18
Drive			three-phase gear motor
	capacity	W	95
	electr. connection		230 V / 50 Hz
Feed volume		cm^3	max. 1500
Granular size		mm	max. 2
Sample collector volume		cm^3	8 x 200
Connection			230 V, 1/N/PE, 50 Hz
We reserve gthe right for technical changes.			

Laboratory sample splitter

This splitter is designed for dry, granular, and powdery samples. The entire splitter, including three sample boxes, is made of stainless and acid-resistant steel manufactered.

Type		10/10	10/32
Number of cells		10	32
Cell width	mm	10	10
Ext. Dimensions	mm	325 x 250	325 x 530
Height	mm	370	370

Type		20/10	20/16	20/20
Number of cells		10	16	20
Cell width	mm	20	20	20
Ext. Dimensions	mm	325 x 340	325 x 485	325 x 565
Height	mm	370	370	370

Type		40/10	40/16	40/20
Number of cells		10	16	20
Cell width	mm	40	40	40
Ext. Dimensions	mm	325 x 565	325 x 805	325 x 965
Height	mm	370	370	370

Solid testing drums

These solidity testing drums are used to determine the tumbler strength in accordance with DIN, ISO and ASTM standards (for example z.B. ISO 556, ISO 3271, DIN EN 1097-2) for coke, iron ore and stones.
They can be used for any other bulk materials where the tumbler strength is of interest.

Solidity testing drums of welded construction are produced in three sizes in accordance with the appropriate standards, they are equipped with the necessary bars, revolution counter and a collecting vessel.

Solid testing drums		FPT 500/1000	FPT 1000/1000	Los Angeles
Dimensions (W x H x D)	mm	1750 x 1550 x 1220	2250 x 1550 x 1220	1760 x 1400 x 1100
Weight	kg	500	650	450
Motor	kW	1,5	1,5	1,5
Drum-inner diameter	mm	1000	1000	711
Drum-inner lenght	mm	500	1000	508
Connection		400 V, 3/N/PE, 50 Hz		
We reserve the right for technical changes.				

Delivery Program

Screening Machines
Process Equipment

circular and elliptical motion screens
double counterweight screens
multideck horizontal screen
round screens
jigs

Sampling Systems, Airtube Systems,
Size Reduction Machines, Laboratory Equipment,
Control Screening Machines and Automation

individual units and complete installations
for sample taking and preparation
airtube systems
jaw crushers
roller mills
hammer and hammer impact mills
eccentric-vibrating mills and ball mills
control screening machines
analytical screening machines
splitter
testing drums
automation

Centrifuges

scroll-screen centrifuges
pusher centrifuges
sliding discharge centrifuges
vibratory centrifuges
decanter centrifuges

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