



caleva

OPTIONS

LABORATORY

CALEVA

1 KG MULTI BOWL SPHERONIZATION KIT

Enhance the utility of your equipment and increase your chance of success by considering these options

OPTIONS AND COMPANION EQUIPMENT



SCREEN EXTRUDER 20 OPTIONS

When supplied all Caleva machines are fully operational and there are no required options. Some options are available to enhance the utility of the Extruder 20. These are shown below.

✓ ADDITIONAL SCREENS

○ Screen Heights

Screens can be supplied at full height or reduced height. Full height screens are the standard and reduced height screens are offered either to reduce cost or to be able to efficiently extrude smaller amounts of material. Full height screens are 63 mm high in total and the extrusion area is 45.5 mm high. Reduced height screens are 35 mm high in total and the extrusion area is 17.5 mm high.

○ Full height screens

Full height screens (standard screens) with very small hole sizes (0.5 mm–0.7 mm etc.) can contain more than 19,000 holes that are individually drilled. Caleva drill rather than punch or laser cut holes as the quality of the individual hole is improved. The quality and consistency of the holes is important to ensure a regular extrudate to obtain the best possible consistency and highest usable yield in pellet production.



The manufacturing cost of screens can be lowered if reduced height screens are used for development work. Caleva can supply reduced height screens for R&D work that would allow a cost saving. It is necessary to use the appropriate rollers and spindles for reduced height screens. If screens with very small holes are required (< 0.7 mm) then we would recommend that reduced height screens are purchased in the first instance. Irrespective of the screens initially purchased, the Extruder 20 can subsequently use either full height or reduced height screens. Contact us for further details.

○ Reduced height screens

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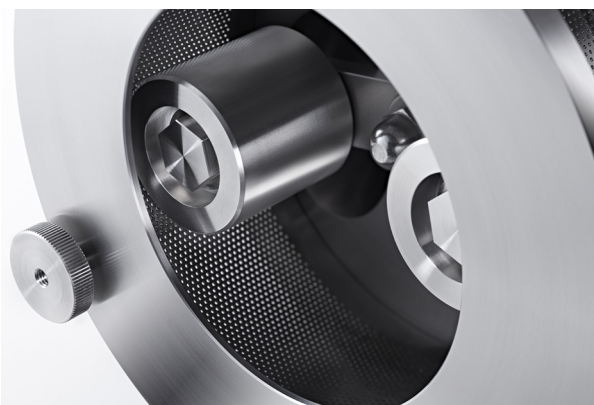
○ Standard screens available

A range of screens are available with holes from 0.5 mm to 2 mm diameter. Screen hole depths are generally 1 mm deep but some screens can be manufactured with 2 mm deep holes if a higher density extrudate is required.



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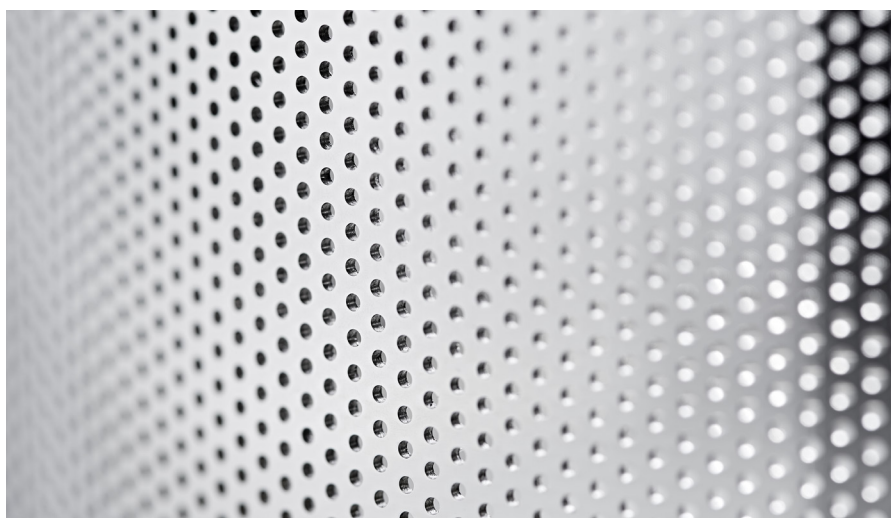
- **Different hole pitch (% open area)**
Screens are offered as standard capacity. Some holes sizes are offered as high capacity screens (greater open area). High capacity screen have more holes per unit area and thus are able to increase the rate of throughput. However, high-capacity screens are not as physically robust as standard screens. A low capacity screen is available for particularly tough products that offer a greater level of strength.



