

# IKA® Particle size reduction

## Analytical mill



### A 11 basic with accessories (page 80)



#### A 11 basic Analytical mill

Batch mill for 2 different grinding procedures:

**Impact grinding** of hard, brittle or non-elastic grinding materials with high-grade stainless steel beater. This beater can be used for a Mohs hardness up to 6 (incl. with delivery).

**Cutting grinding** for pulverizing soft, fibrous materials with a cutting blade (not incl. with delivery).

- Moist and gluey materials can be pulverized by adding water
- Grinding chamber made of Tefcel (ETFE, glass fiber-reinforced) with stainless steel inlet (AISI 316L), useful volume 80 ml (incl. with delivery). For embrittlement of grinding materials with liquid nitrogen in the grinding chamber
- Optionally, a 250 ml grinding chamber is available (page 80)

Motor rating	
input / output	300 / 160 W
Speed	28.000 rpm (fixed)
Useful volume	80 ml
Duty cycle	5 min / 10 min
ON / OFF	
Overload protection	yes
Circumferential speed	53 m/s
Max. granularity of task	10 mm
Dimensions (W x D x H)	85 x 85 x 240 mm
Weight	1,5 kg
Permissible ambient temperature	5 - 40 °C
Permissible relative humidity	80 %
Protection class acc. to DIN EN 60529	IP 43

#### Accessories (Page):

A 11.1 Spare beater (80), A 11.2 Cutting blade (80), A 11.3 Beater (80), A 11.4 Grinding chamber (80), A 11.5 Spare grinding chamber (80), A 11.6 Double beater (80), A 11.7 Funnel (80)

Ident. No. **2900000** 230 V 50/60 Hz Ident. No. **2900001** 115 V 50/60 Hz

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## Analytical mill accessories



### A 11.1 Spare beater

For pulverizing substances with a Mohs hardness up to 6.

Material	stainl. steel (AISI 420)
Included with the analytical mill A 11 basic.	

Ident. No.  
**2904600**



### A 11.2 Cutting blade

For pulverizing soft, fibrous grinding materials.

Material	stainl. steel (AISI 440B)
Not included with the analytical mill A 11 basic.	

Ident. No.  
**2905200**



### A 11.3 Beater

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

Material	stainl. steel (AISI 440B)
Not included with the analytical mill A 11 basic.	

Ident. No.  
**2983000**



### A 11.5 Spare grinding chamber

Made of Tefcel (ETFE, glass fiber-reinforced) with stainless steel inlet. Excellent resistance to chemicals and low temperatures (-200 °C).

Useful volume	80 ml
Material (inlet)	stainl. steel (AISI 316L)
Not included with the analytical mill A 11 basic.	

Ident. No.  
**2983100**



### A 11.4 Grinding chamber

Made of polycarbonate with stainless steel inlet. Not suitable for cooling with N<sub>2</sub>, only applicable with double beater A 11.6.

Useful volume	250 ml
Material (inlet)	stainl. steel (AISI 316L)
Not included with the analytical mill A 11 basic.	

Ident. No.  
**2904100**



### A 11.6 Double beater

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

Material	titanium, surface-hardened
Not included with the analytical mill A 11 basic.	

Ident. No.  
**3302900**



### A 11.7 Funnel

Prevents splashing by pouring in liquid nitrogen in the grinding chamber A 11.5.

Material jacket	PTFE
Material sieve	stainl. steel (AISI 316L)
Not included with the analytical mill A 11 basic.	

Ident. No.  
**3048700**

# IKA® Particle size reduction

## Universal mill



### M 20 Universal mill

Batch mill suitable for dry grinding of hard and brittle substances.

- Double-walled grinding chamber can be cooled with water through two hose adapters
- Removable grinding chamber, easy to clean
- Two grinding chambers can be alternately operated using one drive
- M 21 blade incl. with delivery

#### Accessories (Page):

M 21 Spare cutter (81),  
M 22 Hard metal cutter (81),  
M 23 Star-shaped cutter (81),  
M 20.1 Grinding chamber (81)

Motor rating	
input / output	440 / 225 W
Speed	20.000 rpm (fixed)
Circumferential speed	72 m/s
Overload protection	current limitation
Useful volume	250 ml
Material grinding chamber	stainl. steel (AISI 304)
Material cover	stainl. steel (AISI 304)
Max. granularity of task	max. 6 - 7 mm
Duty cycle ON / OFF (with cooling)	7 min / 10 min
Weight	6,6 kg
Dimensions (W x D x H)	170 x 170 x 350 mm
Permissible ambient temperature	5 - 40 °C
Permissible relative humidity	80 %
Protection class acc. to DIN EN 60529	IP 21

Ident. No.		Ident. No.	
<b>1603600</b>	230 V 50/60 Hz	<b>1603603</b>	115 V 50/60 Hz

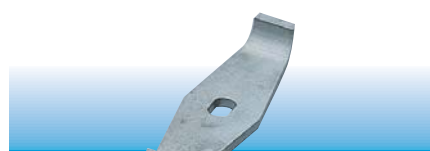


### M 21 Spare cutter, stainless steel

Suitable for crushing materials up to Mohs hardness 5.

