



# HPMC

C A P S U L E S



**CAPSUGEL®**  
Quality  
People and Products Working Together™

# Vcaps™ – HPMC Capsules

## Offering unique solutions

Vcaps capsules, composed of hydroxypropyl methylcellulose (HPMC), offer numerous and unique benefits as a dosage form for the pharmaceutical marketplace.

### Benefits of Vcaps capsules

#### Well suited for moisture sensitive drugs

As seen in Figure 1, Vcaps capsules have a low moisture content level (5-6% at 50% R.H.), and will not retain elevated moisture levels after exposure to highly humid conditions.

#### No risk of capsule cross-linking

To assess cross-linking effect, Vcaps capsules were pre-filled with diluent containing 40 ppm of formaldehyde (a known cross-linking agent) and stored for three months. These test capsules were then emptied and re-filled with acetaminophen and tested according to the USP monograph. Test results indicated that the dissolution of the test capsules matched those not exposed to formaldehyde.

#### Excellent for modified release coatings

The shell texture of Vcaps capsules enables good adhesion and coating uniformity using aqueous systems.

#### Flexibility under extreme storage conditions

Vcaps capsules stored under various controlled humidity conditions, with subsequent varying levels of moisture content, were tested\* for brittleness and breakage. Test results (see Figure 2) indicate stable, robust performance, even at low moisture levels.

#### Machinability

Billions of Capsugel Vcaps capsules have been successfully filled on high speed encapsulation machines using standard change parts.

\*Capsugel Tube Test Method: measures resistance to breakage upon exposure to a fixed impact force.

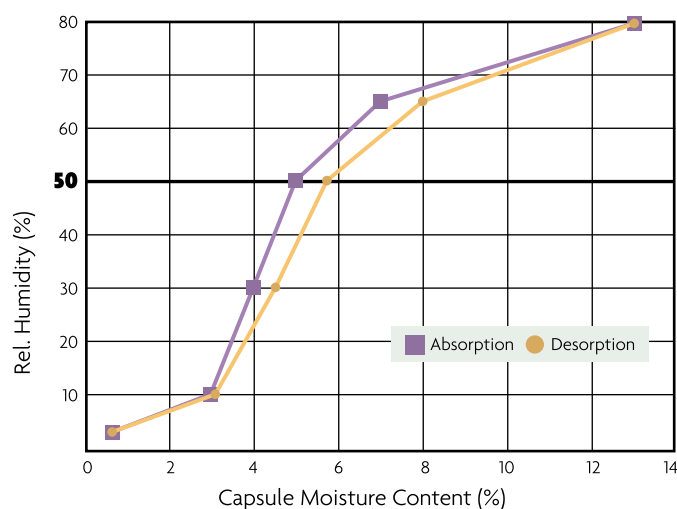


Figure 1: Sorption isotherms of HPMC capsules

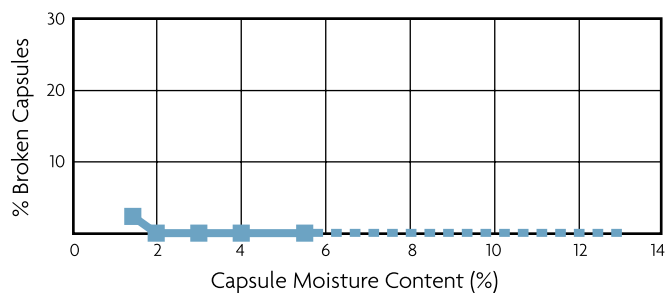


Figure 2: Flexibility at various moisture levels

**HPMC** is derived from cellulose fibers, and is a widely used excipient in pharmaceutical formulations. It is generally regarded as a nontoxic and nonirritant material.



# Capsugel

## The leading supplier of HPMC capsules

Capsugel provides a number of advantages to insure the success of your pharmaceutical products that can be enhanced by the unique benefits of Vcaps capsules.

### Capsugel Advantages

- **Proven commercial and consumer experience** with HPMC capsules
- **Extensive supply capability**, to better support scale-up needs
- **Customized color** and print options that meet global regulatory standards
- Superior quality and process controls, assuring **consistent batch-to-batch performance**
- **Formulation support** for a variety of applications
  - Conventional oral dosage form for **immediate release**
  - Enteric coating for **controlled release** delivery
  - Unit dose container for dry powder **inhalation devices**
  - **Liquid** or semi-solid formulations in capsule dosage form



For more information contact any of our sales offices (listed on the next page), or visit us at [www.capsugel.com](http://www.capsugel.com).

