



Probst & Class

invented and built to last

PUC Colloid Technology



Mixing
Emulsifying
Homogenising
Micro-comminution
De-agglomeration
Dispersing
Dissolving

Probst & Class

Special Machines for Process Technology
since 1926

PUC Colloid mill

PUC colloid mills are robust, tried and tested solutions with high operational availability over a long life cycle.



Around the world, users in the chemical, cosmetic, pharmaceutical, food and lubricant industries count on PUC's experience and unique know-how, gained over decades.

In laboratories, pilot plants and production PUC colloid mills are used for the following technical processing tasks:

- micro-comminution
- homogenising
- dispersing
- denodulisation
- emulsifying

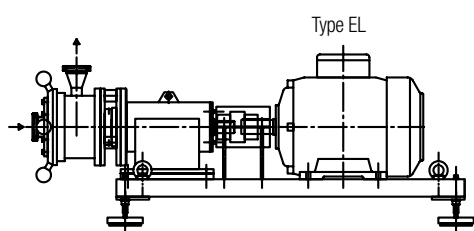
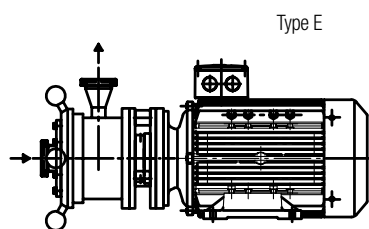
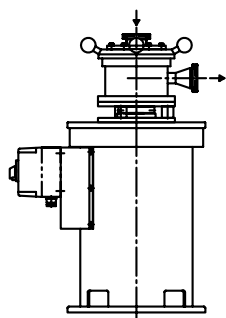
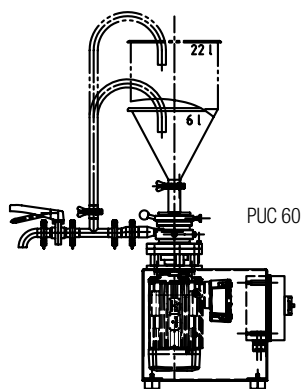
organic and inorganic substances with a wide range of viscosity.

PUC colloid mills are available in various application-oriented types: PUC 60, O, E and EL.





PUC colloid mills



	Power (kW)	Dimensions (mm)		
		L	W	H
PUC 60	2,2	980	330	1070 (1300)
Type O				
PUC 100	5,5/7,5	400	425	814
PUC 120	7,5	400	425	814
PUC 130	11	475	500	949
PUC 150	18,5	475	500	953
PUC 160	22	475	500	953
PUC 180	37	510	535	1070
Type E				
PUC 100	5,5/7,5	719	340	320
PUC 120	7,5	719	340	320
PUC 130	11	861	340	410
PUC 150	18,5	865	380	410
PUC 160	22	865	380	430
PUC 180	37	983	420	499
Type EL				
PUC 100	5,5/7,5	1510	562	518
PUC 120	7,5	1510	562	518
PUC 130	11	1510	562	580
PUC 150	18,5	1514	562	580
PUC 160	22	1514	562	600
PUC 180	37	1541	562	669
PUC 220	45	1705	632	1024
PUC 600	55	1750	632	1049

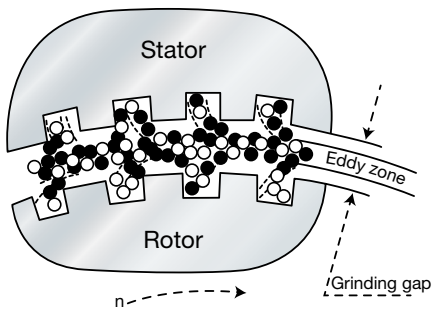
Table of dimension/Dimensions are approx. values!

PUC Colloid mill

The modular technical design allows for an optimal adaptation to the performance requirements and to the product to be processed.



The colloid milling sets consist of stator and rotor with different teeth according to the particular products.



Due to the different taper of the splined conical face of the rotor and stator, a shrinking annular gap results in the direction toward the outlet cross-section. This is infinitely adjustable for all machines, even standard machines, via a locking collar and scale. High shear, compressive and friction forces work on the material particles for the desired result, determining grain size and throughput.



Connections of product feed/discharge for types E and EL Standard DIN 11851.

The PUC colloid mill provides reproducible results at all times in relation to grain distribution and particle or droplet size.

The product chamber of the PUC mill is sealed with lip seal and/or single or double-acting standard slide ring seal appropriate to the operating conditions. These are integrated in a seal cartridge.





All components touching the product, material 1.4404/AISI 316 L and DIN 1.4571/AISI 316 Ti.

PUC colloid mills are designed and configured compliant with GMP guidelines and are CIP capable. They correspond to the current accident prevention regulations according to Machinery Directive 2006/42/EC.



Special process and product-related options, e.g.

- automatic adjustment of the mill gap
- connections: tri-clamp, special flanges etc.
- heatable and coolable mill housing
- explosion-protected motors (ATEX, EEx de)

supplement the standard PUC range.

In terms of design, PUC colloid mills are configured for minimal maintenance and easy cleaning and installation.

