Dry Mills

German technology
made in the USA
IKA® laboratory mills are ideal for coarse and fine particle size reduction, either in batch or continuous operation.

Grinding results of up to 1 μm particle size or 0.25 mm defined ultimate fineness can be easily achieved. Due to a broad spectrum of easily interchangeable beaters/cutters, IKA® mills are highly effective for a variety of applications.

COMING SOON:
IKA® introduces the world’s first disposable grinding tube system which eliminates the possibility of cross-contamination and saves on associated cleaning costs.

IKA® is also going to introduce a brand new A 10 basic mill with enhanced safety features. It is conceptually similar to the existing A 10 basic mill, but includes advanced features such as a digital timer, interval operation, error code display and many more improvements.

Anticipate our newly created pilot mill with modular design that allows for easy conversion from a cutting mill to an impact mill.

Protection class according to DIN EN 60529: Min. IP 21

CE | UL US LISTED

* 2+1 years after registering at www.ika.com/register, glassware and wearing parts excluded

World’s first
Tube Mill control | Fast, safe & clean

World’s first disposable grinding tube system for safe, instant and precise milling results. Its’ unique and compact design makes the unit space saving and ultra-portable. The disposable grinding chamber eliminates the possibility of cross contamination and saves on cleaning costs and time. The ability to cool the sample with dry ice expands the application range enormously.

Disposable grinding chamber

After grinding, a part of the sample will be analyzed. The remaining sample can either be discarded or it can be stored as a reference sample directly in the grinding chamber. In the latter case, grinding chambers can be labeled and either stored in a refrigerator or in a drying room. Reference samples can be re-analyzed and traced at any time.

World’s first

- Disposable grinding chamber
- Stops cross-contamination
- No cleaning required
- Perfect milling results
- Large application range

World’s first Disposable grinding chamber

No cleaning costs

The grinding chamber can either be disposed of after the test or it can be used for storage of the processed sample. This new procedure will save on both time and money. As no cleaning of the tube system is required, the user is safe from aerosol formation that frequently occurs during cleaning procedures.
A 10 basic | Analytical batch mill

A 10 basic is used for low-loss grinding of soft, hard and brittle substances of up to 50 ml with a Mohs hardness of up to 9.

A 14 Spare cutter
Suitable for crushing materials up to Mohs hardness 5. Included with A 10.

Ident. No. 3019300
Price on request

A 15 Hard metal cutter

Ident. No. 3039100
Price on request

A 17 Star-shaped cutter
Used to crush fibrous substances such as paper and vegetation, but also for plastics and material with a low specific weight. Not included with A 10.

Ident. No. 3462700
Price on request

A 18 Grinding chamber reduction
Included with A 10.

Ident. No. 2318200
Price on request

A 10 basic | Advanced technology

Newly designed batch mill for dry grinding of hard, brittle, soft and fibrous materials for volumes up to 50 ml. Due to the embrittlement of samples directly in the grinding chamber, tough, oily and aqueous samples can also be ground.

During development of the mill, particular emphasis was placed on safety. The mill will only start when the lid is closed and it can only be opened at a standstill. A quick stop feature further increases the safety of the user.

Special safety features
- The mill can only be operated if the lid is closed
- The lid can only be opened at a standstill
- A quick stop feature further increases the safety of the user
A 11 basic | Analytical batch mill

A 11.1 Spare beater
For pulverizing substances with a Mohs hardness up to 6. Included with the analytical mill A 11 basic.

Ident. No. 2904600
Price $ 54

A 11.2 Cutting blade
For pulverizing soft, fibrous grinding materials.

Ident. No. 2905200
Price $ 131

A 11.3 Beater
For pulverizing substances with a Mohs hardness up to 9, coated with chromium carbide.

Ident. No. 2906300
Price $ 193

A 11.4 Grinding chamber
Made of polycarbonate with stainless steel inlet. Not suitable for cooling with N₂, only applicable with double beater A 11.6.

Ident. No. 2904100
Price $ 187

A 11.5 Spare grinding chamber
Made of Tefcel (ETFE, glass fibre-reinforced) with stainless steel inlet.

Ident. No. 2905100
Price $ 252

A 11.6 Double beater
For use up to Mohs hardness 3. Only applicable with grinding chamber A 11.4.

Ident. No. 3302900
Price $ 181

A 11.7 Funnel
Prevents splashing of liquid nitrogen when pouring into the grinding chamber A 11.5.

Ident. No. 3046700
Price $ 311

A 11 basic is the best choice for impact and cutting grinding of hard, brittle and non-elastic substances by means of interchangeable cutting and grinding tools. Various grinding chamber sizes enable the crushing of small volumes all the way up to 250 ml with a Mohs hardness of up to 9.