Material	stainl. steel (1.4122)
Included with M 20.	

Ident. No.	
<b>0328200</b>	

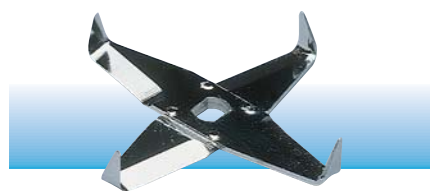


### M 22 Hard metal cutter

Made of tungsten carbide for hard materials up to Mohs hardness 9.

Material	tungsten carbide (91 WC 9 Co)
Not included with M 20.	

Ident. No.	
<b>0521800</b>	



### 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.

Material	stainl. steel (AISI 304)
Not included with M 20.	

Ident. No.	
<b>1443400</b>	



### M 20.1 Grinding chamber

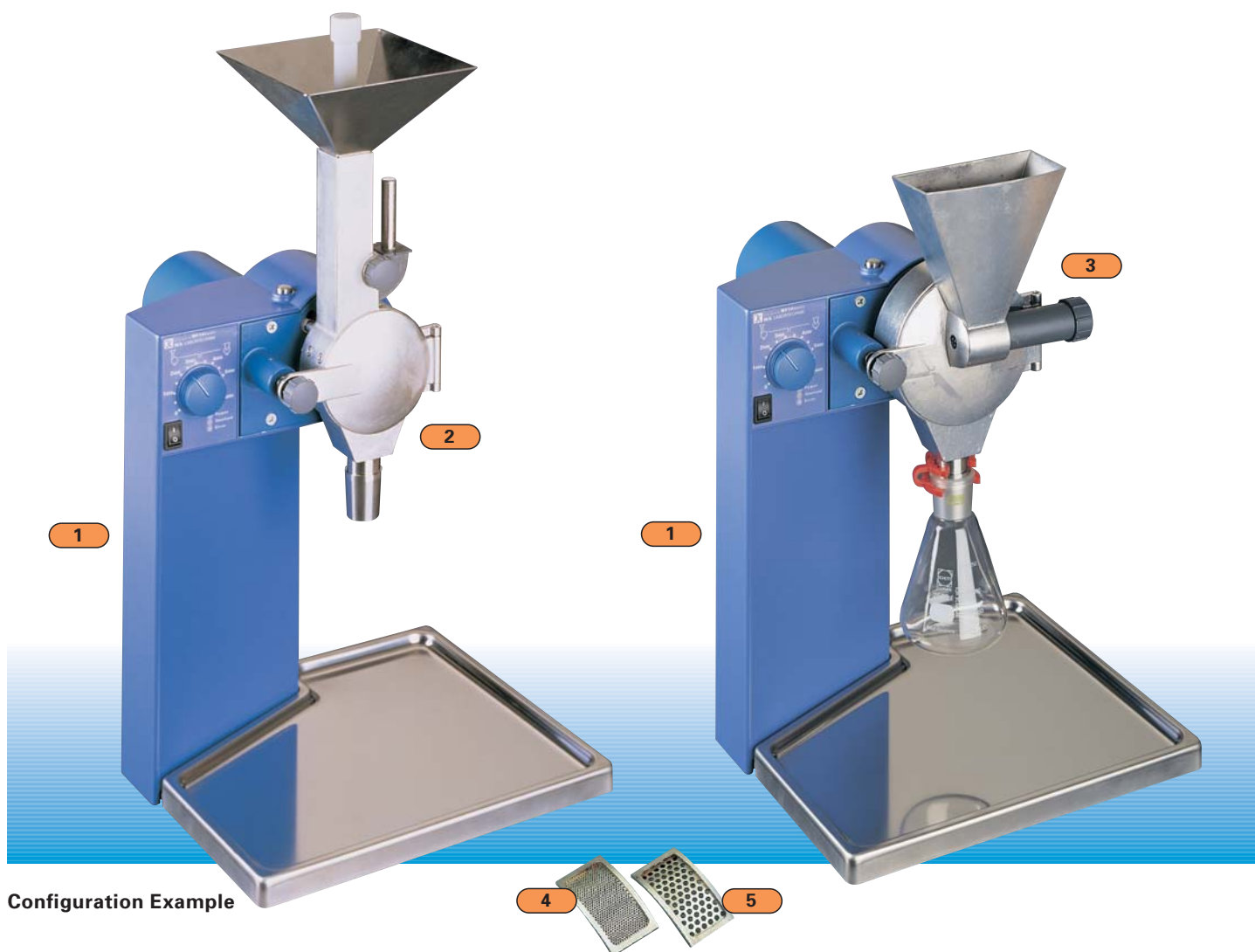
A second grinding chamber ensures effective processing. The grinding chambers can be placed on the drive alternately. One chamber is cleaned and filled while the other is being processed.

