

Now the power of liquid
is within your grasp

Licaps[®] – two-piece capsules for
liquids and semi-solids



Discover the advantages of Licaps®

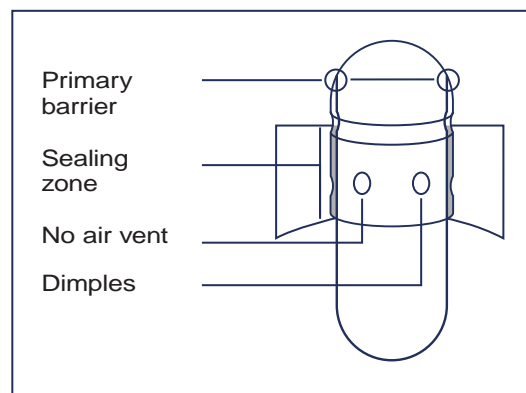
In our continuing efforts to bring meaningful solutions to pharmaceutical scientists, we are offering a new line of capsules: Licaps® – for filling non aqueous materials.

Benefits of Licaps® Capsules for Liquids and Semi-Solids

- In-house development and production.
- Ease of formulation.
- Compatible with a wide range of excipients for improving the solubility and bioavailability of your drug.
- Dust free production enhances ability to work with potent compounds.
- Low oxygen permeability.
- Improved content uniformity of low dose compounds.
- May be filled at temperatures up to 70°C, thus enabling the filling of hot melts.
- Sustained release and enteric possibilities.
- Manufacture small batches when minimal quantities of active are available.

Licaps® Features

- Exclusively designed to optimize liquid filling and sealing with LEMS™.
- Special body design and no air-vent prevent leakage before sealing.
- Six dimple design maximizes sealing zone.
- Available in sizes 00, 0, 1, 2.



Recommended Formulation Guidelines

Thermal and Rheological Characteristics

- Maximum filling temperature: 70°C
- Viscosity at filling temperature: 100-1000 cp
- Particle size of suspended drug: 10-20 micrometers

Excipient Selection

- Compatible with active ingredient and capsule shell.
- Suitable rheology and thermal behavior.
- Suitable for the required bioavailability profile.
- Suitable for the required shelf-life.

Examples of Excipients Compatible with Licaps®

Peanut Oil	Paraffin Oil
Hydrogenated Peanut Oil	Cetyl Alcohol
Castor Oil	Cetostearyl Alcohol
Hydrogenated Castor Oil	Stearyl Alcohol
Fractionated Coconut Oil	Stearic Acid
Corn Oil	Beeswax
Olive Oil	Silica Dioxide
Hydrogenated Vegetable Oil	Polyethylene Glycols
Silicone Oil	Macrogol Glycerides
Soya Oil	Poloxamers

Discover the advantages of LEMS™ technology

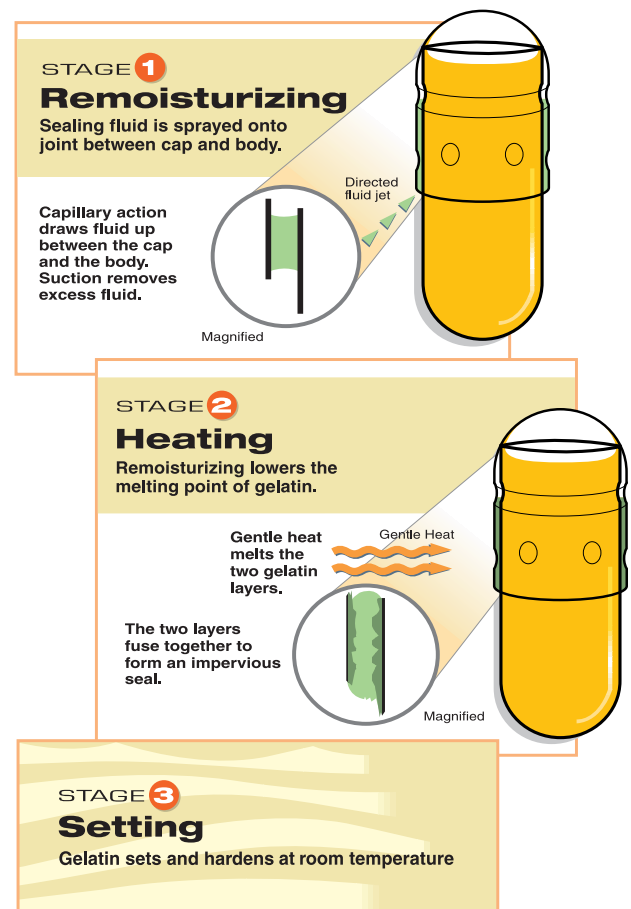
Capsugel has developed an innovative machine to seal Licaps® capsules known as LEMS™ - Liquid Encapsulation Microspray Sealing.

Benefits of LEMS™ Technology

- Eliminates the need for banding.
- Stand alone machine.
- Easy installation and start-up.
- Easy operation: one technician can supervise both the filling and LEMS™ machines simultaneously.
- Easy cleaning and size change.

