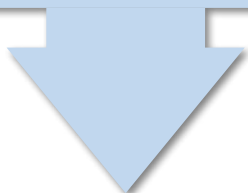


**Primojel® and Primellose®
superdisintegrants.**

Productgroup overview.

DMV-Fonterra Excipients
The ingredients of success



DMV-Fonterra Excipients is a leading supplier of excipients for oral solid dose and dry powder inhalation formulations. Continuous investment in leading cGMP standards, excipient technologies and committed personnel, allow us to consistently supply high quality products from our sites around the globe. With more than 100 years of experience in excipient manufacturing and with a broad portfolio of products, we are committed to building trust with our customers through Quality, Reliability and Expertise.

Superdisintegrants

For tablets and capsules which need rapid disintegration, the inclusion of the right disintegrant is a prerequisite for optimal bioavailability. Superdisintegrants are used to improve the efficacy of solid dosage forms. This is achieved by decreasing the disintegration time which in turn enhances drug dissolution rate. Superdisintegrants are widely used in direct compression and wet granulation applications. In order to closely match the functionality requirements, DMV-Fonterra Excipients produces two superdisintegrants: Primojel (sodium starch glycolate) and Primellose (croscarmellose sodium), which show outstanding disintegration characteristics for tablets prepared by direct compression, wet granulation and for capsule formulations.

Primojel® & Primellose®

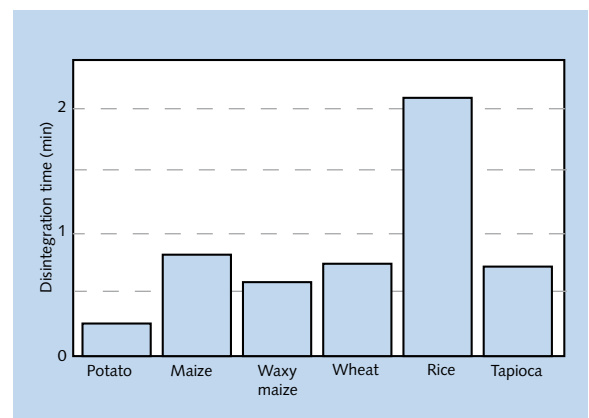
Why should you use Primojel or Primellose? Both products are hydrophilic and practically insoluble, which allows increased disintegration of solid dosage forms. Superdisintegrants are effective in low concentrations of 2-6%, while traditional disintegrants such as starches often require concentrations of about 20%. Growing awareness of the cost control in the pharmaceutical industry makes the use of superdisintegrants such as Primojel and Primellose even more attractive. The relatively low concentration of the superdisintegrants helps to reduce overall tablet size, or allows inclusion of higher levels of compressible filler-binders (see SuperTab range of DMV-Fonterra Excipients).

For more information

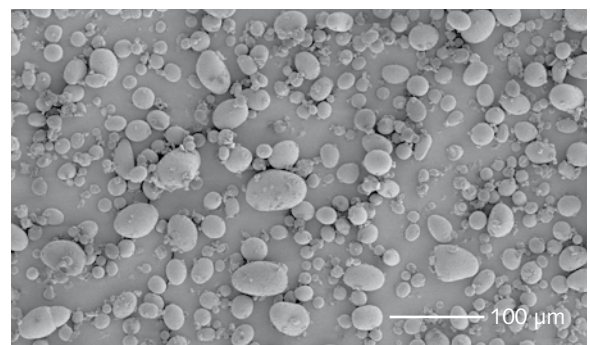
Visit www.dmv-fonterra-excipients.com or contact one of our global sales representatives.



Stages of disintegration.



Disintegration time of α -lactose monohydrate tablets, containing 4% of different experimental sodium starch glycolates, respectively, as a disintegrant.¹



SEM of Primojel.

Primojel®

Sodium starch glycolate, USP-NF, Ph. Eur., JP

Description

Primojel is produced by cross-linking and carboxymethylation of potato starch. It is a white, free flowing powder.