Cutters are not included with M 20.	
<b>Accessories (Page):</b>	
M 21 Spare cutter (81),	
M 22 Hard metal cutter (81),	
M 23 Star-shaped cutter (81)	

Ident. No.	
<b>8006200</b>	

# IKA® Particle size reduction

## Microfine grinder



Configuration Example

1

### MF 10 basic

Drive for inline microfine grinder. Grinding head and sieves not incl. with delivery, page 83.

2

### MF 10.1

Cutting-grinding head, interchangeable with impact grinding head MF 10.2, page 83.

4

### MF 0.5

Sieve for insertion into cutting-grinding head MF 10.1 or impact grinding head MF 10.2, with hole size 0.5 mm, page 83.

1

### MF 10 basic

Drive for inline microfine grinder. Grinding head and sieves not incl. with delivery, page 83.

3

### MF 10.2

Impact grinding head, interchangeable with cutting-grinding head MF 10.1, page 83.

5

### MF 2.0

Sieve for insertion into cutting-grinding head MF 10.1 or impact grinding head MF 10.2, with hole size 2,0 mm, page 83.

# IKA® Particle size reduction

## Microfine grinder



### MF 10 basic Microfine grinder drive

Continuously operating universal grinder.

- Powerful drive
- Easy to clean working surface made of stainless steel
- Two different grinding heads can be attached to the drive
- Heads are easily changeable
- Grinding heads not incl. with delivery

**Accessories** (Page):  
MF 10.1 Cutting-grinding head (83),  
MF 10.2 Impact grinding head (83)

Motor rating	
input / output	1.000 / 500 W
Speed range	3.000 - 6.500 rpm
Circumferential speed:	
Cutting-grinding head	22,5 m/s
Impact grinding head	31,4 m/s
Materials in contact	
with medium	stainl. steel (AISI 316L)
Duty cycle ON / OFF	120 / 30 min
Overload protection	yes
Weight	9,7 kg
Dimensions (W x D x H)	320 x 300 x 380 mm
Permissible	
ambient temperature	5 - 40 °C
Permissible relative humidity	80 %
Protection class acc. to DIN EN 60529	IP 22

Ident. No.	Ident. No.
<b>2836000</b>	<b>2836001</b>
230 V 50/60 Hz	115 V 50/60 Hz



### 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.

Circumferential speed	22,5 m/s
Max. granularity of the task	max. 15 mm
Dimensions including MF 10 basic	320 x 300 x 560 mm
Weight incl. MF 10 basic	10,5 kg
Materials in contact with medium	stainl. steel
Grinding channel and cover	(AISI 304)
Blades	(AISI 440B)
Shaft, rotor, screws	(AISI 316L)
<b>Accessories</b> (Page):	
MF Sieve (83)	

Ident. No.
<b>2870900</b>



### 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.

Circumferential speed	31,4 m/s
Max. granularity of the task	max. 10 mm
Dimensions including MF 10 basic	320 x 300 x 450 mm
Weight including MF 10 basic	11 kg
Materials in contact with medium	stainl. steel
Grinding channel and cover	(AISI 304)
Hammer beater	(AISI 304)
Shaft, rotor, screws	(AISI 316L)
<b>Accessories</b> (Page):	
MF Sieve (83)	

Ident. No.
<b>2871000</b>



### MF Sieves

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

Material	stainl. steel (AISI 304)		
Hole size (diameter)			
MF 0.25	0,25 mm	MF 2.0	2,0 mm
MF 0.5	0,5 mm	MF 3.0	3,0 mm
MF 1.0	1,0 mm	Wider holes on request.	

Ident. No.	Product	Ident. No.	Product
<b>2938900</b>	MF 0.25		
<b>2939200</b>	MF 1.0	<b>2939000</b>	MF 0.5
<b>2939400</b>	MF 2.0		
<b>2939500</b>	MF 3.0		