M 20 | Universal batch mill

M 21 Spare cutter
Suitable for crushing materials up to Mohs hardness 5. Included with M 20.

Ident. No. 0328200
Price $ 95

M 22 Hard metal cutter
Made of tungsten carbide for hard materials up to Mohs hardness 9.

Ident. No. 0521800
Price $ 466

M 23 Star-shaped cutter
Used to crush fibrous substances such as paper and vegetation, but also for plastics and material with a low specific weight.

Ident. No. 1443400
Price $ 372

M 20.1 Grinding chamber
A second grinding chamber ensures effective processing. The grinding chambers can be placed on the drive alternately.

Ident. No. 8006200
Price $ 3,071

M 20 is suitable for low-loss, dry grinding of hard and brittle substances of up to 250 ml with a Mohs hardness of up to 9.
MF 10 basic | Microfine grinder

Continuously operating universal microfine grinder for impact and cutting grinding. Two different grinding heads can be attached to the drive and are easily interchangeable.

1. MF 10.1 Cutting-grinding head
For crushing fibrous substances such as paper and vegetation, but also for plastics and material with a low volume weight. Before being discharged, the ground material passes through a sieve. This sieve is interchangeable and available in different hole sizes (not incl. with delivery). The ground material can then be collected using an NS 29 standard ground vessel.

<table>
<thead>
<tr>
<th>Ident. No.</th>
<th>Price</th>
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<tbody>
<tr>
<td>2870900</td>
<td>$ 2,082</td>
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</tbody>
</table>

2. MF 10.2 Impact grinding head
For crushing brittle, hard materials such as minerals, building materials up to Mohs hardness 6. Before being discharged, the ground material passes through a sieve. This sieve is interchangeable and available in different hole sizes (not incl. with delivery). The ground material can then be collected using an NS 29 standard ground vessel.

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MF Sieve
Interchangeable sieves for insertion into the grinding heads ensure maximum particle size filtering.

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<td>2990000</td>
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<td>2992000</td>
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<td>2994000</td>
<td>MF 2.0</td>
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<td>2996000</td>
<td>MF 3.0</td>
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<tr>
<td>2998000</td>
<td>MF 4.0</td>
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</tbody>
</table>

Powerful drive
Easily interchangeable heads
Easy to clean working surface made of stainless steel
2+1 years after registering at www.ika.com/register

MF 10 basic | Accessories

To get customized and additional accessories, please visit www.ika.com/service
Pilotina | Powerful and safe milling!

Pilotina MC – Cutting Mill
For crushing fibrous substances such as paper and vegetation, but also for plastics and material with a low volume weight. Before being discharged, the ground material passes through a sieve.

Pilotina MI – Impact Mill
For crushing brittle, hard materials such as minerals, building materials up to Mohs hardness 6. Before being discharged, the ground material passes through a sieve.

Sieves
Interchangeable sieves for insertion into the grinding heads ensure maximum particle size filtering. All sieves are made of stainless steel 1.4301.

Pilotina is a newly created pilot mill for grinding soft, elastic as well as hard and brittle materials. The modular design enables easy conversion from a cutting mill to an impact mill. The powerful drive provides ample power, even for ambitious applications. Due to easily interchangeable milling tools, the Pilotina is highly effective for a variety of applications.
Technical data

**MF 10 basic Microfine grinder drive**
- Motor rating input/output: 1000 / 500 W
- Speed range: 3000 – 6500 rpm
- Speed display: no
- Useable volume: 50 ml
- Duty cycle (ON / OFF): 10 min / 30 min
- Overload protection: no
- Circumferential speed: 22.5 m/s
- Max. feed hardness: 3 Mohs
- Max. feed grain size: 15 mm
- Grinding chamber material: stainless steel (AISI 304)
- Dimensions (W x D x H): 320 x 300 x 560 mm
- Weight: 11.9 kg (incl. MF 10 basic)
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 22
- Price: $ 2,909 | MF 10.1: $ 2,082 | MF 10.2: $ 1,774
- Ident. No. 2836001 | MF 10.1: 2870900 | MF 10.2: 2871000

**MF 10.1 Cutting-grinding head | MF 10.2 Impact-grinding head**
- Motor rating input/output: 1000 / 500 W
- Speed range: 3000 – 6500 rpm
- Speed display: no
- Useable volume: 50 ml
- Duty cycle (ON / OFF): 10 min / 30 min
- Overload protection: no
- Circumferential speed: 31.4 m/s
- Max. feed hardness: 6 Mohs
- Max. feed grain size: 10 mm
- Grinding chamber material: stainless steel (AISI 316L)
- Dimensions (W x D x H): 320 x 300 x 450 mm
- Weight: 6.6 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: on request