Machine model	PUC	Laboratory	Production						Volume production	
		60	100	120	130	150	160	180	220	600
Products										
liquid (water)	~ 100 cp	400	2.300	4.000	6.000	12.000	16.000	23.000	34.000	80.000
slightly viscous (condensed milk)	~ 1.000 cp	300	1.500	3.000	3.500	6.500	8.000	11.000	16.500	40.000
viscous (Cream)	~ 5.000 cp	250	1.300	1.800	2.000	3.500	4.300	6.000	10.000	30.000
slightly pasty (paste)	~ 50.000 cp	200	700	1.300	1.800	2.800	4.000	5.500	9.000	25.000
pasty (ointment)	~ 80.000 cp	150	500	1.000	1.300	2.300	2.800	4.000	6.500	18.000

Maximum output l/h for medium milling gap setting – values not guaranteed

PUC Perforated disc mill

PUC Perforated Disc Mills comminute efficiently fragmentary products.



PUC Perforated Disc Mills are used to crush chunky products, as well as for pre-milling and pulping and mashing of, e.g., fruits and vegetables of different types and varieties and with moist consistency.

The product is fed by a hopper or inline via worm or pump.

The axial-fed product is crushed by the interaction of the four-blade rotating cutter bar and the fixed perforated disc. The crushed product is discharged from the milling chamber by an impeller.



The diameter of the holes in the perforated disc is set depending on the base product and the desired grinding level. Related to this, the perforated discs are available with different hole diameters.

PUC Perforated Disc Mills are available in various types

- O = vertical with hopper
- E = horizontal inline for connection to piping system
- EL = horizontal inline with separate shaft bearing and standard B3 motor

Materials

Mill housing: DIN 1.4571/AISI 316 Ti/
DIN 1.4404/AISI 316 L

Cutter bar and perforated disc:
DIN 1.4112/AISI 440 B, hardened

Shaft seals: Lip, single- and double-acting slide ring seals, in integrated seal cartridge

Machines designed for a system pressure of 6 bar.

Model	Throughput (kg/h)	Drive power (kW)
LM 150	2.500	7,5
LM 180	12.000	18,5
LM 250	20.000	30,0

Motors

IE 3 standard, Protection class IP55



PUC Vibroreactor

The PUC Vibroreactor is universally used in different industries.



The PUC Vibroreactor is universally used in the chemical, petrochemical, pharmaceutical, cosmetic and food industries for

- crushing
- homogenising
- denodulisation
- emulsifying

of organic and inorganic substances with low to high viscosities.

The principle of the PUC vibroreactor is based on a three-stage rotor/stator system.

Stage 1 is formed by a rotating impeller or teathed blades with a fixed base as a cutting edge.

This causes high axial velocity and

- pre-disintegration of products with fibrous components
- pre-dispersion of suspensions containing solids
- pre-emulsification of separate liquid phases
- de-agglomeration of agglomerates.

Stage 2 consists of rotor and stator and causes the final homogenisation, dispersion or emulsification.

Stage 3 – here the impeller discharges the product and increases the pressure.

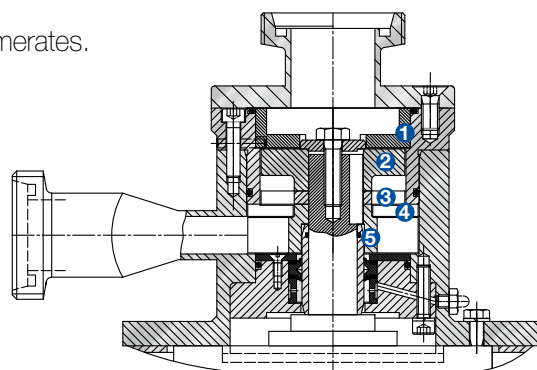
The machine is designed for high throughput with intensive product handling, and for minimal maintenance and easy cleaning.

The sealing of the shaft is designed dependent on product and operation as a multi-lip, single- or double-acting slide ring seal integrated in the seal cartridge.

All components touching the product, material 1.4404/AISI 316 L or 1.4571/AISI 316 Ti.

The machine is delivered in various types, adapted to the respective application.

- O = vertical with hopper
- E = horizontal inline for connection to piping system
- EL = horizontal inline with separate shaft bearing and standard B3 motor



- 1 Fixed cutting Edge
- 2 Blades
- 3 Rotor
- 4 Stator
- 5 Impeller

PUC Colloid Technology

Products and Range of Applications

Hygiene and sterility are the decisive criteria for the use of our machines and for good and safe products and results.



PUC Colloid Mill

Emulsifying, dispersing, crushing, homogenising and suspending from liquid to highly viscous products

PUC Perforated Disc Mill

Homogeniser for continuous homogenisation and dispersion

PUC Vibroreactor B

Crushing of chunky products with moist consistency

Range of Applications of PUC Machines

Cosmetic Industry

Bath additives	Soaps
Creams	Emulsions
Lotions	Face milk
Ointments	Make-up
Toothpastes	Shampoos

Chemical Industry

Colourings	Paper coatings
Detergents	Latex emulsions
Plastics	Textile coatings
PVC coatings	Car shampoos
	Sealants

Pharmaceutical Industry

Ointments	Starch solutions
Extracts	Creams
Emulsions	Pastes
Colour solutions	Lotions

Food Industry

All kinds of pastes	Baby Foods · Soups
Extracts · Drinks	Spiced pastes · Ketchups
Milk products	Cream cheese
Salad creams	Soya products

Our laboratory will carry out tests free of charge for customers and other interested parties.
PUC special designs can be adapted to any operating conditions.



Probst & Class

invented and built to last

Probst & Class GmbH & Co. KG

Industriestraße 28 | 76437 Rastatt / Germany

Phone + 49 (0) 72 22 90 79 - 0

Fax + 49 (0) 72 22 8 12 74

info@probst-class.com

www.probst-class.com