

A-28

PARTICLE ANALYSER



EVERYTHING AT A GLANCE

With dynamic image analysis



Determination of
particle size and shape

+ **More than 20 parameters**
for analysing particle
shapes and sizes

+ **Measuring ranges** from
20 μm to 20 mm (dry)
or 5 μm to 3 mm (wet)

+ **Sample quantities** from
approx. 10 g to 100 g (dry)
or 0.1 g to 1 g (wet)

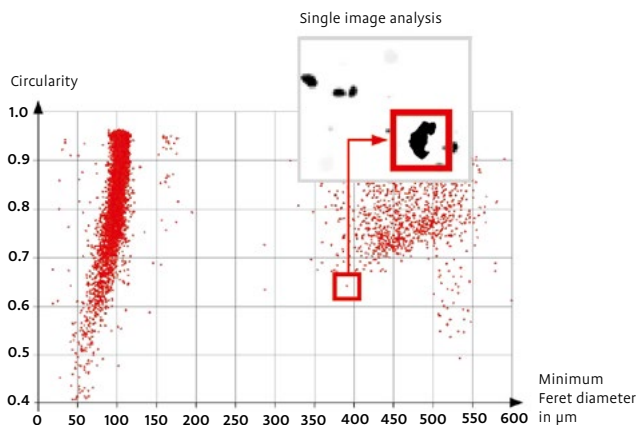
+ **Up to five lenses**
to choose from

+ **Sieve correlation** for an
easy comparison with your
sieving data

+ **Price and performance**
at an unbeatable level

Powerful functions for best results

The FRITSCH A-28 helps you quickly and easily generate precise reproducible data on the shape and size of free-flowing powders and bulk materials or particles in suspensions and emulsions. The software installed on the computer that comes with the A-28 offers over twenty shape and size parameters for fast and intuitive evaluation and for statistical display purposes. The ability to swiftly view single images within the FRITSCH Cloud also facilitates the easy in-depth analysis of your data.



Each particle is represented as a point in the FRITSCH Cloud: the roundness is depicted for more than 10,000 particles in relation to the minimum Feret diameter.

The modern alternative to sieving

The FRITSCH A-28 Particle Analyser is your ideal time-saving alternative for frequent sieving. With no need to weigh, assemble a sieve tower, or spend time cleaning, it considerably reduces your follow-up costs and means you do not have to calibrate or buy new sieves. It also provides you with valuable information about the shape of your particles for analysis purposes. The perfect solution for highly efficient quality control – and with a robust design suited to harsh environments. With the new FRITSCH sieve correlation a smooth transition from sieving to dynamic image analysis is guaranteed.

See the FRITSCH A-28 Particle Analyser in action!

This video shows just how quick and easy it is to work and analyse with the A-28:



Contact us now
for a non-binding
consultation or indi-
vidual test analysis
to identify your ideal
device configuration
and parameters.

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A-28

PARTICLE ANALYSER



TECHNICAL SPECIFICATIONS



EASY WORKING. GREAT RESULTS.



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TECHNICAL DATA

A-28 – Particle Analyser

Measuring Unit

Module	Measuring Unit
Working principle	dynamic image analysis
Field of application	quality control, research and development, laboratory, fast alternative to sieve analysis
Measuring range	dry measurement: 20 µm – 20 mm wet measurement: 5 µm – 3 mm
Type of analysis	dry measurement of free-flowing powders and bulk solids wet measurement of suspensions and emulsions
Measurement value	particle size and particle shape
Standard	ISO 13322-2
Lenses <i>(different, easy to change telecentric lenses)</i>	
Dry measurement <i>(Magnification / measuring range)</i>	0.157x / ~ 90 µm – 20 mm
	0.243x / ~ 60 µm – 14.5 mm
	0.35x / ~ 40 µm – 9 mm
	0.735x / ~ 20 µm – 4.5 mm
Wet measurement <i>(Magnification / measuring range)</i>	0.35x / ~ 40 µm – 3 mm
	0.735x / ~ 20 µm – 2 mm
	1.333x / ~ 5 µm – 1 mm
Camera	5 mega pixel CMOS camera 2,448 x 2,050 pixel resolution USB 3.0
Typical measuring time	< 5 min (depending on the desired measuring statistics)
Typical sample quantity	dry measurement: 10–100 g wet measurement: 0.1–1 g



