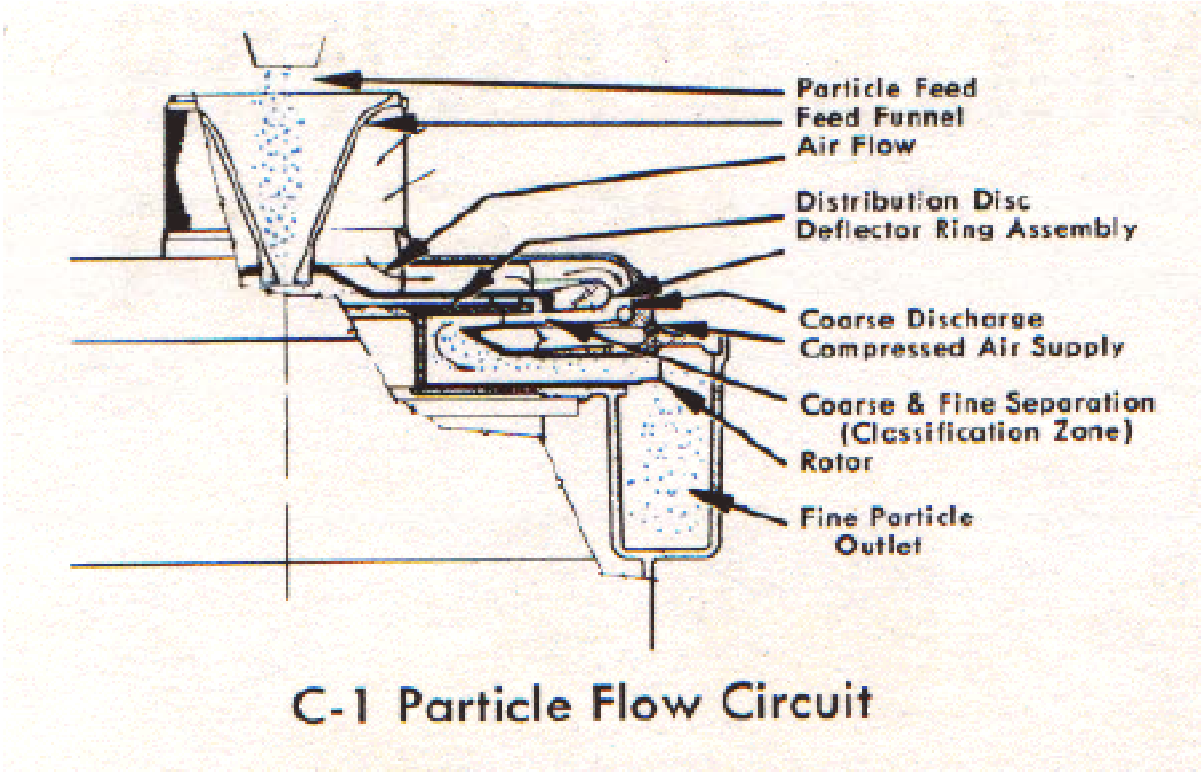
VORTEC PARTICLE CLASSIFIER MODEL C-1

VORTEC PRODUCTS COMPANY

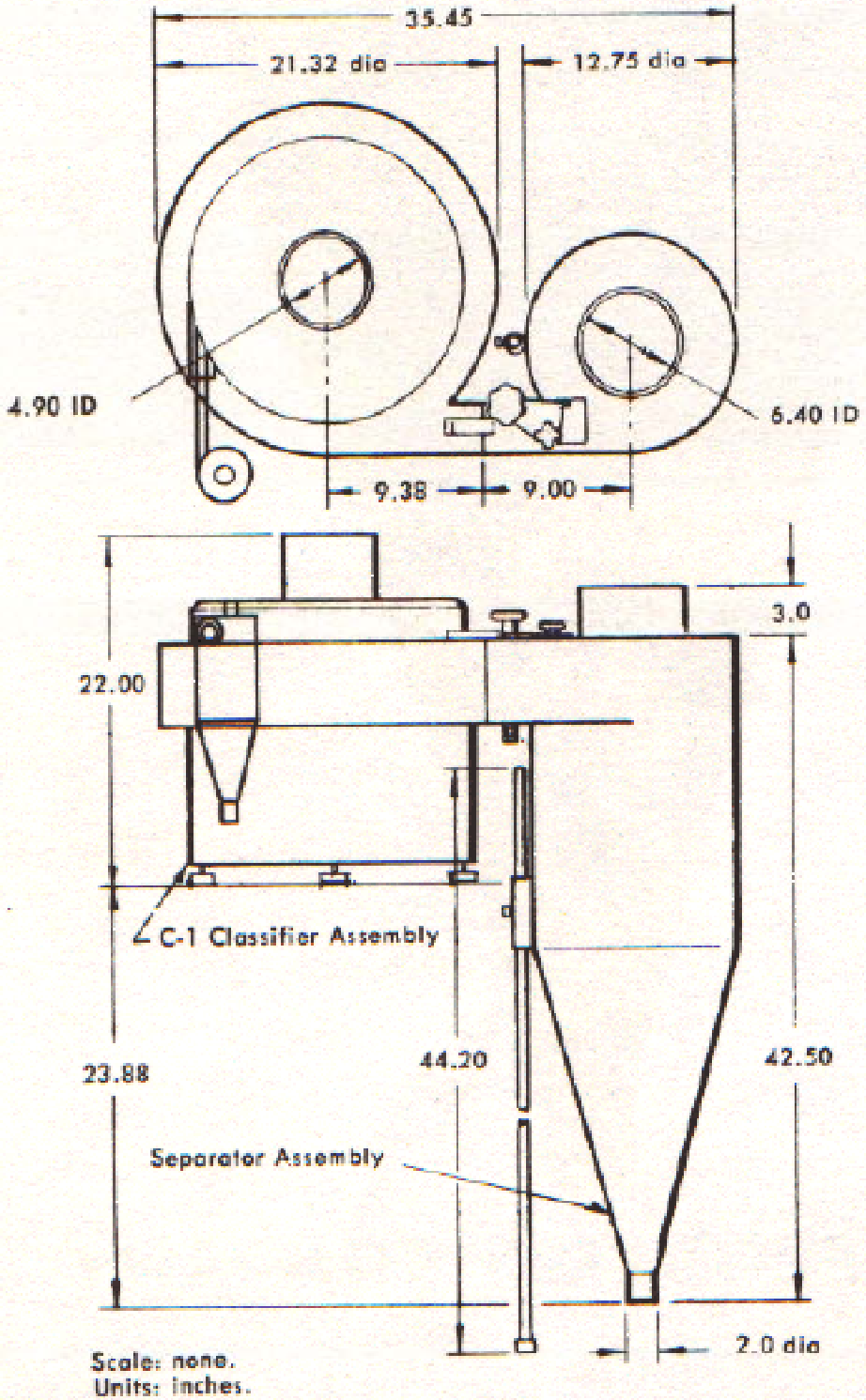


C-1 Particle Flow Circuit

GENERAL

The C-1 is designed to meet the increased technological and scientific requirements for constant optimum particle uniformity in the subsieve range. The C-1 is the first classifier that can produce narrow particle bands with a maximum deviation of +/ - 2 microns.

The competitively-priced, compact C-1 is ideal for small production or research and development in the chemical, powdered metals, minerals, and related industries. Extensive tests and documented operational runs have proven the outstanding capabilities of this versatile unit.


35.45
21.32 dia
12.75 dia
4.90 ID
6.40 ID
9.38
9.00
3.0
22.00
C-1 Classifier Assembly
23.88
44.20
42.50
Separator Assembly
2.0 dia
Scale: none.
Units: inches.

Dimensions

FEATURES

PRECISE CLASSIFICATION

Separation for a material of spherical or cubical particle shapes and uniform density is extremely accurate. Outstanding separation results are achieved even for irregularly shaped particles like talc.

PARTICLE SIZE BANDS WITH ACCURACY OF + / - 2 MICRONS

With the precise classification characteristics of the C-1 unit, subsieve particle size bands with an accuracy of + / - 2 microns or better are easily produced by removing those particles which are either smaller or larger than the particle in the required size band.