- Contact us for more details and advice.

CONSUMABLE ITEMS

- **FDA approved polymer bushes for extruder rollers**
Under normal use the rollers (polymer bushes) holding the extrusion rollers in place would be expected to last for some years, however they can be damaged over time from use or from contact with very aggressive chemicals. These bushes are easy to replace and should be considered as consumable.
- **Screens**
Extruder screens are very durable and under normal conditions of use in an R&D or teaching situation are likely to last for some years. However, in all screen extruders, due to the nature of the screens and the difficulty of extruding some materials and the large forces generated, screens are normally considered as consumable in the long term.



SPHERONIZER MBS 250

If you are considering a laboratory benchtop spheronizer that is designed to work with the Extruder 20 then the Caleva bench-top Multi-Bowl Spheronizer 250 with its unique interchangeable bowl system is the best complimentary equipment choice for you. The combination of the Caleva Extruder 20 and the Caleva MBS Spheronizer 250 together make up the 150 g to 1 kg kit. When supplied, all Caleva machines are fully operational and there are no required options. Some options are available to enhance the utility of the bench top MBS Spheronizer. These are shown below.

✓ OPTIONS

A range of interchangeable bowls (drums) and disc sizes can be purchased as and when required and the option to PTFE coat both discs and bowls are amongst the unique features and advantages of the Caleva MBS-Spheronizer base unit

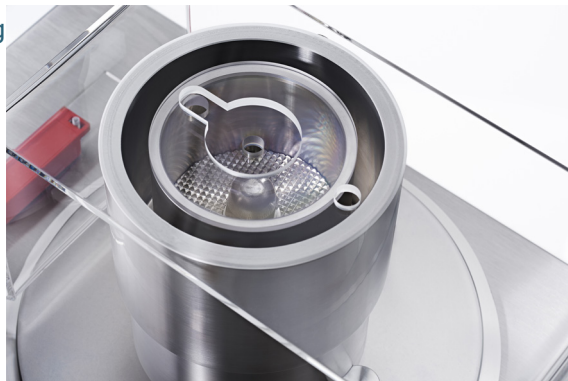
○ **Optional 120 mm bowl if the base and 250 mm bowl is supplied (or “vice versa”)**

Spheronizer bowl attachment kits to allow the use of different spheronizer bowl sizes are available. These can attach to the Caleva MBS spheronizer base unit. This possibility is unique to the Caleva MBS system. This additional unit includes a 3x3 mm cross hatch pattern spheronizer disc and all necessary attachments and safety cover. Note: It is possible to select either the 120 mm bowl and the MBS base only or the 250 mm bowl and the MBS base. It is not necessary to purchase the 250 mm bowl if the 120 mm bowl is preferred or the 120 mm bowl if the 250 mm bowl is preferred. Contact us for a quotation or more information.



○ **Optional insert kit for 120 mm bowl**

Insert kit for 120 mm bowl comprising of an insert sleeve, a 3x3 mm cross hatch spheronizer disc and all necessary attachments. Bowl diameter can be 60 mm or 85 mm. This includes a complete kit for either an 85 mm diameter spheronizer or for a 60 mm spheronizer (customer choice). If both sets are required then the cost is separate for each. It is not normally necessary to have both the 60 mm and the 85 mm kit. One is normally sufficient. The insert kits will allow the spheronization of very small batch sizes.



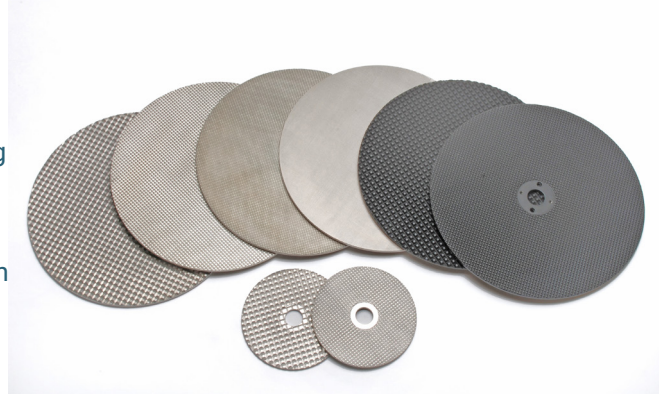
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- **Additional spheronization discs with different patterns**

Cross hatch patterns from 1 mm to 6 mm are available. The cross hatch serrations are described by parallel cuts with a 90° angle to a depth equal to 1/3rd of the pitch. Tolerance on pitch is ± 0.010 mm. Tolerance on depth of cut is ± 0.20 mm. Other alternatives and special designs may be available on request.