Disintegration performance

Primojel takes up more than 20 times its own weight of water. Rapid water penetration into the tablets and powerful swelling results in rapid disintegration². Studies show that Primojel takes up more water than comparative products on the market and develops a strong disintegrating force making it a highly effective product³. The starch source, degree of cross-linking and degree of substitution of Primojel have been optimised in

order to give rapid water uptake by the polymer without the formation of a viscous gel that may impede water penetration into the tablet⁴. The starch source for sodium starch glycolate is important and the figure in the previous page shows that potato starch, the source material for Primojel, is the preferred type of starch for sodium starch glycolate⁵.

Application

Primojel is suitable for a variety of tablet and capsule formulations. It is most effective in combination with insoluble to slightly-soluble filler-binders, such as MCC and dicalcium phosphate at a dosage of 2-6%. In higher concentrations, Primojel can act as a dissolution enhancing agent⁶. Primojel is effective when used as intra-granular or extra-granular superdisintegrant, or when divided between these locations.

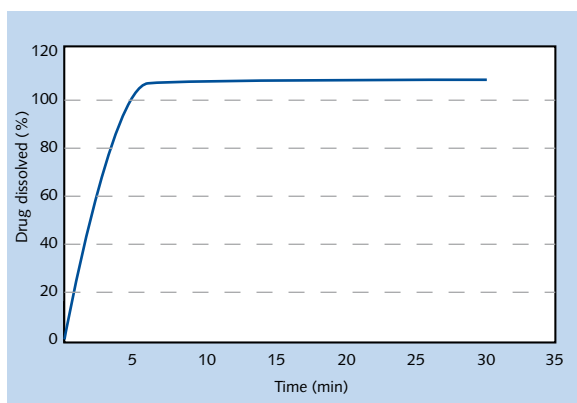
Formulation examples using Primojel

Alprazolam tablets 1 mg by direct compression

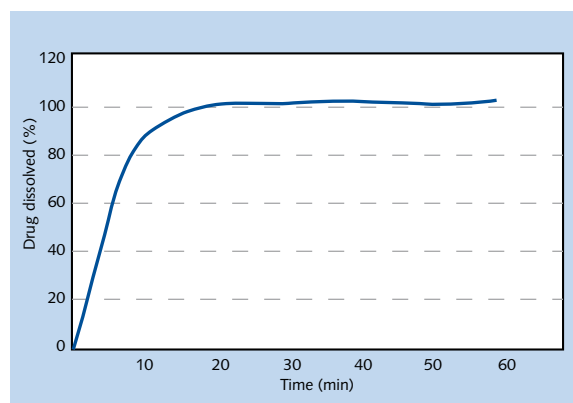
Components	mg/tablet
Alprazolam	1.00
SuperTab 14SD	76.0
Pharmacel 102	39.9
Primojel	2.40
Docusate sodium	0.12
Magnesium stearate	1.20
Total	120.6
Tablet properties	
Mean weight	121 mg
Thickness	2.80 mm
Hardness	73 N
Friability	0%
Assay (% label)	98%
Content uniformity(%RSD)	3.7%
Disintegration time (min:s)	00:19

Hydrochlorothiazide tablets 100 mg by wet granulation

Components	mg/tablet
Hydrochlorothiazide	100
Pharmatose 200M	375
Primojel	20.0
PVP	2.50
Magnesium stearate	2.50
Total	500
Tablet properties	
Crushing strength	65 N
Disintegration time	32 s



Dissolution of Alprazolam in pH6 phosphate buffer (USP apparatus 1).



Dissolution of Hydrochlorothiazide in 0.1N hydrochloric acid (USP apparatus 1).

Primellose®

Croscarmellose sodium, USP-NF, Ph.Eur., JP

Description

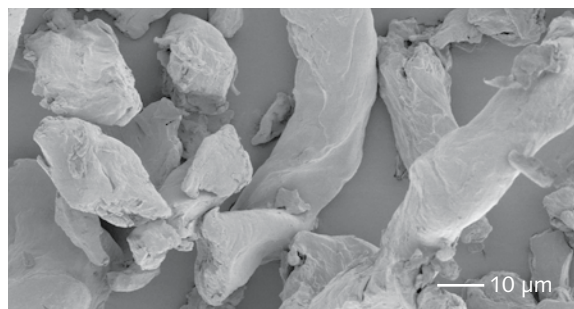
Primellose is cross-linked carboxymethylcellulose sodium. It is a white, free flowing powder.

