

BATCH GRINDING

time proven equipment for fast grinding

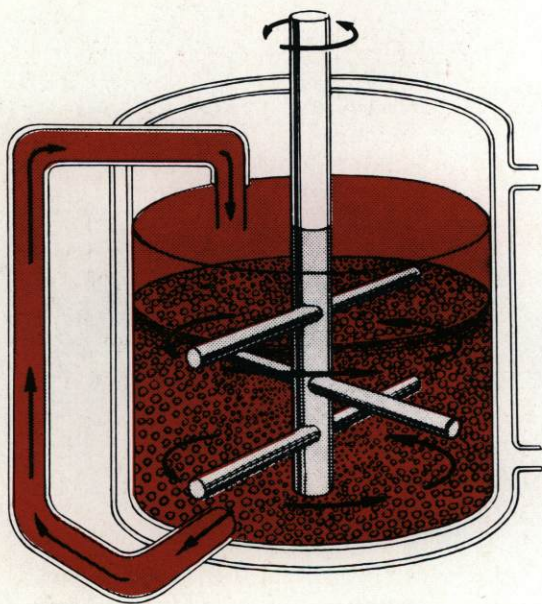


ATTRITOR

TEN TIMES FASTER THAN CONVENTIONAL EQUIPMENT

THE BATCH ATTRITOR

The Attritor was originated over 40 years ago by Union Process Inc. The Attritor has been continuously developed into the present models which represent the most efficient grinding apparatus available.



- Fine homogenous dispersions
- Short grinding times
- No premixing necessary
- Easy inspection and control
- Low power consumption
- Minimum floor space
- Excellent temperature control
- Simple to operate and easy to maintain
- Low noise level

HOW THE ATTRITOR WORKS

Grinding action of the Attritor is achieved in a stationary tank by random motion of the grinding media which are agitated by an internal shaft with arms.

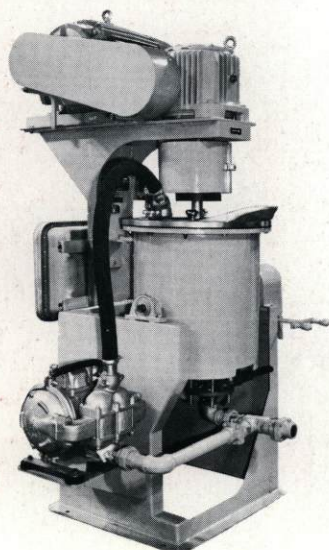
The grinding media used in Attritors may be carbon steel, stainless steel, chrome steel, tungsten carbide or ceramic balls. The sizes range from $\frac{1}{8}$ " to $\frac{3}{8}$ " in diameter.

Production size Attritors are equipped with a built-in pumping system which maintains circulation during grinding to accelerate the action, and which can also be used for charging and discharging.

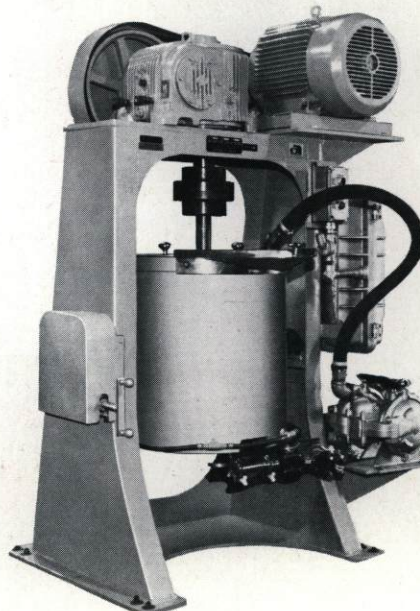
APPLICATIONS OF THE ATTRITOR

Attritors are used by the chemical, rubber, ceramic, paper coating, metal powder, paint and varnish, printing ink, pharmaceutical, cosmetic, plastic, electronic, confectionery and many other industries. Attritors are also used in dry grinding and in processing DSM by mechanical alloying.

ATTRITOR 15-S



ATTRITOR 30-S



ADVANTAGES OF THE ATTRITOR

Fine homogenous dispersions can be obtained in a particle size range of 1 micron or less at high concentration of solids without occluding (trapping) air.

Grinding times are reduced to 1/10th or even less of that required in conventional equipment — such as ball or pebble mill.