WIDE RANGE OF SUBSIEVE CLASSIFICATION

The overall range of classification for the C-1 is from 3 to 60 microns. The range of classification, a function of specific gravity, may be calculated for a given materiai (see Performance, below).

INSTANT, STEPLESS DIAL CONTROL DURING OPERATION

The separation point may be changed during operation simply by moving the dial control pointer to the desired setting and then locking the dial in position.

RELIABLE DUPLICATION OF SEPARATION POINT

For a given material, a required separation point may be duplicated repeatedly simply by setting the dial control at the same position.

ACCURATE SEPARATION POINT MAINTAINED

Extreme variations of feed rate do not affect accuracy of the separation point.

SAMPLES CLASSIFIED IN MINUTES

A few grams (or pounds) of material can be accurately classified in minutes. For small production the input capacity range af the C-1 unit is up to 500 pounds per hour. Regardless of the quantity of material, the classification accuracy does not vary.

SELF-CLEANING, SELF-COOLING

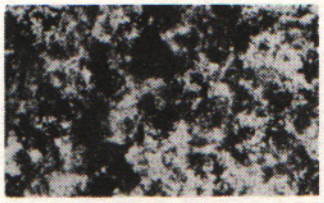
Fresh ambient air carries the particles. This air flow cleans and cools the unit constantly. Temperature rise is negligible.

MINIMUM WEAR AND MAINTENANCE

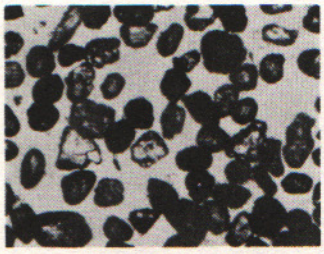
Surfaces exposed to intensive wear can be protected by high-abrasion-resistant tungsten carbide coatings or rubberlining for long operating life. All parts are interchangeable. Bearing surfaces are sealed. Therefore no lubrication is required for the unit.

Materials separated into size bands by the Vortec Particle Classifier, Model C-1

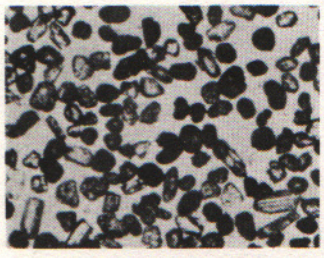
TALC



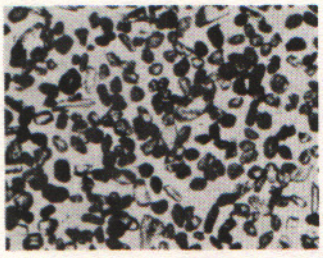
Raw material size: +325 to −16 mesh after grinding in the Vortec M-1 Impact Mill. Note the sharp edges, a result of single-impact shattering.



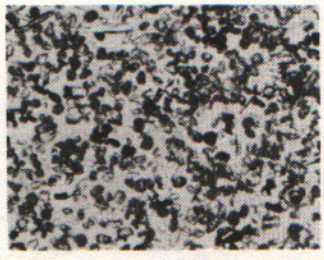
+37 MICRONS



17 TO 25 MICRONS

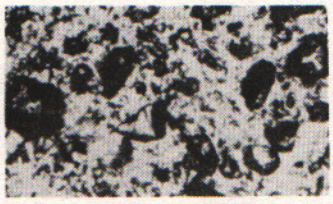


25 TO 37 MICRONS



10 TO 17 MICRONS

OTTAWA SILICA

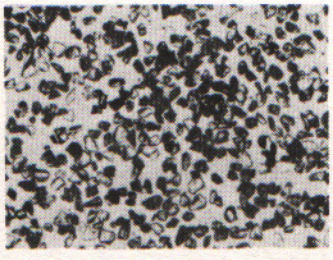


Raw material size: +30 to −16 mesh after grinding in the Vortec M-1 Impact Mill. Note the sharp edges, a result of single-impact shattering.

