

Example DC formulations with sieved lactose

Example with SuperTab® 22AN

Component	mg/tablet	% w/w
Glipizide	2.50	1.25
SuperTab® 22AN	120.0	60.00
Pharmatose® 100M	68.50	34.25
Primellose®	8.00	4.00
Magnesium Stearate	1.00	0.50
Total	200.0	100.0

Tablet Property	Value
Punch diameter	7.7 mm
Mean weight	200 mg
Thickness	4.43 mm
Crushing Strength	44 N
Friability	0.3%
Disintegration time	100 s
Mean assay (% label)	98%
Content Uniformity (%RSD)	1.7%
Dissolution after 15 minutes (USP)	98%

Example with Lactopress® Spray Dried 250

Component	mg/tablet	%w/w
Atenolol	50.00	20.00
Lactopress® Spray Dried 250	125.0	50.00
Lactochem® Crystals	63.75	25.50
Primellose®	10.00	4.00
Magnesium Stearate	1.25	0.50
Total	250.0	100.0

Tablet Property	Value
Punch diameter	9 mm
Mean weight	250 mg
Thickness	3.03 mm
Crushing Strength	88 N
Friability	0.1%
Disintegration time	140 s
Mean assay (% label)	105%
Content Uniformity (%RSD)	1.7%
Dissolution after 15 minutes (USP)	105%

Application notes

Sieved lactose



Lactose

Pharmatose® and Lactochem® are DFE Pharma's brand names for crystalline lactose monohydrate in milled and sieved forms. All DFE Pharma's products comply with the requirements of the Ph. Eur., USP-NF and JP for lactose monohydrate. Pharmatose® is made in Veghel (the Netherlands) and Kapuni (New Zealand); Lactochem® is made in Borculo (the Netherlands). The origin of each product is stated on the packaging and on the Certificate of Analysis.

Product range

There are 4 sieved Lactochem® products: Lactochem® Coarse Crystals, Crystals, Fine Crystals and Extra Fine Crystals are all made in Borculo. There are 8 sieved Pharmatose® products each with a number code followed by the letter "M", and the higher the number then the finer the grade. The number should not be construed as a mesh size. The 50M, 80M, 90M, 100M, 110M and 125M grades are made in Veghel,

the 60M and 70M grades are made in Kapuni. Lactochem® Coarse Crystals, Crystals, Fine Crystals and Extra Fine Crystals are very similar to Pharmatose® 80M, 90M, 100M and 110M respectively. Should you need to dual source a sieved grade lactose it would be very likely DFE Pharma would be able to provide you this. The particle size distributions of sieved lactose are generally narrower than those of milled lactose.

Head Office
Klever Strasse 187
P.O. Box 20 21 20
47568 Goch, Germany
T. +49 2823 9288 770
F. +49 2823 9288 7799
pharma@dfepharma.com

DMV-Fonterra Excipients GmbH & Co. KG - Warranty
The details given here are merely intended for information purposes and are in no way legally binding. Consequently we accept no responsibility in the broadest sense of the word for damage that may result from applications based upon this information. Furthermore, this information does not constitute permission to infringe patent and licence rights.

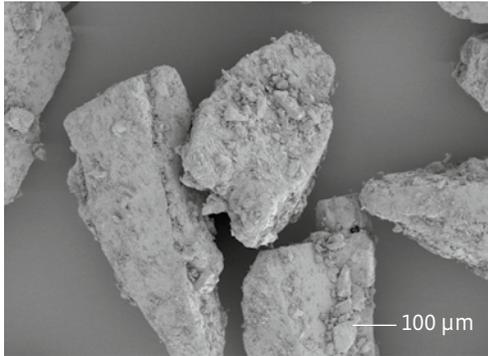
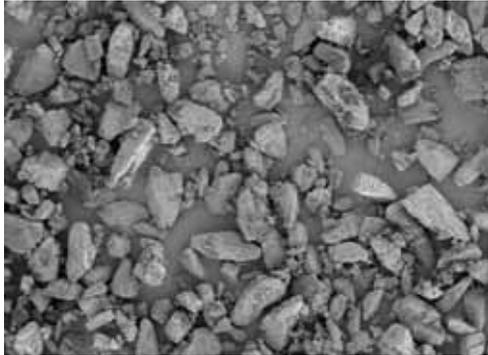
www.dfepharma.com



#001/October 2011

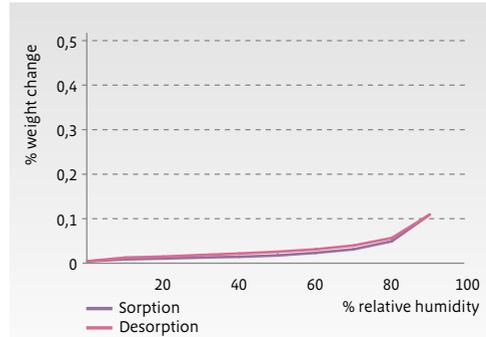
Morphology and characteristics

The morphology of sieved lactose is shown below in the SEM pictures (same magnification) of Lactochem® Extra Fine Crystals (top) and Pharmatose® 50M (bottom). The characteristic “tomahawk” shape of the lactose monohydrate crystal is evident with some adhering fines that are not removed by sieving.



Moisture sorption

Sieved lactose monohydrate exhibits very low hygroscopicity as shown in the dynamic vapour sorption plot below (typical batch of Pharmatose® 100M). Even at 90% relative humidity only about 0.1% water is taken up, and the water uptake is completely reversible.



Applications

Sieved lactose monohydrate has a wide range of applications, especially where good flow and low hygroscopicity of the excipient is needed. Typical applications are as a filler for encapsulation and sachet filling, and it is also used as a filler for some direct compression applications.

General guidelines for DC formulations using sieved lactose from DFE Pharma

Compaction

Lactose compacts primarily by brittle fracture, and the strength of the resulting tablets is directly related to the surface area available for bonding. However lactose monohydrate has a low fragmentation propensity.

Thus sieved lactose monohydrate should always be used in conjunction with a more highly compactable filler binder such as the SuperTab® or Lactopress® ranges of direct compression (DC) grade lactose or with microcrystalline cellulose, in order to achieve tablets of good crushing strength. In general we would recommend that the proportion of DC-lactose in the formulation is at least 50% of the tablet weight.

Lubrication

Crystals of sieved lactose monohydrate are, in common with most crystalline materials, sensitive to the lubrication effects of magnesium stearate, and precautions should be taken to avoid over-mixing which can lead to reduced tablet strength and increased disintegration times.

Blending

To ensure good content uniformity of the tablets we strongly recommend the preparation of a pre-blend of drug and lactose, which is then subject to a high shear step before final blending, lubrication and compaction.