



VIBROMAC

Technology Solutions

LIQUID VACUUM
REFINING



THE SUBMILL AND THE NEW TECHNOLOGY FOR COSMETICS

LIQUID GRINDING MILL

The main function of the Submill is to grind/disperse pigments and other raw materials which have been premixed in a liquid phase. For a better performance, all powders/pigments have to be slightly moistened during the following three phases:

- Water
- Oil
- Greasy.

The immersion mill for discontinuous processing, an innovative cycle in cosmetics production, offers several benefits:

- The grinding/dispersion process takes place within a fully automated closed cycle, and does not need any supervision;
- Vacuum-sealed process;
- Process temperature is controlled by a thermostat;
- Cleaning times are reduced to just a few minutes.

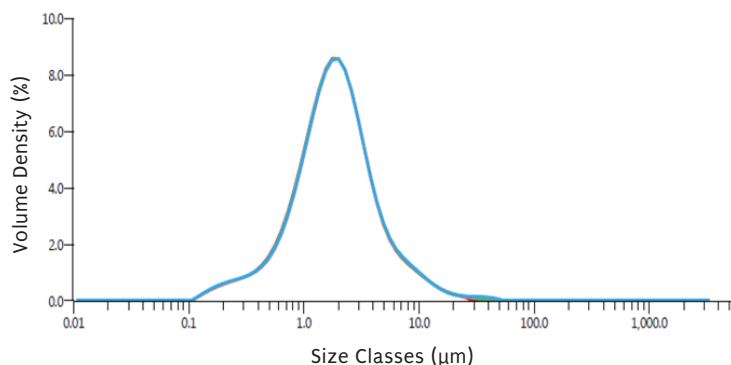
The Submill is a valid alternative to the three-cylinder machine and bead mills using feeding pumps to recirculate the product to be treated.

The quality and processing time of end products are excellent when compared to products manufactured with three-cylinder machines.

There is also no need for specialised operators.

Every part in contact with the product is in mirror-polished AISI 316 stainless steel, whereas other structural components are in glazed AISI 304 stainless steel.

GRANULOMETRIC CURVE



Dv (10)	0.630 µm
Dv (50)	1.82 µm
Dv (90)	5.01 µm

ANALYSIS OF GRANULOMETRIC CURVE
IN PARTNERSHIP WITH THE POLYTECHNIC OF MILAN

GRINDING CHAMBER

Product recirculation, generated by an impeller under the grinding chamber, creates an upward flow along the vessel walls.

Products are continuously sucked and expelled from the grinding chamber where beads are kept moving by an impeller rotating at a pre-set speed. Products are gradually ground/dispersed.

Beads are in cerium-loaded zirconium oxide. Thanks to their hardness, they do not wear out over time.

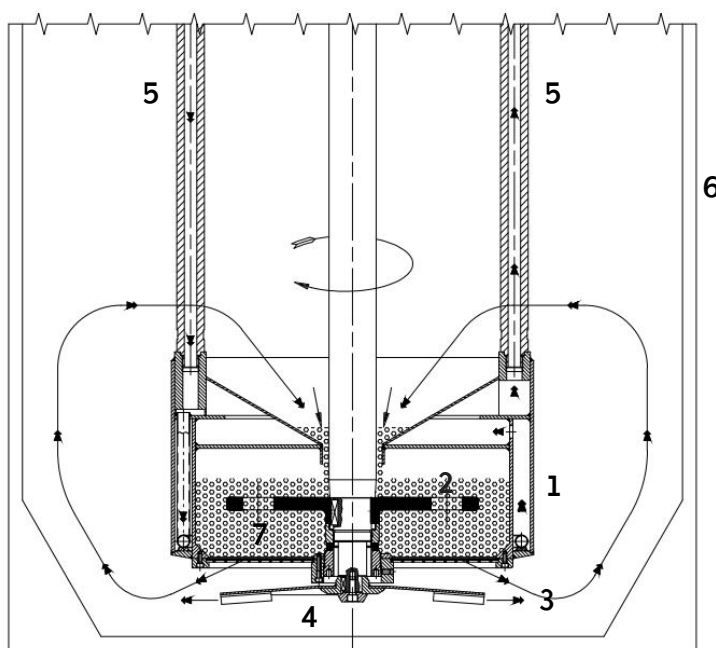
The grinding and dispersion process of standard pigments for cosmetics takes 30-40 minutes.

At the end of the process the granulometric spectrum is very narrow and without undispersed pigments (see granulometric curve).

The grinding chamber has a jacket for water recirculation. Water comes from a thermostat, useful to cool or heat products to grind.

LEGEND

1. Grinding chamber
2. Internal grinding impeller
3. Filtering net
4. Bottom or external impeller
5. Cooling/heating circuit
6. Cooling/heating circuit
7. Grinding beads



VESSEL

The grinding vessel is in mirror-polished AISI 316 stainless steel, and has a jacket for water circulation from 15° to 95° C.

Recirculating water used to fluidify products to be ground is heated with a built-in water thermoregulator.

To use the machine more efficiently, more than one grinding vessel can be employed.



LID

The vacuum lid is an integral part of the machine and has the following accessories:

- Glass window to check processing
- Lamp
- Connection for vacuum pump with vacuum gauge
- Connection for steam condenser
- Product temperature detection probe



TOUCH-SCREEN

The Submill is managed by PLC; its control panel, with a built-in colour touch screen, is used to set parameters.

The Submill offers a parameter storage/recall function for standard process cycles.

Cycle sequence and parameters can be stored and downloaded for each production batch.



CLEANING

Submill cleaning is extremely simple and fast.

When grinding is over, the grinding chamber needs to be lifted with an hydraulic cylinder and emptied by rotating the internal and external grinding impellers at slow speed. The chamber is then immersed in the cleaning liquid, usually warm isopropyl myristate. For optimum cleaning, 10-15 minutes are enough.

■ TECHNICAL FEATURES

	SMC LABO	SMC PILOT	SMC 10	SMC 20
INSTALLED POWER HP/(Kw)	0,75/(0,55)	3/(2.2)	10/(7.5)	20/(15)
VESSEL CAPACITY	1	Standard 18	130	300
		Special 10		
MIN/MAX BATCH (lt)	0.3/0.8	Standard 8/12,5	35/85	140/240
		Special 3/6		
SIZE cm (b x p h h1 – h2)	70x50x80	90x70x185-230	140x190x200-300	150x175x170-250
CERIUM LOADED ZIRCONIUM OXIDE BEADS (3,69 kg/lt)	0.15 kg	1.5 kg	15 kg	25 kg



VIBRO-MAC S.r.l.

Via Primo Maggio, 2/4
20070 San Zenone al Lambro (MI)
Italy

Tel. +39.02.98264390

Fax. +39.02.98264392

info@vibromac.it

www.vibromac.it