+60 MICRONS

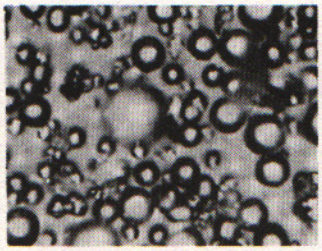
32 TO 40 MICRONS

25 TO 32 MICRONS

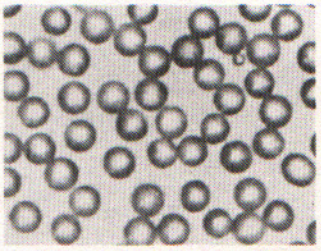


15 TO 20 MICRONS

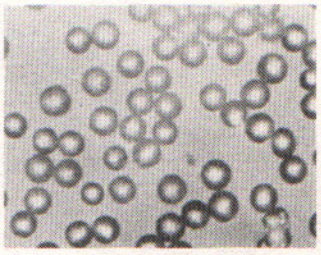
TUNGSTEN POWDER



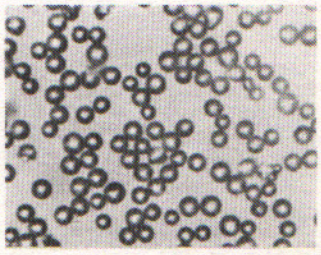
UNCLASSIFIED MATERIALS



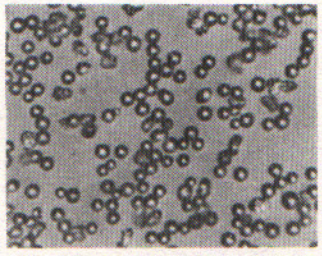
7 TO 8 MICRONS



5 TO 6 MICRONS

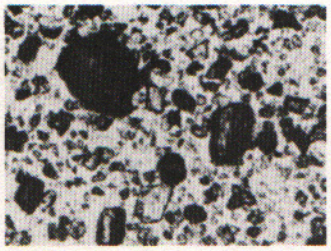


4 TO 5 MICRONS

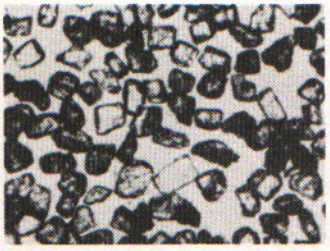


2.8 TO 3.5 MICRONS

LIMESTONE

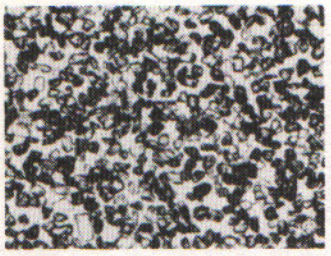


RAW MATERIAL

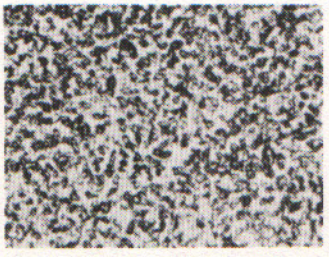


+40 MICRONS

25 TO 40 MICRONS



17 TO 25 MICRONS



10 TO 17 MICRONS

PERFORMANCE

The C-1 employs a unique tangential, centripetal air flow principle to obtain classification accuracy of + / - 2 microns or better, depending on the material.