Disintegration performance

Cross-linking of the cellulose fibers reduces water solubility, and the resulting material can take up many times its own weight of water and swell powerfully without losing its fibrous integrity. The combination of rapid water penetration into tablets through the hydrophilic, fibrous particles and the subsequent development of a strong disintegration force make croscarmellose sodium a very effective superdisintegrant.⁷ Primellose is one of the most effective croscarmellose sodium products available because of the strong swelling force which it develops.⁸ The effectiveness of Primellose may be attributed to a combination of its particle size and optimal degree of substitution.⁹

Application

Primellose is suitable for a variety of tablet and capsule formulations. Primellose is effective in combination with both insoluble filler-binders, such as MCC and dicalcium phosphate and slightly soluble to soluble filler-binders such as mannitol and lactose at a dosage of 2-6%. It is also a choice for formulations which require non-starch products. Primellose is effective when used as intra-granular or extra-granular superdisintegrant, or when divided between these.

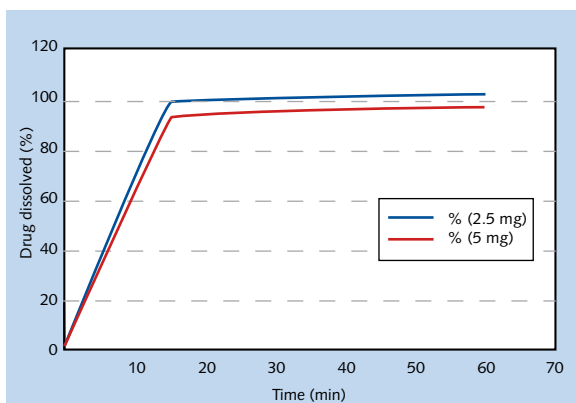


SEM of Primellose.

Formulation examples using Primellose

Glipizide tablets 2.5 mg & 5 mg by direct compression

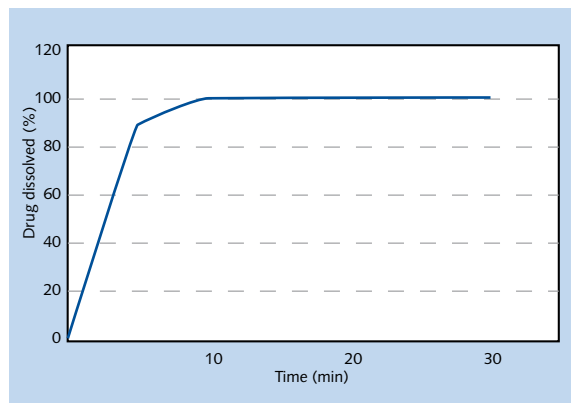
Components	mg/tablet	
Glipizide	2.50	5.00
SuperTab 22AN	120	120
Pharmatose 100M	68.5	66.0
Primellose	8.00	8.00
Magnesium stearate	1.00	1.00
Total	200	200
Tablet properties		
Mean weight	200 mg	200 mg
Thickness	4.43 mm	4.52 mm
Friability	0.3%	0.1%
Assay (% label)	98%	100%
Content uniformity (RSD)	1.7%	3.3%
Disintegration time (min:s)	1:14	0:50



Dissolution of Glipizide in pH6.8 phosphate buffer (USP apparatus 2).

Propranolol tablets 80 mg by direct compression

Components	mg/tablet
Propranolol hydrochloride	80.0
SuperTab 14SD	158.25
Primellose	10.0
Aerosil 200	0.50
Magnesium stearate	1.25
Total	250
Tablet properties	
Mean weight	250 mg
Weight uniformity (RSD)	0.2%
Friability	0.2%
Hardness	74 N
Disintegration time (min:s)	2:22



Dissolution of Propranolol in dilute hydrochloric acid (USP apparatus 1).

Pharmacopoeia

Primojel complies with the latest editions of the USP-NF, Ph.Eur. and JP.

Primellose complies with the latest editions of the USP-NF, Ph.Eur. and JP.

U.S.A. Drug Master File

Primojel: No. 3015, submitted August 24, 1977.

Primellose: No. 9662, submitted April 21, 1992.

Packaging

Primojel: packed in a 50 kg HDPE drum with a polyethylene inner bag.

Primellose: packed in a 35 kg HDPE drum with a polyethylene inner bag.

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