LEMS™ Sealing Process

- Sealing fluid is sprayed onto the joint between the cap and body, lowering the melting point of gelatin in the wetted area.
- Sealing fluid contains approximately 50% water and 50% ethanol resulting in a lower surface tension than water alone. The fluid thus penetrates the cap/body overlap more easily and a better seal is established.
- Approximately 50 microliters of fluid is sprayed during a one second cycle, followed by suction to remove excess fluid.
- Air heated to 40-60°C is gently blown across the capsule during a one minute cycle to complete the melting and fusion of the two gelatin layers.
- Gelatin setting is completed while the product returns to room temperature.



Specifications

Licaps[®] Specifications

SIZE	00	0	1	2
Capsule Volume ml	0.95	0.68	0.50	0.37
Approximate Available Volume ml(*)	0.85	0.61	0.45	0.34
Weight in mg	118	96	77	61
Tolerance mg	±10	±8	±6	±5
Overall Closed Length mm	23.8	21.70	19.70	17.90
Tolerance mm	±0.30	±0.30	±0.30	±0.30
Body Length mm	20.22	18.84	17.01	15.57
Tolerance mm	±0.46	±0.46	±0.46	±0.46
Cap Length mm	11.73	10.72	9.78	8.94
Tolerance mm	±0.46	±0.46	±0.46	±0.46
External Diameter				
Body mm	8.18	7.33	6.63	6.07
Cap mm	8.53	7.64	6.91	6.35
(*) The approximate available volume is 10% less than the total volume				

LEMS[™] Machine Specifications

Maximum Sealing Capacity	30,000 caps/hour
Capsule Sizes	00, 0, 1, 2
Dimensions (approximate):	
Length	1.5 m
Width	0.9 m
Height	1.4 m
Weight (approximate)	670 Kg
Sealing Fluid Consumption	Approximately 1.6 liters/hour at 30,000 capsules per hour



Licaps[®]

Capsugel Support

At Capsugel we are committed to the success of your product during development, technology transfer and market introduction. To that end we offer the following services to support you during these critical steps.

Compatibility Study:

Your formulation is tested to ensure compatibility with Licaps® and you are provided with a detailed report of the results.

Filling Trial:

A liquid filling and LEMS™ sealing trial is performed on formulations which pass the compatibility test. We will determine the machinability of your formulation on our filling machine, seal on our LEMS™ machine, and provide a complete feedback report.

Machine Evaluation:

You evaluate the LEMS™ machine and filling operation in our research center.

LEMS™ Support:

We install the LEMS™ machine, train your technicians and provide on-going technical service support.

Put the power of liquid
within your grasp.



Licaps®

CAPSUGEL AMERICAS

U.S.A.

535 North Emerald Road
Greenwood, S.C. 29646 U.S.A.
Tel: +1-864-223-2270
Fax: +1-864-942-3848
Tel. USA: (800) 845-6973
Tel. Canada: (800) 545-0879

MEXICO

Carr. Mexico-Veracruz Nr. 1030
C.P. 72270 Puebla, MEXICO
Tel: +52-22-82-6218
Fax: +52-22-82-6449

BRAZIL

Estrada Mal. Miguel Salazar
Mendes de Moraes
Nr. 969 Jacarepagua
CEP 22770-033
Rio de Janeiro, BRAZIL
Tel: +55-21-445-5777
Fax: +55-21-445-1950

CAPSUGEL EUROPE

BELGIUM

Rijksweg 11
B-2880 Bornem, BELGIUM
Tel: +32-3-890-05-11
Fax: +32-3-889-26-22

FRANCE

10, rue Timken
F-68027 Colmar Cedex
FRANCE
Tel: +33-3-89-20-57-09
Fax: +33-3-89-41-48-11

ITALY

Via C. Colombo, 1
I - 20020 Lainate, Milano
ITALY
Tel: +39-2-93337-428
Fax: +39-2-93337-436

CAPSUGEL ASIA

THAILAND

Internat. Capsules Co.LTD
32/46 Sino Thai Tower,
18th Floor
Asoke road, Sukhumvit 21
Bangkok 10110 THAILAND
Tel: +662-259-2400
Fax: +662-259-2401

INDONESIA

Jl. Raya Bogor Km 42
Cibinong, Jawa Barat
INDONESIA
Tel: +62-21-875-2226
Fax: +62-21-875-2227

JAPAN

3-36 Minamihashimoto 4
Chome
Sagamihara City
Kanagawa prefecture
JAPAN 229-1133
Tel: +81-427-70-4601
Fax: +81-427-71-7397

CHINA

Yellow Stone Bridge
Suxie Highway
Suzhou 215006
Jiangsu Province
PEOPLES REPUBLIC OF CHINA
Tel: +86-512-761-6666
Fax: +86-512-761-8807

The World's Leader in Two-Piece Capsules™

CAPSUGEL

Your Natural Partner™



Licaps®

Liquid Capsules by Capsugel

Capsugel  Library

BAS 193E 1999