SPI Pharma™

TECHNICAL BULLETIN

Advantol™ 300

"Soft-Melt" Delivery System for Nutritionals

SPI Pharma's Advantol™ platform uses proprietary co-processing technology. It can be used to develop a "soft-chew" or a "quick-melt" solid dosage form for tablet applications. Advantol is a robust, off-the-shelf excipient system that allows the formulator to carry out product development work in their lab giving the company control of the development and testing activities. In addition, Advantol requires no special manufacturing equipment or tooling. Advantol formulations utilize a standard rotary tablet press with standard tooling under normal tableting temperature and humidity conditions to make robust "soft-melt" tablets. In contrast to using wet granulation or spray drying methods, SPI's technology allows customers to simply add the active to Advantol, dry blend and compress, thus reducing the production cycle time and lowering costs.

Table 1. Typical Properties of Advantol 300

Appearance	White granular free-flowing powder
Loss on Drying	NMT 3.0%
Bulk Density	.435 g/mL
Tapped Density	.52 g/mL
Angle of Repose	36º
Carr's Index	16 (Good Flow)
Average Particle size	100 µm

Using Advantol 300 – Simply Dry Blend and Direct Compression

Formulations containing Advantol 300 are easily manufactured by direct compression process. The active(s) are blended with flavors, sweeteners, colors, etc. The mixture is blended with Advantol 300 for a specified mixing time. The lubricant is then added in the final step and blended for a minimum of 5 minutes. To demonstrate the versatility of Advantol 300, placebo and formulated tablets were prepared and tested for hardness, friability, and disintegration.

Advantol™ 300 flows well on tableting and did not exhibit significant weight variation. Advantol™ 300 had a suitable Angle of Repose, and has a mean particle size of 90 - 120 microns, therefore, it will not cause segregation of finer API's which will result in fewer problems with content uniformity.

Packaging

The nature of the Advantol product is to absorb water rapidly to allow quick disintegration. These hygroscopic properties therefore demand attention to packaging. For Advantol based tablets, Aclar® PCTFE* fluropolymer films are recommended as blister material and aluminum foil laminated with child resistant, peel-off paper backing for the lidding. When Advantol based products are packaged in bottles, HDPE bottles with induction sealing and desiccant are recommended. If the packaging or sealing is inadequate, tablet hardness will decrease resulting in higher friability of tablets.

Advantol 300 is a directly compressible excipient system offering "Soft-Melt" functionality and specially formulated for nutritional applications. This easy-to-use delivery system provides the following attributes:

- **Smooth mouthfeel**
- **Quick disintegration**
- **Tablets manufactured using standard tooling**
- **Highly compactible**
- **High loading in small tablet**
- **Produced under cGMP with USP excipients**
- **Cost effective**
- **Patent pending**

Why "Soft-Melt"?

- **Ease of administration to patients who have difficulty swallowing tablets**
- **Pleasant Mouthfeel**
- **Convenience**

Advantol™ 300 Placebo:

Figure 1.

Advantol™ 300 exhibits a steady increase in hardness as compression force is increased, a characteristic of robust diluents. This material offers the formulator an excellent carrier for high-dose actives.

Advantol™ 300 provides for extremely low friability, even at relatively low compression forces. For example, a relatively large tablet (1000mg, 0.625" diameter) has a friability below 1%, when compressed at 10kN. At higher compression forces (> 25kN), the same tablet exhibits friability of less than 0.1%. Tablets compressed with Advantol™ 300 are robust and exhibit low friability, providing for the structural integrity necessary for further processing, such as coating, blister packing, and shipping.

Figure 2.

Tablets manufactured with Advantol™ 300 provide for rapid disintegration which is relatively independent of compression force. A 1000mg tablet with a hardness of 25kP disintegrates in just over 30 seconds (test conducted according to USP/EP disintegration). The rapid disintegration time allows the formulator to efficiently manufacture both quick-dissolve and soft-chew nutraceutical dosage forms.

Advantol™ 300 offers high compaction, low friability, and rapid disintegration in one easy-to-use, directly-compressible excipient system. The ease of manufacture, functionality, and superior organoleptic properties of Advantol™ 300 make it the excipient of choice for quick dissolve and soft chew nutraceutical applications.

Figure 1. Compaction and Friability – Advantol™ 300

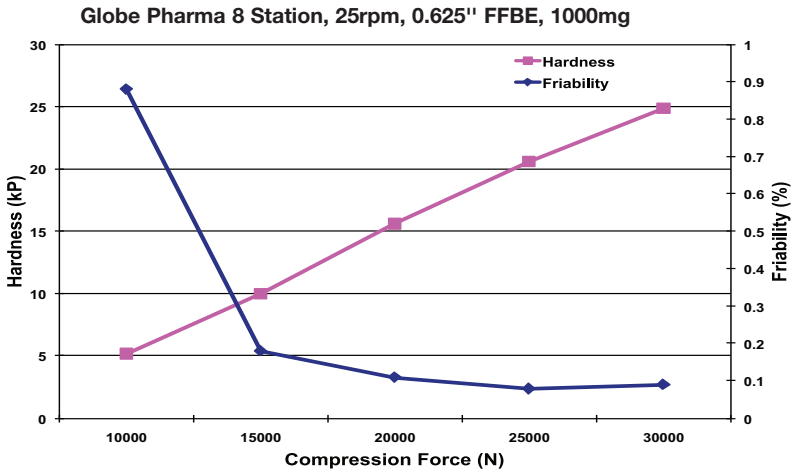
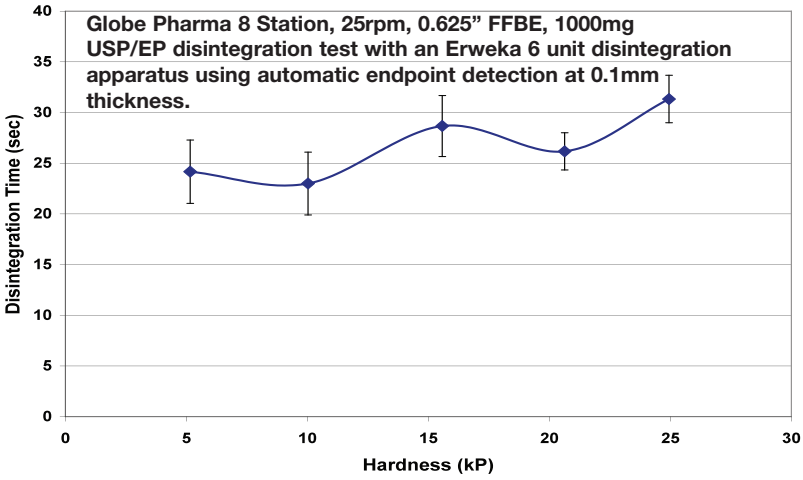


Figure 2. Disintegration Time – Advantol™ 300



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