Measuring speed	max. 75 images/s
Evaluation	fast image analysis for morphology description and particle size determination (23 parameters), Sieve correlation, Data filter, Particle and image gallery, FRITSCH cloud (correlation of up to 3 parameters)
Software	image sizing software ISS for controlling, recording and evaluating the measuring results pre-installed on supplied computer, incl. monitor, keyboard and mouse (without computer hardware for deliveries to CIS countries)
System requirements <i>(for computers supplied by customer)</i>	standard Windows PC with Intel Core i7-12700K processor or better, at least 16 GB main memory, drives: 1 TB SSD, 4 TB HDD, USB 3.0 port, Windows 11 Pro, monitor with 1,920 x 1,080 pixel or better, keyboard, mouse
Electrical details	100–240 V/1~, 50–60 Hz, 60 W
Weight	dry measurement: 38.6 kg wet measurement: 52 kg
Dimensions (W x D x H)	main unit (incl. dry measurement): 862 x 306 x 547 mm





Wet Dispersion Unit

Module	Wet Dispersion Unit
Type of wet dispersion	closed liquid circulation system
Suspension volume	150–500 ml, with three predefined filling levels
Radial pump	up to 3.5 l/min, adjustable in steps between 1 and 10
Materials in contact with sample	
Wet Dispersion Unit	high-quality stainless steel 316L, PTFE, FFKM, FEP, BK7 glass, FKM, hoses made of silicone
Conversion kit Extended for extreme chemical resistance (optional)	high-quality stainless steel 316L, PTFE, FFKM, FEP, BK7 glass, seals and a flow plate made of FFKM, inside of hoses made of FEP
Sample material characteristics	suspensions, emulsions and solids that tend to agglomerate, are not soluble in the dispersion liquids, are poorly free-flowing or are sticky
Sample quantity <i>(depending on the sample material and particle size)</i>	0.1–1 g
Weight	16 kg
Dimensions (W x D x H)	246 x 246 x 300 mm





Ultrasonic Box

Module	Ultrasonic Box
Output	up to 50 W, adjustable in steps between 1 and 10
Materials in contact with sample	high-quality stainless steel 316L, FFKM, hoses made of silicone
Sample material characteristics	suspensions, emulsions and solids that agglomerate
Safety class	IP22
Weight	6.2 kg
Dimensions (W x D x H)	287 x 90 x 279 mm





ACCESSORIES

A-28 – Particle Analyser

Order no.

Article

Particle Analyser A-28

28.2000.00 for 100–240 V/1~, 50–60 Hz, 60 W
with USB-interface and software already pre-installed on supplied computer,
incl. monitor, keyboard, mouse



**For dry measurement please order lenses according to the desired measuring range.
For wet measurement please order Wet Dispersion Unit, lenses according to the
desired measuring range and if required Ultrasonic Box separately.**

Accessories for Particle Analyser A-28

Accessories for dry measurement of powders and bulk solids

**Lenses with holder, feeder, funnel and incl. accessory case with FRITSCH test
powder, cleaning brush, dust blower and much more**

28.2060.00 telecentric lens – 0.157x with feeder 50 mm and sample funnel 2000 ml
(measuring range ~ 90 µm – 20 mm, depth of field ~ 27 mm)

28.2070.00 telecentric lens – 0.243x with feeder 50 mm and sample funnel 2000 ml
(measuring range ~ 60 µm – 14.5 mm, depth of field ~ 11 mm)

28.2061.00 telecentric lens – 0.35x with feeder 20 mm and sample funnel
250 ml (measuring range ~ 40 µm – 9 mm, depth of field ~ 5 mm)

28.2062.00 telecentric lens – 0.735x with feeder 20 mm and sample funnel 250 ml
(measuring range ~ 20 µm – 4.5 mm, depth of field ~ 1.2 mm)

Modules for wet measurement of powders, suspensions and emulsions

28.2600.00 Wet Dispersion Unit suitable for many liquids
automatic dispersion, volume 150–500 ml
suitable for extremely aggressive chemical dispersion liquids
incl. accessory case with FRITSCH test powder, cleaning sand, tenside and
much more



Order no.

Article

Modules for wet measurement of powders, suspensions and emulsions

28.2700.00 Wet Dispersion Unit extended for extreme chemical resistance automatic dispersion, volume 150–500 ml suitable for extremely aggressive chemical dispersion liquids incl. accessory case with FRITSCH test powder, cleaning sand, tenside and much more

22.9270.00 Ultrasonic Box for dispersion with ultrasonic with max. 50 W ultrasonic output, variably adjustable for 200–240 V/1~, 50–60 Hz, 60 W

22.9280.00 Ultrasonic Box for dispersion with ultrasonic with max. 50 W ultrasonic output, variably adjustable for 100–120 V/1~, 50–60 Hz, 60 W

Lenses with holder

28.2017.00 telecentric lens – 0.35x (measuring range ~ 40 µm – 3 mm, depth of field ~ 5 mm)

28.2018.00 telecentric lens – 0.735x (measuring range ~ 20 µm – 2 mm, depth of field ~ 1.2 mm)