# Product Characteristics and Dimensional Specifications

Capsule Size	00	0	1	2	3	4
<b>A. WEIGHT</b>						
Average weight in mg	118	95	75	60	47	38
Tolerance in mg	±7	±6	±6	±4	±3	±3
<b>B. CAPACITY</b>						
Volume in ml	0.91	0.68	0.50	0.37	0.30	0.21
Weight capacity:						
Powder density (mg)						
0.6 g/ml	546	408	300	222	180	126
0.8 g/ml	728	544	400	296	240	168
1.0 g/ml	910	680	500	370	300	210
1.2 g/ml	1092	816	600	444	360	252
<b>C. LENGTH OF CAPSULE PARTS (BODY &amp; CAP)</b>						
BODY inches	0.796	0.726	0.654	0.601	0.535	0.480
Tolerance inches	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018
BODY mm	20.22	18.44	16.61	15.27	13.59	12.19
Tolerance mm	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46
CAP inches	0.462	0.422	0.385	0.352	0.318	0.284
Tolerance inches	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018
CAP mm	11.74	10.72	9.78	8.94	8.08	7.21
Tolerance mm	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46
<b>D. EXTERNAL DIAMETER</b>						
BODY inches	0.322	0.289	0.261	0.239	0.219	0.199
BODY mm	8.18	7.34	6.63	6.07	5.57	5.05
CAP inches	0.336	0.300	0.272	0.250	0.229	0.209
CAP mm	8.53	7.64	6.91	6.35	5.82	5.32
<b>E. OVERALL CLOSED LENGTH</b>						
Inches	0.917	0.854	0.765	0.709	0.626	0.563
Tolerance inches	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012
mm	23.3	21.7	19.4	18.0	15.9	14.3
Tolerance mm	±0.30	±0.30	±0.30	±0.30	±0.30	±0.30
<i>Recommended Storage Conditions: 59° - 77° F / 15° - 25°C      35% - 65% RH</i>						

## Sales Office Locations

### AMERICAS

**Greenwood, South Carolina**  
Capsugel  
535 North Emerald Road  
Greenwood, SC 29646  
Tel: 888-783-6361 or  
864-223-2270  
Fax: 888-783-6360

**Mexico City, Mexico**  
Capsugel Mexico  
Periferico Sur No. 4194  
Col. Jardines del Pedregal  
C.P. 01900, Mexico D.F.  
Tel: 001-800-010-0463 or  
001-800-606-8406  
Fax: 001-800-845-6973

**Rio de Janeiro, Brazil**  
Capsugel  
Estrada Mal Miguel Salazar  
Mendes de Moraes  
Nr. 969 Jacarepaqua  
Rio de Janeiro - RJ  
Brazil, Zip: 22770-330  
Tel: 55-21-445-5777  
Fax: 55-21-445-1950

### EUROPE

**Bornem, Belgium**  
Capsugel Bornem  
Rijksweg 11  
B-2880 Bornem  
Tel: 32-(0)3-890-05-11  
Fax: 32-(0)3-889-26-22

**Colmar, France**  
Capsugel Colmar  
10, Rue Timken  
F-68027 Colmar, Cedex  
France  
Tel: 33-(0)3-89-20-57-09  
Fax: 33-(0)3-89-41-48-11

### ASIA

**Bangkok, Thailand**  
Capsugel  
32/39 Sino Thai Tower, 15th Floor  
Sukhumvit 21 (Asoke)  
Klong-Toey Nua, Wattana  
Bangkok 10110, Thailand  
Tel: 66-2-259-2400  
Fax: 66-2-259-2401

**Jakarta, Indonesia**  
Capsugel  
Jl. Raya Bogor Km 42  
P. O. Box 15/CBI  
Cibinong, Jawa Barat  
Indonesia  
Tel: 62-21-875-2226  
Fax: 62-21-875-2227

**Tokyo, Japan**  
Capsugel  
2-24-9 Kamiohsaki Shinagawa-ku  
Tokyo, Japan 141-8656  
Tel: 81-3-5487-5650  
Fax: 81-3-5487-6876

**Suzhou, China**  
Suzhou Capsugel, Ltd.  
Jinjihu Road, Suzhou Industrial Park  
Suzhou, Jiangsu,  
People's Republic of China  
Post code: 215021  
Tel: 86-512-761-6666  
Fax: 86-512-761-8807

**Sydney, Australia**  
Capsugel  
32, Cawarra Road  
Caringbah, Sydney  
NSW2229 Australia  
Tel: 61-2-98503564  
Fax: 61-2-97106283