No premix is necessary. The ingredients may be added at the beginning or at any time during the processing.

Material processed can be inspected continuously and corrections can be made at any time without stopping the machine.

The power consumption is low, due to the fact that power is used only for dispersion or grinding. No heavy components have to be raised or moved continuously.

Attritors require minimum floor space. No special foundation is necessary. Attritors can be relocated easily, without difficulty.

Grinding tanks are jacketed, making it possible to have a reliable temperature control during operation. Heating or cooling can be employed.

Attritors represent the safest fine grinding equipment available for hazardous operation. With proper precautions volatile and inflammable materials can be handled safely.

All Attritors are ruggedly constructed to last for years. As greatest action of the grinding media is 2/3 radius away from the shaft and not against the wall of the tank or the shaft, there is little wear of the tank or the shaft. Simplicity of design and operation means minimum maintenance and practically no down time.

FEATURES OF THE ATTRITOR

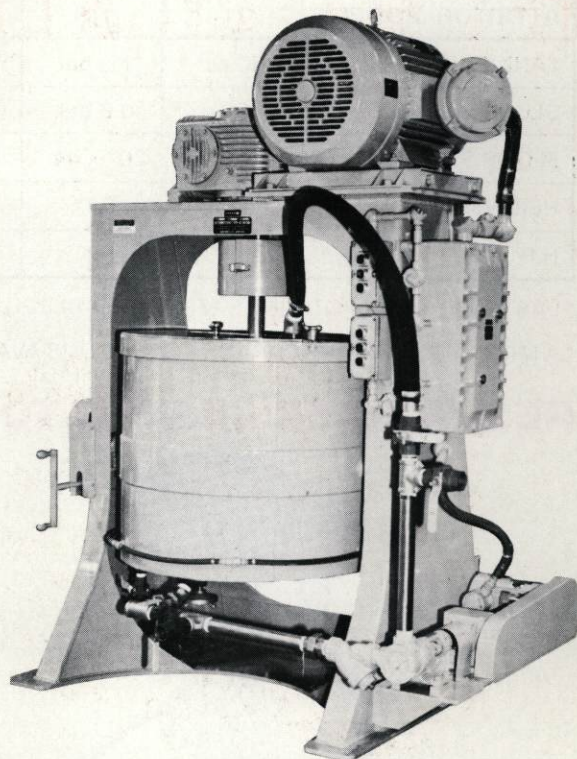
All production Attritors have a worm gear assembly attached to the tank for tilting so that shaft and arms may be readily removed and inspected and the grinding media easily changed if necessary. The arms are held in place on the shaft by pins that are readily extracted for arm replacement.

Cover seals can be provided for those conditions which require grinding under a closed inert gas system.

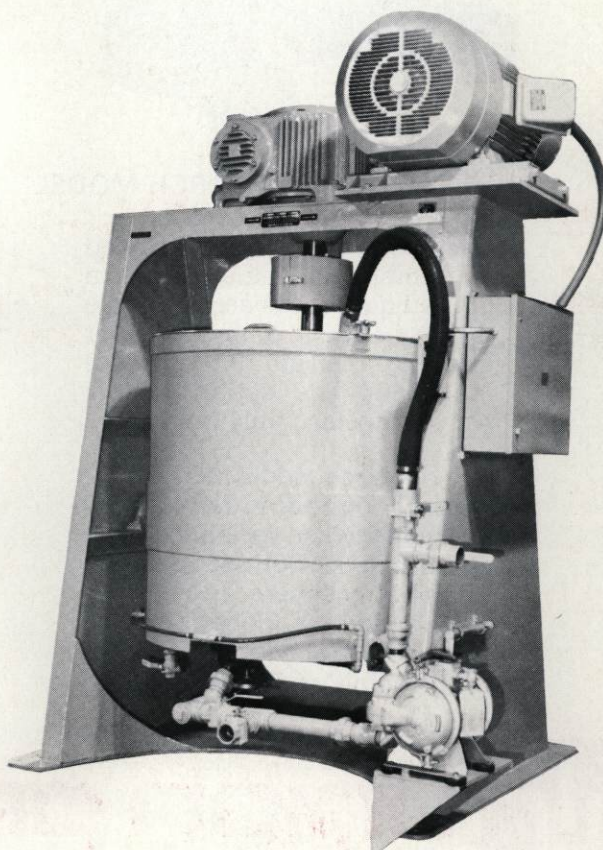
Production Attritors are equipped with two speed electric drive. The lower speed is used for charging and discharging. The higher speed is used for the actual grinding.