28.2501.00 telecentric lens – 1.333x (measuring range ~ 5 µm – 1 mm, depth of field ~ 0.5 mm)

Accessories for Wet Dispersion Units

22.9515.00 cover sample bath for Wet Dispersion Units

22.9180.00 IPA-capable pump (external) for filling the wet dispersion units with isopropanol or water, if no suitable media connection is available

Accessories for combining the dynamic image analysis of the A-28 with the static light scattering of the A-22

28.2690.00 supplement set for A-22 NeXT wet dispersion unit 22.9200.00 consisting of wet measuring cell A-28 and hoses for connecting the A-22 wet dispersion unit 22.9200.00 to the A-28 - 28.2000.00 (measuring unit A-22 NeXT Nano 22.9040.00 or Micro 22.9000.00 and wet dispersion unit 22.9200.00 are also required!)



Order no.	Article
28.2790.00	supplemental kit for A-22 NeXT wet dispersion unit 22.9200.00 with extended conversion kits for extreme chemical resistance 22.9287.00 or 22.9288.00 consisting of wet measuring cell A-28 and hoses for connecting the A-22 wet dispersion unit 22.9200.00 with extended conversion kits to the A-28 - 28.2000.00 (measuring unit A-22 NeXT Nano 22.9040.00 or Micro 22.9000.00 and wet dispersion unit 22.9200.00 with extended conversion kits 22.9287.00 or 22.9288.00 are also required!)

Spare parts for Wet Dispersion Units

22.8566.26	measuring cell glass 4 mm incl. seal for wet measuring cell
28.2615.84	hose set standard for Wet Dispersion Unit 28.2600.00
28.2616.84	hose set standard for Wet Dispersion Unit 28.2600.00 in combination with Ultrasonic Box

Accessories for certified calibration

28.2224.00	calibration plate with 0.5 mm dots with certificate for telecentric lenses – 0.157x, 0.243x and 0.35x
28.2225.00	calibration plate with 0.125 mm dots with certificate for telecentric lenses – 0.735x and 1.333x

Certification

96.0090.00	set of IQ/OQ blank forms <i>(questionnaire format - implementation by customer - standards and implementation not included)</i> <i>Hoses and seals on request.</i>
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Choose accessories for dry or wet measurement, according to your measuring task



Lenses for dry and wet measurement (page 7–8)

In order to use the A-28 you will need at least one telecentric lens. Five telecentric lenses with different measuring ranges are available. Order the desired lenses separately according to the measuring task. They can all be retrofitted at any time, and are easy to replace.



Modules for wet measurement of suspensions and emulsions (page 8)

Wet dispersion is particularly suitable for fine particles, poorly flowing, fine-agglomerating or sticky materials, which do not react in water or other liquids. Select an Ultrasonic Box if you frequently measure sample material that tends to agglomerate.



Accessories for certified calibration (page 9)

For certified calibration of the A-28, two different calibration plates are offered. Please choose the appropriate calibration plate according to the lens used.



APPLICATION EXAMPLES

Dry or wet measurement

Sample 1: feed pellets

Measurement

- dry measurement (free fall)
- 0.243x lens
- big feeder & funnel
- analysis of aspect ratio

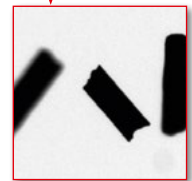
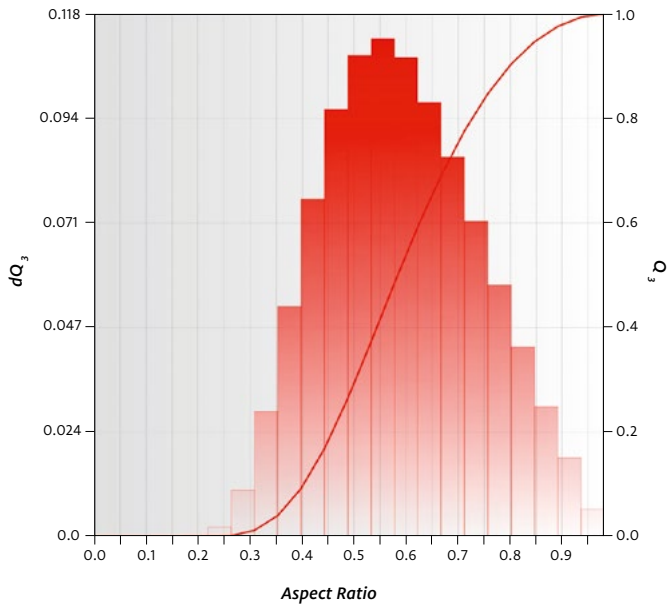


