



# KINEMATICA

Homogenizing perfected.



## POLYTRON®

**LABORATORY LINE**

### POLYTRON® PT 1200 E

Hand Disperser (Ecoline), dispersing devices for budget-conscious labs

# POLYTRON® PT 1200 E

Efficient and Economical.

This ergonomic hand disperser is lightweight and therefore ideal for rapid turnaround of smaller sample volumes. The extensive range of dispersing aggregates covers a wide range of sample preparation applications.

## THE EXPERT FOR YOUR LABORATORY

Since more than 60 years we are perfecting the rotor / stator technology, working in close cooperation with users and universities. When using our technology, your test samples will be dispersed into homogeneous systems. Depending on the type of samples you will get homogeneous emulsions, dispersions or suspensions. This is the best foundation for all subsequent analyses or formulations.

## ERGONOMICS

- Easy operation with an on-off switch and speed control
- Lightweight
- Intelligent variable speed control for long equipment life
- Low noise
- Height adjust stand (available as an option)
- Switch aggregate quickly with Click & Go coupling
- Easy aggregate clean-up with EasyClean Design

## RESULTS ARE CONVINCING

- Smallest sizes of particles / droplets: because precise analysis require homogeneous samples
- Efficient sample preparation: because fast dispersion saves time
- Standard or custom-made aggregates: perfected for and in cooperation with the users
- Cleaning and disassembly: EasyClean design makes it very simple
- Quick coupling of the aggregates: by using Click & Go
- Best materials available: because without them, we could not call it Swiss Made
- Durability is a Swiss virtue



44 mm



220 mm





#### TECHNICAL INFORMATION

Processing volume (water)	0.05 up to 250 ml
Tip speed	Up to max. 14 m/s Up to max. 21 m/s (X-Aggregate)
Applicable aggregates	ø 3, 5, 7, 12 mm ø 20 mm X-Design
Speed range	0 to 25000 rpm
Drive coupling	Aggregates with E coupling
Noise level (drive without aggregate)	≤ 65 dB(A) at 20 000 rpm ≤ 76 dB(A) at 25 000 rpm
Motor	Universal with carbon brushes
Drive power	100W
Connection voltage	90 – 230 V ± 10%, 50Hz / 60Hz
Relative humidity (max.)	80% during storage 80% during operation
Operating temperature	0 – 40 °C
Protection class acc. to DIN	IP 20
Dimensions (LxWxH)	Drive: 220x44x55 mm Power supply: 132x58x30 mm
Weight	Drive: 440 g Power supply: 310 g
EMC standards	IEC / EN 61000-6-2 / EN 61000-6-3
Safety standard	IEC / EN 61010-2-51



#### USERS / APPLICATION RANGES

- General homogenizing applications
- Dispersions, suspensions, and emulsions
- Dispersion of plant, animal and human tissue samples in various liquids and volumes
- Extraction of active pharmaceutical ingredients (API) in pills and tablets
- Sample preparation for medical diagnostics and RNA / DNA analysis

- Breakdown of animal and plant cells
- Emulsions and suspensions in tiny volumes
- Cell breakdowns for enzyme studies
- Preparation of samples for genetic studies
- Deagglomeration of cell complexes

This list provides a small selection of possible applications.

# Kinematic dispersion.

Using the rotor / stator system.

Who is the inventor of it?

The roots of today's Kinematica began in the former chemical / physical research institute of Prof. P. Willems in Lucerne, Switzerland, the inventor of the modern rotor / stator dispersion technology.

