

CryoMill

General Information

The CryoMill is tailored for cryogenic grinding. The grinding jar is continually cooled with liquid nitrogen from the integrated cooling system before and during the grinding process.

Thus the sample is embrittled and volatile components are preserved. The liquid nitrogen circulates through the system and is continually replenished from an Autofill system in the exact amount which is required to keep the temperature at -196 °C.

Powerful impact ball milling results in a perfect grinding efficiency. The Autofill system avoids direct contact with LN2 and makes the operation very safe. Its versatility (cryogenic, wet and dry grinding at room temperature) makes the CryoMill the ideal grinder for quantities up to 20 ml.



Application Examples

animal feed, bones, chemical products, food, hair, oil seeds, paper, plant materials, plastics, sewage sludge, soils, tablets, textiles, tissue, waste samples, wood, wool, ...

Product Advantages

- powerful cryogenic grinding by impact and friction, up to 30 Hz
- 3 different grinding modes (cryogenic, dry or wet at ambient temperature)
- closed LN2-system (autofill) for enhanced safety, avoids any contact of the user with LN2
- screw-top grinding jars for convenient, leak-proof operation
- wide range of accessories including various LN2 feeding systems, jar and ball sizes, adapter racks, materials
- low LN2-consumption
- clearly structured user interface, memory for 9 SOPs
- programmable cooling and grinding cycles (10 s to 99 min)

Features

Applications	size reduction, mixing, homogenization, cell disruption
Field of application	agriculture, biology, chemistry / plastics, construction materials, engineering / electronics, environment / recycling, food, geology / metallurgy, glass / ceramics, medicine / pharmaceuticals
Feed material	hard, medium-hard, soft, brittle, elastic, fibrous
Size reduction principle	impact, friction



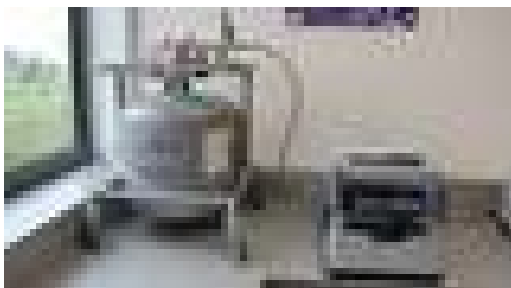
CryoMill

Material feed size*	<= 8 mm
Final fineness*	~ 5 µm
Batch size / feed quantity*	max. 20 ml
No. of grinding stations	1
Setting of vibrational frequency	digital, 5 - 30 Hz (300 - 1800 min ⁻¹)
Typical mean grinding time	10 min / 4 min (cooling / grinding)
Dry grinding	yes
Wet grinding	yes
Cryogenic grinding	yes
Cell disruption with reaction vials	yes
Self-centering clamping device	yes
Type of grinding jars	screw top design
Material of grinding tools	hardened steel, stainless steel, zirconium oxide, PTFE
Grinding jar sizes	5 ml / 10ml / 25 ml / 35 ml / 50 ml
Autofill	50 l
Setting of grinding time	digital, 30 s - 99 min
Storable SOPs	9
Electrical supply data	100-240 V, 50/60 Hz
Power connection	1-phase
Protection code	IP 30
Power consumption	260 W
W x H x D closed	395 x 373 x 577 mm (D: 710 mm with exhaust tube)
Net weight	~ 45 kg
Documentation	Operation & Application Video
Standards	CE

Please note:

*depending on feed material and instrument configuration/settings

Videolink



<http://www.retsch.com/cryomill>



CryoMill

Function Principle

The grinding jar of the CryoMill performs radial oscillations in a horizontal position. The inertia of the grinding balls causes them to impact with high energy on the sample material at the rounded ends of the grinding jar and pulverize it. The grinding jar is continually cooled with liquid nitrogen from the integrated cooling system before and during the grinding process.

Order data

CryoMill

(please order Autofill with LN2 container and safety valve, grinding jars and balls separately)

20.749.0001 CryoMill, 100-240 V, 50/60 Hz

Grinding jars CryoMill

Hardened steel

01.462.0300	5 ml, to be used with adapter 02.706.0304
01.462.0330	25 ml
01.462.0329	35 ml
01.462.0328	50 ml

Stainless steel

01.462.0290	5 ml, to be used with adapter 02.706.0304
01.462.0331	10 ml
01.462.0334	25 ml
01.462.0333	35 ml
01.462.0332	50 ml

Zirconium oxide

01.462.0336	25 ml
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PTFE

01.462.0335	25 ml
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Accessories CryoMill

02.480.0002	Autofill with LN2 container and safety valve, 50 litres
05.871.0001	Connection tube, incl. safety valve (for LN2 supply provided by customer)
02.706.0304	Adapter for use of 2/4 grinding jars, 5 ml
02.706.0303	Adapter for use of 2/4/6 reaction vials, 2 ml
22.749.0001	Safe-lock reaction vials 2 ml, 1000 pcs.



CryoMill

99.200.0016

IQ/OQ Documentation for CryoMill

Grinding balls CryoMill / MM 200 / MM 400

Hardened steel

05.368.0029	5 mm Ø
05.368.0030	7 mm Ø
05.368.0059	10 mm Ø
05.368.0032	12 mm Ø
05.368.0108	15 mm Ø

Stainless steel

05.368.0034	5 mm Ø
05.368.0035	7 mm Ø
05.368.0063	10 mm Ø
05.368.0037	12 mm Ø
05.368.0109	15 mm Ø
05.368.0062	20 mm Ø
05.368.0105	25 mm Ø

Zirconium oxide

05.368.0094	10 mm Ø
05.368.0096	12 mm Ø
05.368.0113	15 mm Ø

PTFE with steel core

05.368.0045	10 mm Ø
05.368.0046	12 mm Ø
05.368.0114	15 mm Ø
05.368.0047	20 mm Ø