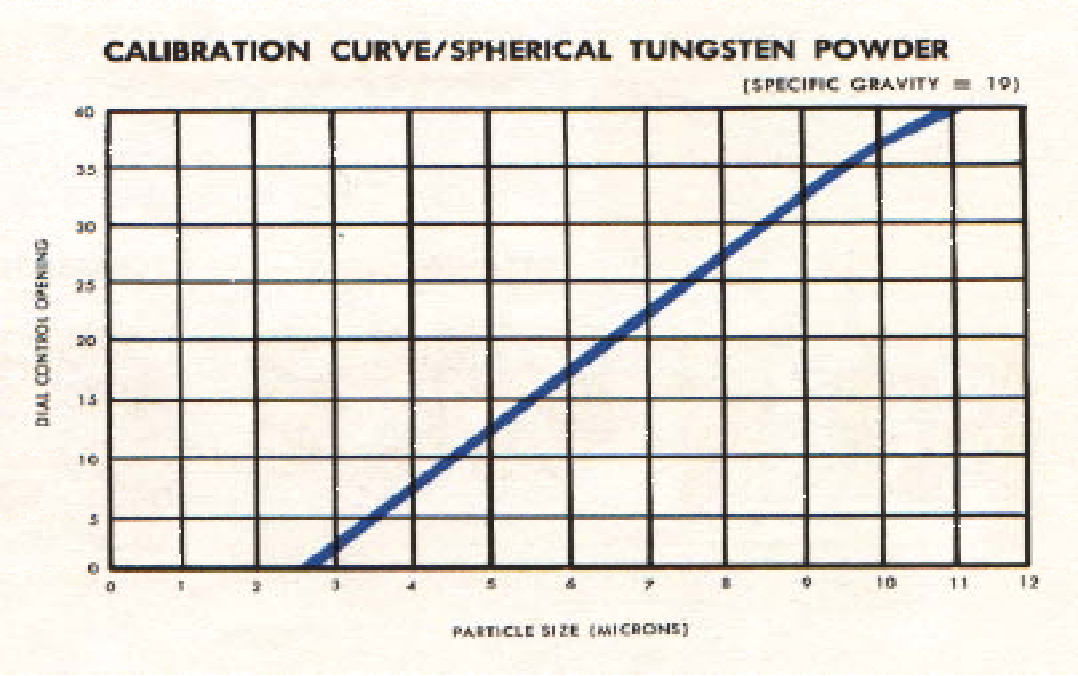
Separation points are varied by changing the air flow through the classification zone with the stepless dial control. Separation points for a given material are established by calibration (see below).

The capacity of the C-1 is a function of the air-weight-flow moving through the unit. Therefore, the capacities vary from approximately 50 pounds per hour, with less dense materials and with the dial cantrol setting for the smallest size particle separation point, up to 500 pounds per hour with higher density materials and with the maximum size separation point.

Several configurations of the Classifier are available for separation ranges from minimum of d= 9/ (square root of s) to a maximum of d = 120/(square root of s)
WHERE: d = particle size in micron
s = partical density in gm/cc

CALIBRATION

Calibration for the dial control settings of specific separation points for a given material is easily accomplished. Classify samples of the material at a minimum of six control settings over the control range. Make slides of both fine and coarse samples taken from each setting. By microscopic examination accurately measure the mean diameters of the largest particles on the fine samples and the mean diameters of the smallest particles on the coarse samples. Plot the points on a graph showing dial control setting versus particle size. Complete the curve by connecting the points. For an example, see the graph below.



Size of Classifier Unit Height—22.0 inches; diameter—21.5 inches
Weight of Classifier Unit: 350 pounds
Capacity (input): 50 to 500 pounds per hour, depending on material and dial control setting.
Feed size: 1/8 inch, maximum
Drive motor 7.5 hp, 220/440 volts, 60 cycles, T.E.F.C. type electrical motor
Lubrication: None required. (Motor bearings are factory grease packed.)

Cyclone Air Cleaner Size: Height—45.5 inches; diameter—13 inches
Weight: 70 pounds.

INSTALLATION REQUIREMENTS (CUSTOMER FURNISHED)

Motor starter
On-Off push button station or Variable Speed Motor Controller
Power lines to motor connection box
Air supply: 15 SCFM, 60 p.s.i.g. at unit, filtered
Exhaust system with filter for 750 c.f.m. (if required)
Hopper with controllable vibrator feeder or screw feeder.

OTHER VORTEC PRODUCTS

Vortec Particle Classifier, Model C-2: Input capacity 10,000 pounds per hour.
Vortec Impact Mill, Model M-1: Input capacity 500 pounds per hour.
Vortec Impact Mill, Model M-2 Input capacity 10,000 pounds per hour.

For full information on these machines, write or call:

MR. HARRY TANG

VORTEC PRODUCTS COMPANY
20943 BRANT AVE. • LONG BEACH,CA 90810
Voice: (310) 537-6624 Fax: (310) 537-0518
E-Mail: harrytang@vortecproducts.com Web Site: www.vortecproducts.com