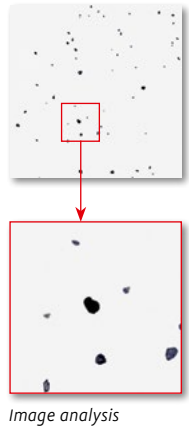
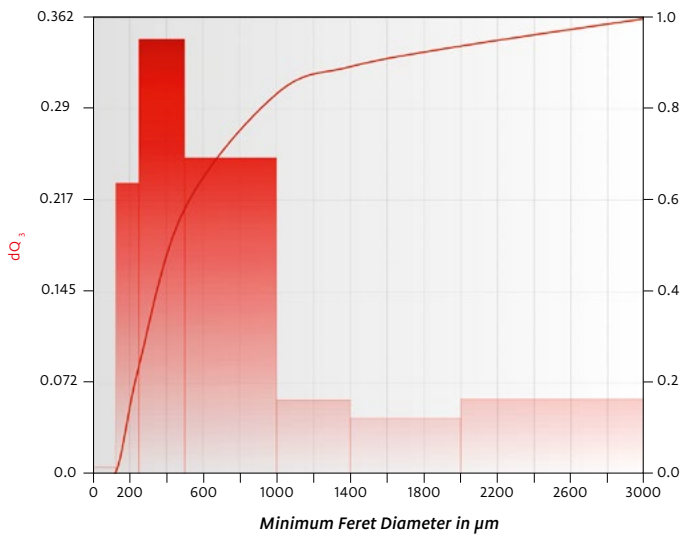
Image analysis



Sample 2: sand

Measurement

- dry measurement (free fall)
- 0.35x lens
- small feeder & funnel
- analysis of particle size distribution with minimum feret diameter





Sample 3: rice

Measurement

- dry measurement (free fall)
- 0.157x lens
- big feeder & funnel
- correlation of Minimum Feret Diameter and aspect ratio with FRITSCH cloud

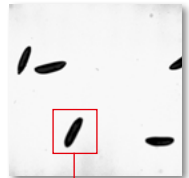
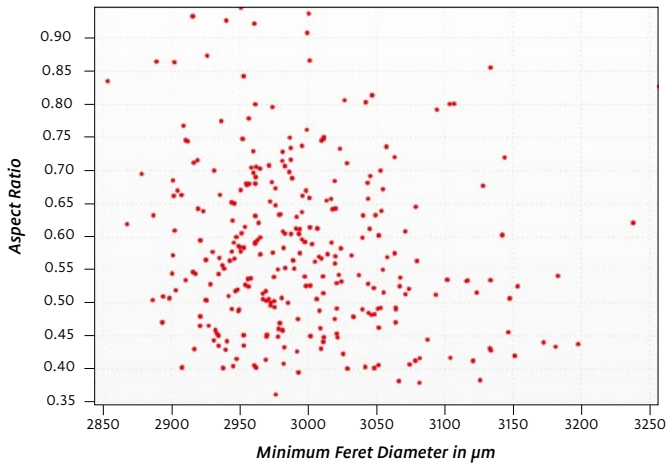


Image analysis



Sample 4: glass beads

Measurement

- wet measurement
- 0.735x lens
- pump speed 50 %
- analysis of particle shape based on circularity
- measurement goal: detection of good vs. defective particles

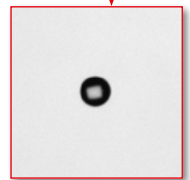
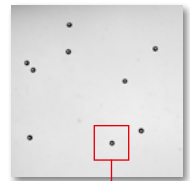
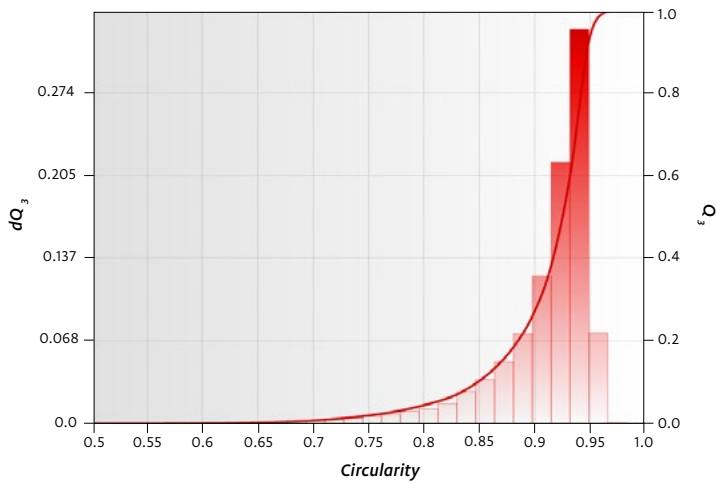


Image analysis



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Contact person:

Contact us now

for a non-binding consultation or individual
test analysis to identify your ideal device
configuration and parameters.