- **Radial groove disc**

A radial groove disc provides gentler processing and is somewhat easier to clean in case of products that stick to the cross-hatch discs. Can be purchased later if needed for special products.



- **Non-Stick Coating on the Disc**

A US-FDA food use approved PTFE/FEP coating on the discs can be provided if it is foreseen that sticky products might be used at some time in the future. For most products this is not essential but in research and development having the disc coated may allow more flexibility in use.
- **Non-Stick Coating on the Bowl**

Specification as for disc above. It is sometimes recommended to have drums coated as well as the discs.



COMPANION EQUIPMENT

✓ THE VARIABLE DENSITY EXTRUDER

The Caleva Variable Density Extruder will allow you to include in your development extrudate with different densities to broaden your options and increase your chances of success with your R&D project.



✓ CALEVA MIXER TORQUE RHEOMETER

As part of any formulation development program the ability to quantitatively measure the consistency of the granulation produced for extrusion and spheronization will offer significant advantages. Some potential advantages already demonstrated using the Caleva Mixer Torque Rheometer. Contact us for additional information.



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VALIDATION AND TRAINING

INSTALLATION AND TRAINING AT THE CUSTOMER SITE

Training within the UK

Including one day installation and training and two days travelling.

Training in any other European country

Including one day installation and training and two days travelling. All travel and subsistence costs are included in the cost

Training outside Europe

Including one day installation and training and up to four days travelling depending on the location.

Includes installation, commissioning and training at customer site of up to one day, but does not include IQ/OQ which is separately chargeable. The customer will assist with local transport for the Caleva technician if required. The customer will supply the consumable products required. Trained electricians will be provided by the customer if required (generally not required). Installation does not include any alteration to the customer site and does not include installation or connection of any electrical (or other) services.

The customer will be responsible for the unpacking and location of the machines at the user site. This is not included in any quotation or offer.

If more than one item is purchased then training can be done together for other equipment with considerable savings in cost. Contact us for details.

FACTORY ACCEPTANCE TEST AT THE CALEVA SITE

We make our own quality check before the equipment is shipped (a copy is supplied to the customer) and thus a separate FAT is not normally necessary but can be completed with the customer if required. The customer will be responsible for all his or her expenses incurred in getting to and from the Caleva site.

CUSTOMER TRAINING AT THE CALEVA SITE (OVERSEAS CUSTOMERS)

Training is recommended if extrusion and spheronization is a relatively new technique to the company or if new staff would benefit from it. Contact us for details.

Customers from outside the UK will be collected at any London main airport and transferred to suitable accommodation. All meals for one trainee whilst with Caleva and transport to and from the Caleva site is included. Extras (such as phone calls etc.) at hotel are for guest's account. One night bed & breakfast in London hotel before return flight to home country can be included if requested. Up to two days

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training (as required) at the Caleva site on customer's own equipment prior to shipment. Transport to and from the customer's own country to London main airport is not included and is for the customer's account.

- **If more than one item is purchased then training can be done together with considerable savings in cost. Contact us for details.**

✓ **VALIDATION AND IQ/OQ DOCUMENTATION PACKAGE**

Recommended if required for regulatory purposes.

- **At Caleva site:** The IQ/OQ package can be completed at the Caleva site by us. The customer can attend if he or she wishes to do so at their own cost. An additional set of blank documents will be provided to allow the customer to re-do the IQ/OQ in their own facility.
- **At customer site:** IQ/OQ and installation completed as far as possible at the customer site at the same time as installation and training. The cost for the IQ/OQ is in addition to the costs for installation and training.

Note: there may be additional country-specific charges depending on location. Contact us for details.

✓ **MATERIAL CERTIFICATES (INCLUDED IN IQ/OQ)**

In line with current standards Caleva does not automatically supply copies of material certificates for product contact parts. Caleva can provide free of charge a certificate naming the product contact parts and confirming that we or our suppliers can provide full traceability to original certificates if this is requested.

- **If certified copies of material certificates are required then these can be provided at an additional cost.**

CONTACT CALEVA

Please call us without obligation

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Certificate Number: 1503