

Coni-Snap[®] Hard Gelatin Capsules

Reliable and consistent two-piece capsules



CAPSUGEL[®]

Quality by design

With the significant advances in life sciences, we are able to treat or at least manage the majority of communicable and non communicable diseases through efficient drug therapy, which has and still is increasing our life expectancy every year.

The free accessibility to efficient drug therapies in the Western world, which accounts for about 1 billion of the world's population, has increased the health care costs in these countries to a level that has initiated a lot of cost containment programs. In contrast to this, the emerging economies, which account for 2.9 billion people but also the very poor countries, which account for 2.6 billion people are in an increased demand for drug therapeutics as well but are not in a position to afford these medicines at their actual costs.

Pharmaceutical product prices are mainly detected by its manufacturing costs. Several options have been more or less successfully explored in the past decade to lower the costs through transfer of the manufacturing into low labor cost market places and through continuous improvement programs to streamline the manufacturing process.

When benchmarked with other industry it became evident that the pharmaceutical industry is still working at a very low performance with very traditional processes. Moreover, the product formulation, process and design, which are highly regulated, have not been questioned over the past decades. After patent expiration the products are true copy cats of the products in the market since 10 to 15 years, which is a missed opportunity to apply innovative technologies that might have evolved during the past years.

With the introduction of the ICH Guidelines Q 8 - 10 the concept of the Quality-by-Design (QbD) and the Process-Analytical-Technologies (PAT) was introduced that will become state of the art within the coming years. With QbD and PAT, pharmaceutical development and manufacturing will move towards an intensive product and process understanding that will significantly increase manufacturing efficiency through

continuous process monitoring and process control leading to a desired product quality all time. The Quality-by-Design approach will also question the product formulation, processing and design with regard to its necessary and required complexity in order to achieve a desired product quality. Reducing out-of-specification materials and products, excipients as well as unit operations will immediately turn into efficiency enhancements and cost savings. Looking ahead, changing from a batch based process to a continuous manufacturing driven by QbD and PAT will be another important step forward to enhance manufacturing efficiency.

Traditional two piece capsule products were manufactured in a simple weighing, blending and filling process using none or very few functional excipients like a lubricant, a disintegrant and a diluent. As capsule filling is known since many years and capsule filling machines are available around the world, it

is not surprising that two piece capsules as a predictable drug delivery system for a variety of formulation types starting from API alone to modified release multiparticulates have gained back substantial attention in the R&D based and generic pharmaceutical industry as a cost effective pharmaceutical dosage form and high quality pharmaceutical drug product option.

Pharmaceutical drug products of the future will have to address the efficacy of the active moiety but also its affordability in the mature as well as emerging markets. Quality-by-Design is a tool in achieving considerable efficiency gains in pharmaceutical manufacturing coupled with the two piece capsule dosage form.


“Quality by Design is a tool in achieving considerable efficiency gains in pharmaceutical manufacturing coupled with the two piece capsule dosage form.”

Sven Stegemann

Director Pharmaceutical Business Development

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Coni-Snap[®] Hard Gelatin Capsules,
the most popular two-piece hard
gelatin capsules in the world.”



About Coni-Snap[®]

Hard Gelatin Capsules

Designed to meet your needs

Renowned performance

With more than a century of world-leading capsule manufacturing expertise, it is not surprising that Capsugel produces over 50% of all two-piece capsules sold globally. Capsugel standard hard gelatin capsules, known as Coni-Snap, perfectly match the stringent regulations and standards of major pharmaceutical companies as well as health & nutrition manufacturers and marketers.

Outstanding quality

Dedication to innovation extends beyond the Coni-Snap[®] Hard Gelatin Capsules itself and well into the production cycle. The latest high-capacity filling machines require a precise capsule design to work at maximum capacity. To meet this requirement, the Coni-Snap[®] Hard Gelatin Capsules features a body with a tapered rim that allows more play between the two parts, reducing the risk of the two rims meeting and therefore eliminating the splitting phenomenon. Furthermore, the pre-lock design with six dimple-like notches reduces the chance of premature opening during both transportation and filling.