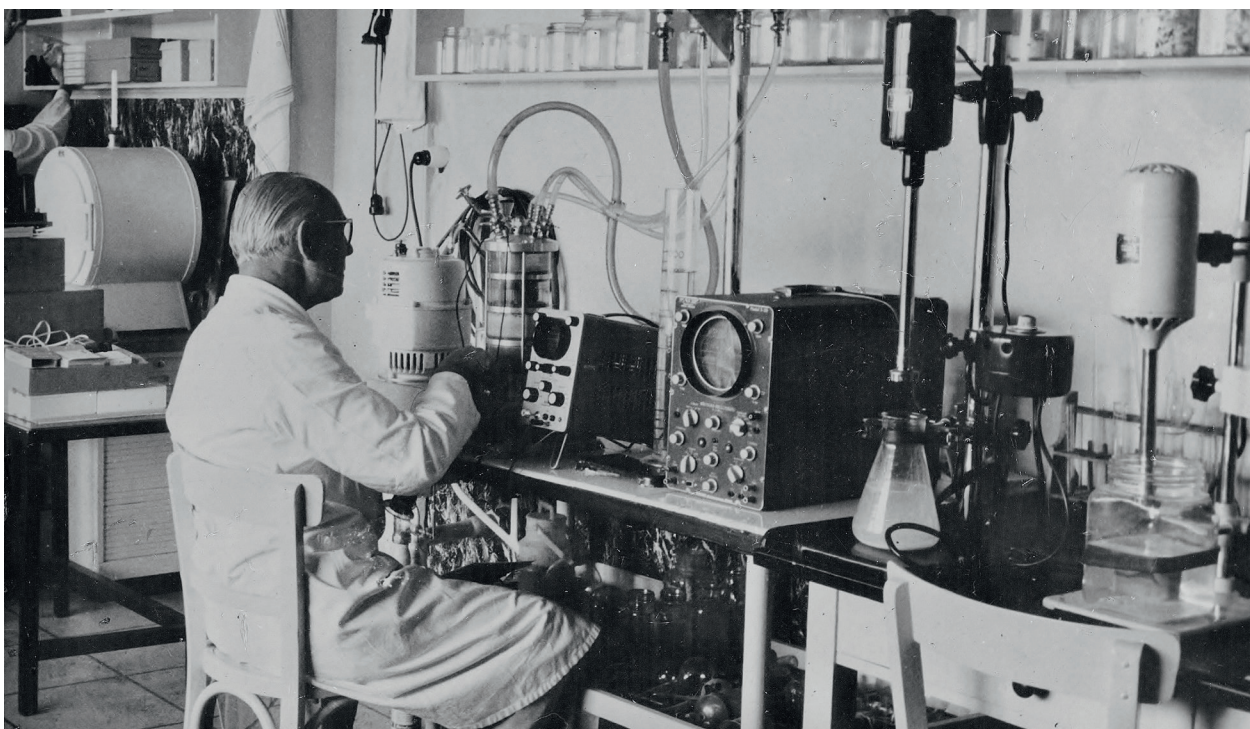
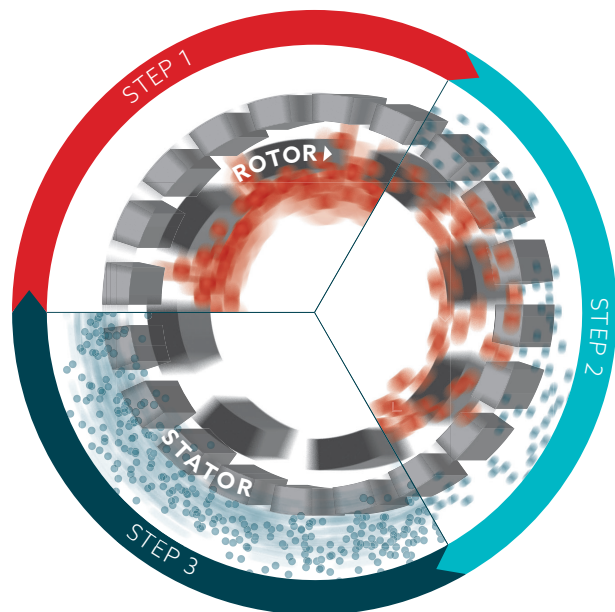
## THE PRINCIPLE

The spinning rotor generates a vacuum. The sample is drawn in and discharged to the outside through the stator's slots. Between the rotor / stator (shear gap), the product is subject to high deceleration-tangential and radial acceleration forces. The individual particles / droplets are torn apart and thus reduced in size; they are reduced to several micrometers in size through additional cutting and crashing effects.