The electrical system can be either standard, TEFC, or explosion proof. Special voltage requirements can be provided.

The pumping system for the production units is usually an electrically driven gear pump. For abrasive and very high viscosity materials, an air driven diaphragm pump can be substituted.



ATTRITOR 100-S



ATTRITOR 200-S

ENGINEERING DATA

ATTRITOR MODEL	01	1-S	1-S	10-S	15-S	30-S	100-S	200-S
TANK CAPACITY	750 cc*	1½ gal.	2½ gal.	15 gal.	24 gal.	52 gal.	128 gal.	300 gal.
SLURRY CAPACITY	250 cc	0.8 gal.	1.1 gal.	6-8 gal.	10-12 gal.	23-25 gal.	60-70 gal.	50-160 gal.
FLOOR SPACE (W x D)	Lab Table	20" x 44"	20" x 44"	47" x 43"	47" x 43"	60" x 41"	78" x 53"	85" x 64"
HEIGHT	21"	37"	37"	80"	80"	86"	97"	117"
H.P.	⅛	2	2 or 3	5	5	10	25	50

PLASTIC OR CERAMIC LININGS ARE AVAILABLE FOR ALL MODELS.

* A MINI TANK WITH THE CAPACITY OF 110 cc IS AVAILABLE.

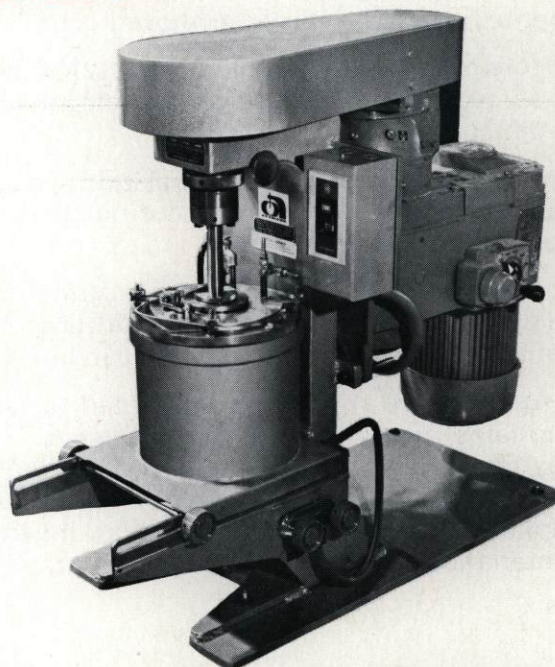
RESEARCH & LABORATORY ATTRITORS



ATTRITOR 01 — RESEARCH MODEL

The Research Model 01 is used for formulation evaluation where limited quantities are available for test work. It is also used for grinding small quantities of rare materials. The action of this Attritor is extremely fast.

The research model has a stainless steel grinding tank and is equipped with variable speed electric drive. For use in an explosive atmosphere, an air driven motor can be supplied. An airtight sealed cover is available for grinding under inert gases:



ATTRITOR 1-S — LABORATORY MODEL

The Attritor No. 1-S is a convenient bench type laboratory size Attritor, which is, however, large enough to closely duplicate production conditions. Therefore, test results can be scaled up to the larger production models.

1. The 1-S can also be equipped with ½ or 1 gal. interchangeable tank.
2. An "O" ring seal and cover, (as shown above), can be provided for grinding under inert gases.
3. A specially designed 1-ST equipped with torque sensor and R.P.M. Meter for precise energy calculation is available.

These units are equipped with a bottom discharge valve for easy discharge and cleaning.

This unit has a variable speed electric drive and can be supplied with either standard, (TEFC) or explosion proof electricals.



1925 AKRON-PENINSULA ROAD, AKRON, OHIO 44313 PHONE: (216) 929-3333 TELEX: 98-6490

FLEETWOOD SALES INC.
8000 South Madison Street
Burr Ridge, Illinois 60521
(312) 920-9050

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