**MF 10.1 | MF 10.2**

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**Technical data**

**MT 40 Disposable grinding chamber**
- Price: $ 74 (10 pieces/pack)
- Ident. No. 4180001

**A 10 basic Disposable grinding chamber**
- Price: $ 143
- Ident. No. 4311997

**A 10 basic**
- Speed range: 1000 – 1500 rpm
- Speed display: no
- Useable volume: 50 ml
- Duty cycle (ON / OFF): 10 min / 30 min
- Overload protection: no
- Circumferential speed: 63 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 6 mm
- Grinding chamber material: stainless steel (AISI 14301)
- Dimensions (W x D x H): 120 x 105 x 225 mm
- Weight: 2.2 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: on request

**A 10 basic Analytical mill**
- Speed range: 1000 – 1500 rpm
- Speed display: no
- Useable volume: 80 ml (optional 250 ml)
- Duty cycle (ON / OFF): 1 / 10 min
- Overload protection: no
- Circumferential speed: 53 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 10 mm
- Grinding chamber material: stainless steel (AISI 316L)
- Dimensions (W x D x H): 85 x 85 x 240 mm
- Weight: 1.5 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 43
- Price: $ 1,445

**A 11 basic**
- Speed range: 2400 – 3600 rpm
- Speed display: no
- Useable volume: 80 ml
- Duty cycle (ON / OFF): 1 / 10 min
- Overload protection: no
- Circumferential speed: 57 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 6 mm
- Grinding chamber material: stainless steel (AISI 14301)
- Dimensions (W x D x H): 120 x 105 x 225 mm
- Weight: 2.2 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: on request

**A 10 basic**
- Speed range: 1000 – 1500 rpm
- Speed display: no
- Useable volume: 50 ml
- Duty cycle (ON / OFF): 5 / 10 min
- Overload protection: no
- Circumferential speed: 57 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 6 mm
- Grinding chamber material: stainless steel (AISI 14301)
- Dimensions (W x D x H): 120 x 105 x 225 mm
- Weight: 2.2 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: on request

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**A 10 basic**
- Speed range: 1000 – 1500 rpm
- Speed display: no
- Useable volume: 50 ml
- Duty cycle (ON / OFF): 5 / 10 min
- Overload protection: no
- Circumferential speed: 57 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 6 mm
- Grinding chamber material: stainless steel (AISI 14301)
- Dimensions (W x D x H): 120 x 105 x 225 mm
- Weight: 2.2 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: on request

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**A 10 basic**
- Speed range: 1000 – 1500 rpm
- Speed display: no
- Useable volume: 50 ml
- Duty cycle (ON / OFF): 5 / 10 min
- Overload protection: no
- Circumferential speed: 57 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 6 mm
- Grinding chamber material: stainless steel (AISI 14301)
- Dimensions (W x D x H): 120 x 105 x 225 mm
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- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: on request

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**Dry Mills**

**Pilotina**
- Motor rating input/output: 620 / 260 W
- Speed range: 20,000 rpm (fixed)
- Speed display: no
- Useable volume: 250 ml
- Duty cycle (ON / OFF): 7 / 10 min
- Overload protection: no
- Circumferential speed: 72 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 7 mm
- Grinding chamber material: stainless steel (AISI 316L)
- Dimensions (W x D x H): 170 x 170 x 350 mm
- Weight: 6.6 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 21
- Price: $ 4,176
- Ident. No. 1603603

**A 11 basic**
- Speed range: 1000 – 1500 rpm
- Speed display: no
- Useable volume: 80 ml (optional 250 ml)
- Duty cycle (ON / OFF): 1 / 10 min
- Overload protection: no
- Circumferential speed: 53 m/s
- Max. feed hardness: 9 Mohs
- Max. feed grain size: 10 mm
- Grinding chamber material: stainless steel (AISI 316L)
- Dimensions (W x D x H): 85 x 85 x 240 mm
- Weight: 1.5 kg
- Permissible ambient temperature: 5 – 40 °C
- Permissible relative moisture: 80%
- Protection class acc. to DIN EN 60529: IP 43
- Price: $ 1,445
- Ident. No. 2900001
Selection Guide

Applications & Industries

Knowledge | Grinding material properties

Tobacco Industry
Pharmacy
Paper Industry
Paint and Varnish Industry
Metallurgy
Medical industry
Food Industry
Feed Industry
Energy Industry
Detergent Industry
Cosmetics
Chemical Industry
Ceramic Industry
Building Material Industry
Brewery
Biology
Agriculture
Field

Suitable

Rice, spices, bread, meet
Coal, coke
Bees wax, collagen
Salt, molecular sieves
Ceramic
Building materials
Hop, malt pellets
Blossoms, flowers
Grains, seeds
Sample
Ultimate fineness

Max. granularity of task

Ultimate fineness

Lowest value of retained mass

Medium density fiberboard (MDF)
Silicon carbide
Limestone
Concrete
Ceramic
Pebble stone

Limited (Embrittlement of the sample)          * depends on the sample

Right

Wax sequins
Paraffin wax
Color pigments
Ibuprofen
Uzera dragees
Tablets
Piroxicam capsules
Enzyme powder

Soft
Coal, coke,male, soft...
Bottles, glass, ceremic, concrete...
Loose capsules, paper, paper, glass...
Rubber, plastic, elastomer, gummi bars...