## THE RESULT

Microscopic dispersions, emulsions, suspensions, and foams are generated. Droplets, particles, and gas bubbles are reduced to several micrometers or smaller. Small and large substances are dispersed more economically, faster, and better than with any other system.

Your samples are efficiently «**POLYTRONIZED**».



# Aggregate Technology.

Unrivaled.

The high efficiency and the uniqueness of our POLYTRON® dispersing aggregate can only be achieved through superior manufacturing precision and the sophisticated Kinematica design method. This is 100 % Swiss Made.

## **STANDARD AGGREGATES (EC DESIGN WITH TWO GEAR RINGS)**

This is all you need for popular applications in the preparation of samples and formulation development. The cutting teeth embedded in the head of the tool optimize the pre-crushing of the sample. An enclosed ring design provides optimum protection for those teeth and prevents them from bending.

## **SPECIAL AGGREGATES (W, M, B, SYN, Z & X DESIGN)**

Specializations in the chemical, pharmaceutical, cosmetic, and food industry, as well as the life sciences, makes new designs inevitable. These aggregates are based on state-of-the-art technology and only available from Kinematica.

The highly specialized tool is subject to further development that involves close cooperation with our customers and universities. Thus, it is continuously perfected for specific applications.

## **MATERIALS**

Whether you need a tool with standard or special geometry, all aggregates are manufactured from high-alloy stainless steel 316L, electrolytically polished and made in Switzerland. Our synthetic aggregates (SYN) are manufactured from the highest quality materials available. This guarantees their application at a motor speed up to 30 000 rpm.

## **BEARINGS**

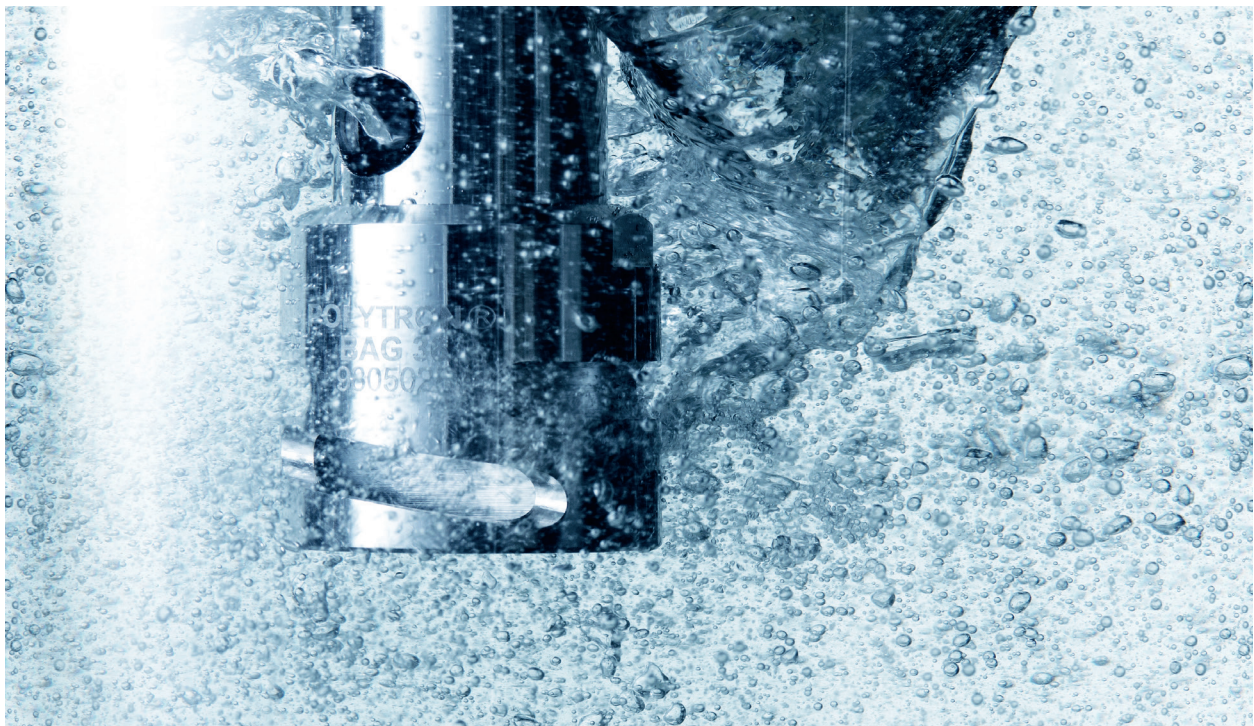
All dispersing aggregates for the PT 1200 E are equipped with high-quality synthetic bearings. They exhibit excellent mechanical properties and chemical resistance. They are all FDA approved.

