SIEBTECHNIK TEMA

Drum/Bond Mills

Drum mills and bond mill

For production, the laboratory and for determining the work index

The drum mills are for the fine and ultrafine comminution of brittle materials. The mills are used both as production machines and in the laboratory for sample preparation. Laboratory drum mills can also be used to simulate industrial processes.
The TTS 20 can be used to determine the work index according to Bond, as the drum corresponds to the dimensions specified by Bond.
Discontinuously operated drum mills enable homogenization of the ground material in addition to comminution.

Function

Drum mills have a horizontally mounted grinding drum that rotates around a fixed pivot point. This cylindrical working chamber contains a grinding media filling that is circulated by the rotating grinding drum.

The freely movable grinding media grind the feed material mainly by means of pressure, impact and shearing. For this purpose, balls or cylpebs are usually used. For special applications, steel rods can also be used in appropriately modified grinding drums.

The operating conditions that are decisive for comminution are the grinding time, the drum speed and the filling levels. The usual speeds are in the rangebetween 70% and 80% of the critical. In exceptional cases, both lower speeds (friction effect) and higher speeds (impact effect) in the range of 60% to 80% of the critical speed can be used. 90% of the critical speed must be selected.

In addition to the speed, the grinding media and grinding material filling levels are also decisive for energy-efficient comminution. The following standard values have proven to be effective: Grinding media filling degree approx. 35% and grinding material filling approx. 25% in relation to the grinding drum volume.

continuous TNS 200-K

The discontinuous grinding drums are fed via an opening located on the casing of the grinding drum. This is designed with a quick-release fastener that can be opened and closed without tools.

To empty the discontinuous wet grinders, the sealing lid is with a sieve insert (colander) with a drain valve, then the grinding drum is positioned so that the colander at its lowest point.
After opening the drain valve, the stationary grinding drum can be emptied.

With the dry mills, the milled product is discharged through the opening with a discharge grate, which placed in place of the sealing cover, while the grinding drum is rotating.
To collect the discharged material, the dry mills are equipped with a dust hood. It encloses the grinding drum and runs to a funnel-shaped outlet.

continuous TTS 700-K

Technology

Depending on the size and design of the mill, the grinding drum is moved on the mill stand either via welded-on stub shafts or on running wheels. The stub shafts are fixed to the mill stand via ball bearings. The running wheels supports the drum on a running ring.

The grinding drum is driven by a shaft mounted gear motor directly on the shaft or by a V-belt drive.

The dry mills are equipped with a dust hood that firmly bolted to the mill stand. To ensure good accessibility to the grinding drum, the dust hoods on discontinuous mills are equipped with two flaps.

Milled material can be collected at the outlet of the funnel-shaped converging dust hood.

The discontinuous wet mills also have an enclosure for the grinding drum with two flaps. As with the discontinuous dry mills, all work required for and emptying the grinding drum can be carried out without any problems.

The discontinuous grinding drums are positioned in the filling or emptying position in tip mode or via an optional control system with automatic positioning

TTS 50 in filling position with open drum

TTS 50 with sealing cover

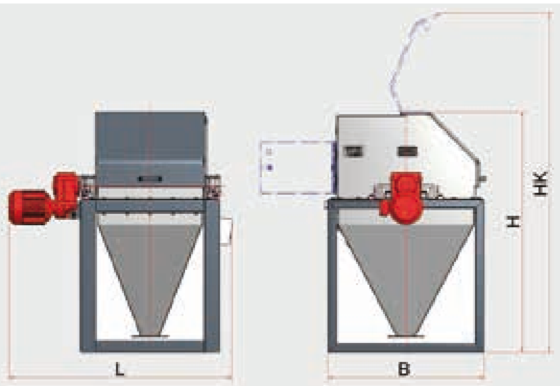
TTS 50 with discharge grate

TTS 20
with open rear flap

Special equipment

- Lining of the grinding drum with ceramic or a rubber coating for metal-free grinding of products
- Grinding drums with double jacket, for temperature control of the grinding drum via an external cooling/heating circuit. For this purpose, a stub shaft is fitted with a rotary feed-through for the heat transfer medium. Instead of the double jacket, the grinding drum can also be equipped with electric heating to heat the grinding drum only
- Hollow shaft with filter, for simulating the volatilization of grinding aids in laboratory drum mills
- Base for elevating the grinder so that larger containers or bags can be connected

Technical data



Nomenclature

1.digit	2.digit	3.digit	4.digit	5.digit
T	T / N	S / G / K	50	K
Machine designation Drum mill	Mode of operation Dry / Wet	Design of the grinding drum Steel shell drum / with rubber lining or with ceramic lining	Machine type 20 - 700	Mode of operation continuous

Machine types			20	50	100	200	200-K	400	700-K
Drum volume		dm^3	22	55	89	212	261	430	670
Drum inner diameter	Di	mm	305	400	480	630	620	810	810
Internal drum length	Li	mm	305	435	490	680	865	835	1300
Drum speed		UpM	58	50	46	40	38	35	35
Length	L	mm	825	1275	1520	1500	1900	1650	2225
Width	B	mm	890	900	940	1200	1310	1300	1300
Height	H	mm	1240	1300	1400	1750	1480	1830	1810
Opening height	HK	mm	1810	1850	2000	2150	-	2100	
Grinding media weight	Steel	kg	36	91	148	352	433	713	1112
Regrind filling		dm^3	5	14	22	53	-	108	
Drive power		kW	0,75	0,75	1,5	3,0	5,5	5,5	9,2
Mill weight (without grinding media)		kg	245	270	330	580	1100	930	2100

The drum mill weight and the main dimensions may vary depending on the version. The lining of the grinding drum reduces the drum volume and thus the grinding material filling according to the lining thickness. Subject to technical changes.