Data sheet download

Send your sample with a data sheet to:
IKA-Werke GmbH & Co. KG,
Send us your sample and we will process and analyze it for you within 48 hours!

Sample Preparation!

VIAFILL+ mills can be used for the grinding of soft, hard, brittle, fibrous and elastic materials. The grinding of small samples is essential to ensure precise analysis. It is important that the grinding leads to the homogeneity and desired fineness of the sample. The type of mill to be used depends on the property of the substance and the quantity of the sample. For example, brittle materials are ground with a beater, fibrous materials with a blade, and hard brittle materials are ground with a special hard metal cutter.

Problems can arise when soft and tough materials such as rubber or plastics have to be ground. The problems can be solved through the embrittlement of the sample with dry ice or liquid nitrogen. The sample can then be ground without difficulty.

Small sample quantities are generally ground with a batch mill. Here, a particle size spectrum of the ground material can be expected. Larger quantities can be ground with an inline mill. Here, the sample passes through a sieve, which leads to the grinding material achieving a defined particle size.

Below are the examples

Soft: Waxes, pastilles, cheese, tissue...
Hard: Coal, coke, male, soft...
Brittle: Bottles, glass, ceramic, concrete...
Fibrous: Louose capsules, paper, paper, glass...

Choose beaters/cutters from the selection guide below to suit your application needs

Sample Preparation!

Send your sample to:
IKA-Werke GmbH & Co. KG
Janke & Kunkel-Str. 10,
78718 Staufen, Germany
Data sheet download www.ika.com

IKA® mills can be used for the grinding of soft, hard, brittle, fibrous and elastic materials. The grinding of small samples is essential to ensure precise analysis. It is important that the grinding leads to the homogeneity and desired fineness of the sample. The type of mill to be used depends on the property of the substance and the quantity of the sample. For example, brittle materials are ground with a beater, fibrous materials with a blade, and hard brittle materials are ground with a special hard metal cutter.

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Soft: Waxes, pastilles, cheese, tissue...
Hard: Coal, coke, male, soft...
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Fibrous: Loose capsules, paper, paper, glass...

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Sample Preparation!

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78718 Staufen, Germany
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What is the difference between a batch and an inline mill?
- **Batch**: working with a default volume
- **Inline**: continuous sample feeding.

Is it possible to grind liquid nitrogen frozen samples?
It is possible to pre-cool the samples in liquid nitrogen, but in the mill chamber there should not be any liquid nitrogen. With the A 11, the sample can be pre-cooled directly in the ETFE grinding chamber. In A 10 and M 20 mills, the grinding chamber can be rinsed with liquid nitrogen for pre-cooling.

How is it possible to get chromium contamination when working with the A 10, A 11 or M 20?
Knives and mill chamber are made of Cr-Ni stainless steel. There may always be fine or superfine abrasion in the milling process.

How long do I have to grind my sample in an IKA® mill to get the best results?
Depending on the sample, 20 seconds could be enough. In general, after 60 seconds there is no particle reduction taking place; only the application of energy and the sample getting increasingly warmer.

How to cool my sample most effectively for milling?
Pre-cooling with iced carbon (or liquid nitrogen) is reasonable for samples containing oil or for elastic samples. With iced carbon, it is even possible to pre-cool directly in the milling chamber. But all iced carbon should be evaporated completely before the milling process.

I would like to crush very hard materials. IKA® mills are suitable for up to what Mohs hardness?
In general, all of our mills can manage a Mohs hardness of about 5 – 6. But for the A 10, A 11 and M 20 there is a hard metal beater available that is suitable for samples up to a Mohs hardness of 9.

Is it possible to sterilize IKA® mills?
The grinding chamber of the A 11 and the knives of the A 10, A 11, M 20 as well as the grinding head of the M 20 can be autoclaved. The drives of all mills can only be treated with an isopropanol wet cloth while the shaft feed can only be cleaned and sterilized with a solvent wet cloth.

Can the M 20 or the A 10 be cooled via the hoses with ethanol or liquid nitrogen?
No, the cooling hoses are only suitable for cooling with water.
Remain up-to-date!
Get absolutely free software updates and technical support by getting yourself a one year service contract. 

www.ika.com