## **CLEANING AND DISASSEMBLY**

EasyClean: Our technology ensures the simplest removal and fast cleaning, either by hand, dishwasher, or autoclave. Disassembling the precisely fitting components is simple and fast.

## **LOCKING SYSTEM**

All our POLYTRON® aggregates are fitted with a high-precision quick-release system: The Click & Go.



# Dispersing aggregates for PT 1200 E.

Your applications, our solution.

Kinematica aggregates solve all problems you are faced with every day in the laboratory. Using our Click & Go quick release makes the changing of aggregates very easy.



## EC «STANDARD DISPERSING AGGREGATE»

### Design

The universal geometry uses two rows of teeth, is suitable for a large spectrum of laboratory applications, and it is reliable and efficient.

### Selection and applications

- All standard dispersing tasks
- Grinding of animal and human tissue samples in a variety of fluids and volumes
- Sample preparation for the extraction and dissolution of organic materials
- Sample preparation for medical diagnostic procedures as well as DNA analysis
- Extractions of systems/substances from vegetable-derived samples
- Disruption of animal and human cells
- Deagglomeration of united cell structures
- Intensive mixing



## SYN «SYNTHETICS»

### Design

Disposable aggregates for the processing of multiple samples per day, where the required sterilization of stainless steel aggregates represents a significant time limitation. Available in PES/Special POM. Sterile packaging in packet sizes of 25 units each (ø 7 mm) and 10 units per packet (ø 12 mm) each.

### Selection and applications

- Prevention of X contamination
- All standard dispersing applications similar to EC aggregate



## B «BIOTRONA® HIGH-TURBULENCE MIXER»

### Design

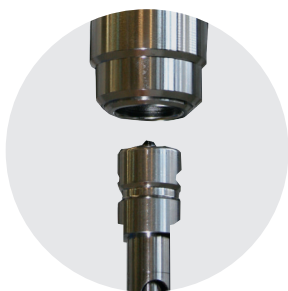
High-turbulence mixing head with the least possible shear forces and energy inputs.

### Selection and applications

- Quick removal and suspension of solid particles; also suitable for high viscosity applications

Sales No.	Product	ø/length mm	Volume ml	max. Tip speed m/s
<b>EC «STANDARD DISPERSING AGGREGATE»</b>				
11030004	PT-DA 03 / 2EC-E050	3/50	0.05 - 2	3
11030012	PT-DA 05 / 2EC-E085	5/85	0.1 - 5	5
11030031	PT-DA 07 / 2EC-E107	7/107	0.3 - 10	7
11030062	PT-DA 12 / 2EC-E123	12/123	2 - 250	12
11030042	PT-DA 12 / 2EC-E157	12/157	2 - 250	12
<b>SYN «SYNTHETICS»</b>				
11030030	25 x PT-DA 07 / 2SYN-E082*	7/82	0.3 - 10	7
11030037	25 x PT-DA 07 / 2SYN-E082**	7/82	0.3 - 10	7
11030038	12 x PT-DA 07 / 2SYN-E082**	7/82	0.3 - 10	7
11030035	10 x PT-DA 12 / 2SYN-E126*	12/126	2 - 250	12
11030036	10 x PT-DA 12 / 2SYN-E126**	12/126	2 - 250	12
	*Sterile pack / **Non-sterile pack			
<b>B «BIOTRONA® HIGH-TURBULENCE MIXER»</b>				
11030034	PT-DA 07 / BEC-E107	7/107	10 - 100	7
11030286	PT-DA 12 / BEC-E157	12/157	50 - 500	12

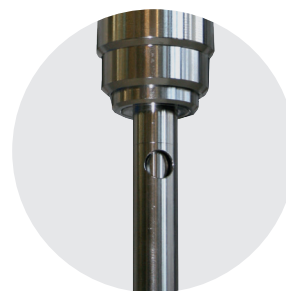




Step 1



Step 2



Step 3



### M «OUTSIDE CUTTING BLADES»

#### Design

Outside blades pre-cut samples that are larger than the rotors diameter. Subsequently, they can be dispersed inside the generator.

#### Selection and applications

- Dispersing of large samples made simple
- All standard dispersing applications similar to EC aggregate



### Z «Z-DESIGN»

#### Design

Breaking up of hard probes, with integrated V-notch technology. Additional, integrated holes for cleaning.

#### Selection and applications

- Hard and brittle material
- Sweet corn and grain
- Breaking, opening and dispersing of pills
- Breaking, hard grains



### W «W-DESIGN»

#### Design

The W-design prevents fibrous, stringy or solid samples from clogging the rotor / stator.

#### Selection and applications

- Dispersing fibrous, stringy or solid samples (e.g., pieces of meat)
- All standard dispersing applications similar to EC aggregate



### X «X-DESIGN»

#### Design

A special geometry designed for dispersing tablets and pills or for preventing suppositories from clogging or agglutinating.

#### Selection and applications

- Ultrafast crushing of tablets, coated pills, and suppositories
- Basis for the analysis of active pharmaceutical ingredients (APIs)
- Used in the substance analysis or for the quality control during the production of tablets

Sales No.	Product	ø / length mm	Volume ml	max. Tip speed m/s
<b>M «OUTSIDE CUTTING BLADES»</b>				
11030266	PT-DA 12/2MEC-E157	12/157	2 - 250	14
<b>Z «Z-DESIGN»</b>				
11030067	PT-DA 12/2ZMEC-E157*	12/157	2 - 250	12
	* Z-Design aggregate with knives			
<b>W «W-DESIGN»</b>				
11030060	PT-DA 12/2WEC-E157	12/157	2 - 250	14
<b>X «X-DESIGN»</b>				
11030255	PT-DA 20/2XEC-E116	20/116	min. 10*	21
	*When using a vessel ø 22 mm / volume is always dependent on the diameter of the vessel			



# Dispersing vessels.

For best results.

Choosing the right dispersing aggregate is crucial for good results. The right vessel also contributes to achieve the desired result.

## THE PROBLEM

For normal cylindrical beakers, the flow creates a vortex. The mixing and dispersing efficiency decreases considerably since the product is no longer being optimally processed through the dispersing generator head. This lengthens processing times, requiring more energy input. Depending on the shape of the vortex, this may also lead to additional air being introduced.

## THE SOLUTION

Our specially designed GS jars have a cloverleaf-like shape. This effectively interrupts the flow in the radial direction and generates additional counteracting forces. These high turbulences maximize the mixing and dispersion efficiency, thus minimizing processing time and requiring less energy.

## THE SELECTION

Our GS-glasses are available in chemical- and temperature-resistant borosilicate glass or in stainless steel, with working volumes from a few milliliters to several liters, with or without lid and with or without sealed feedthrough.



GS vessel principle (viewed from top)



Sales No.	Product	Ø/H (mm)	Process volume	Thickness	Thread	Description
Open on top						
11051010	GS 15	30/100	35ml	2.8 mm	-	-
11051011	GS 25	54/150	150ml	3.5 mm	-	-
With screw cap and sealing						
11051020	GS 15K	30/100	35ml	2.8 mm	GL25	-
11051021	GS 25K	54/150	150ml	3.5 mm	GL45	-
Incl. cover with sealing and hole						
11051030	GS 15KL08	30/100	35ml	2.8 mm	GL25	8mm hole
11051031	GS 15KL12	30/100	35ml	2.8 mm	GL25	12mm hole
11051040	GS 25KL12	54/150	150ml	3.5 mm	GL45	12mm hole
11051041	GS 25KL20	54/150	150ml	3.5 mm	GL45	20mm hole



# Order information and accessories.

Authorized extension of your system.

Depending on your specific requirements, it is possible to expand the PT 1200 E drive with our functional accessories. Our expert personnel will be happy to assist you and answer all the questions you might have.



## DRIVES

Sales No.	Product	Description
11010025	PT 1200 E, 230 V	Drive unit, EU-power cable and tabletop power supply
11010027	PT 1200 E, 230 V	Drive unit, CH-power cable and tabletop power supply
11010028	PT 1200 E, 230 V	Drive unit, UK-power cable and tabletop power supply
11010026	PT 1200 E, 100 - 120 V	Drive unit, Power cable and tabletop power supply

## HOLDER SYSTEM AND STAND

Sales No.	Product	Description
11040006	HS 1200 E	Stainless steel holder for drive unit, tabletop power supply, four dispersing aggregates and two tools. Weight: 0.68 kg
11040007	ST-P 13/ 320	Stainless steel plate stand with anti-slip mat made of silicone, with height-adjustable holder for the drive and for fastening the base station. Weight: 1.00 kg



## ADAPTER

Sales No.	Product	Description
11035002	Adapter PT-DA/PT-DA (E/C)	This adapter connects older C-coupling dispersing aggregates such as PT 1200 C/CL/B with E-coupling drive units.



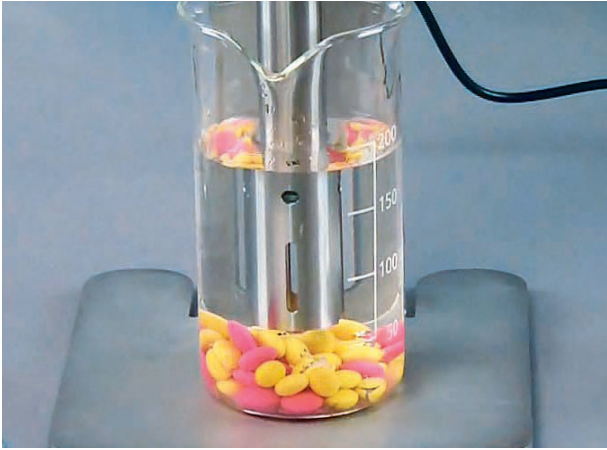
## CARRYING CASE

Sales No.	Product	Description
11040004	Carrying case	Made of polypropylene (anthracite), with feet, continuous hinge, sturdy clip closures and openings for drive unit, tabletop power supply, cables, and two aggregates. Dimensions: 350x245x100 mm / Weight (empty): 1.10 kg

# Users / application ranges.

Best solution for every application.

Since 1962 we are a leading supplier of dispersing solutions for applications in the chemical, biotechnology, pharmaceutical, cosmetics and food industries. Due to our close relationships with our customers we detect new trends early and we always look for ways to find an ideal solution for you.





# Our mission. Your solution.

Homogenizing perfected: for every industry.

Kinematica's broad portfolio of solutions can address almost every dispersing application for the pharmaceutical, cosmetic, chemical, food and life science industry. Innovative powder-induction systems, solutions for completely sterile environments, or fully-compliant ATEX architecture are just some examples of the broad portfolio that Kinematica can offer with true scalability from pilot-plant to large plant configurations.

Our state-of-the-art technology, in addition to a professional consulting and engineering suite of services, can address a variety of processes such as blending / mixing / stirring, emulsifying, deagglomerating, foaming, crushing and homogenizing with particle size reduction from a few micrometers down to nanometers in size: the proprietary design and innovative geometry of our aggregates / generators can downsize and provide perfect statistical particle distribution for the finest emulsions / suspensions and foam dispersions.



**PHARMA**



**CHEMICAL**



**COSMETICS**



**FOOD**



**LIFE SCIENCE**



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