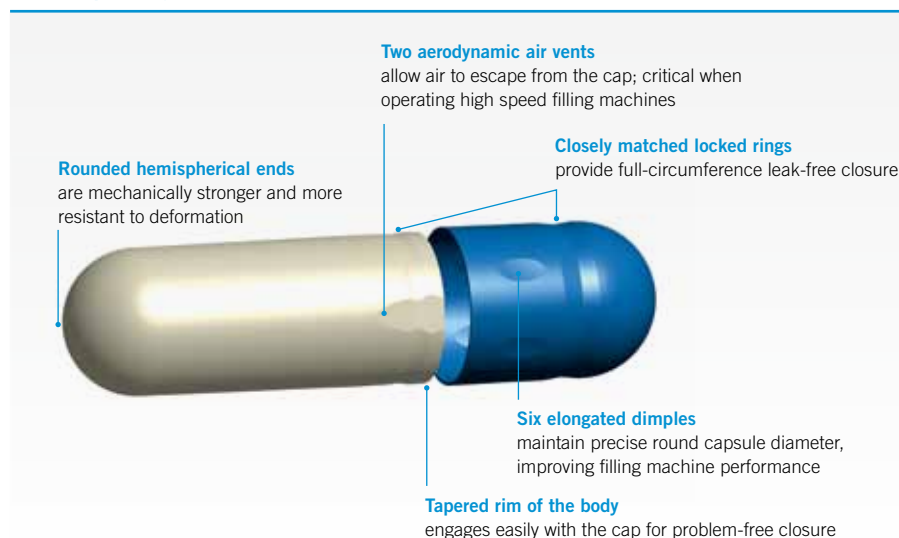
Customer focus

Constant technical improvement is just one of the reasons why customers around the world have been counting on Coni-Snap two-piece capsules for over fifty years. For pharmaceutical and dietary supplement manufacturing customers, Coni-Snap[®] Hard Gelatin Capsules offer a wide range of advantages. The hard gelatin capsules can be produced using a simpler manufacturing process with fewer production steps while maintaining high quality standards. On the formulation side, hard gelatin capsules are a versatile container, offering numerous filling possibilities including granules, powders, liquids, semi-solids and mini-tablets. Coni-Snap[®] Capsules are ideal for controlled release formulation as well. Consumers tend to prefer hard gelatin capsules since they are easy to swallow and mask tastes and odours.

One size does not fit all

With a vast range of colours, sizes and imprinting possibilities, Coni-Snap[®] Capsules provide an ideal way to enhance product identity as well as overall brand image.

Coni-Snap[®] design features





“Capsugel hard capsules
are produced from
high-grade gelatin.”

Manufacturing process

Gelatin, the primary raw material

High-quality gelatin

Every single Capsugel hard gelatin capsule originates from high-quality gelatin derived from collagen, a fibrillar protein composed of eighteen different amino acids found in connective tissues and bones. Natural bovine or porcine collagen is macerated and purified using either acids or alkalis, depending on the production process. The collagen splits hydrolytically into an unbranched amino acid chain with a molecular weight ranging from 40,000 to 100,000. This results in a high-grade, consistent granular gelatin.

Strict regulations and quality requirements

The high-grade gelatin used to produce Capsugel hard gelatin capsules meets all standards and regulations imposed by both the food and pharmaceutical industries. Every Capsugel gelatin supplier must adhere to strict Capsugel regulations and quality requirements. Delivered high-grade gelatin undergoes stringent preliminary physical, chemical and microbiological tests before it is released into production by the Capsugel quality control department. Testing methods are applied with equal thoroughness at all Capsugel factories world-wide, guaranteeing a primary raw material of the highest consistency and quality.

“Every Coni-Snap® Hard Gelatin Capsule conforms to strict requirements.”



Manufacturing process

Production level and quality

The underlying principles of capsule manufacturing have remained practically unchanged since its invention in 1833. Over the years, modern technology and automation have significantly increased production levels and product quality.

Specialised R&D team

Today, Capsugel counts on a specialised R&D team that constantly improves automation processes and technology, resulting in a highly effective production process centred on integrated high-capacity automatic machines.

The manufacturing process

1 Melting Stage

After passing the preliminary quality control, the gelatin is released for production and placed in large hoppers. Here, filtered water is added and the gelatin is heated at 80°C until it reaches the correct viscosity. Following a resting period, a vacuum pump removes the air from the gelatin solution.

2 Colour

At this point, the gelatin solution is moved to transfer tanks, or 'melters', where titanium oxide is added to create an opaque base. Specialists blend in the necessary colouring agents or pigments to create one of eighty possible colours. Following a colour management step to confirm colour accuracy, the transfer tank with the colour-correct gelatin solution is moved to the production area where the gelatin is fed into dipping dishes from temperature-controlled tanks in the production machine.

3 Capsule manufacturing

The process itself is an engineering feat. Standardised steel pins arranged in rows on metal bars are precision-dipped into the dishes containing the coloured solution. After dipping, the bars are removed and rotated to distribute the gelatin as uniformly as possible around the pins. The gelatin is then allowed to set. Precise bar rotation, gelatin viscosity and dipping rate all contribute to correct gelatin distribution, resulting in a homogeneous capsule wall with an exact, specified thickness.

4 Drying

Travelling along a conveyor belt, the bars carrying the pins coated with solidified gelatin pass through a series of drying kilns until the moisture content is reduced to the required level.

5 Automatic Finishing

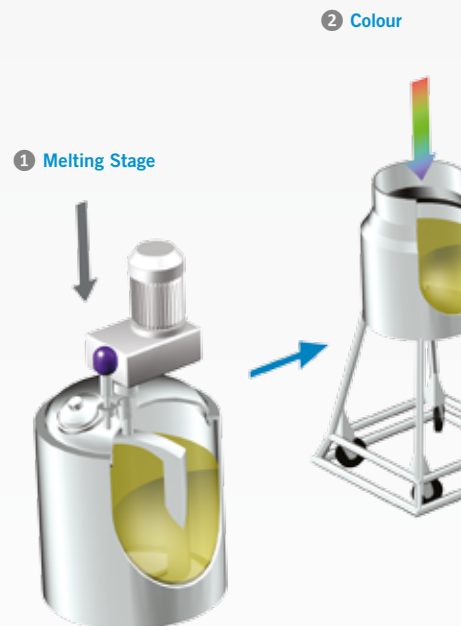
During the final production stage, the machine automatically strips the formed gelatin from the pins, cuts it to the correct length, and places the body and cap in the pre-closed position. The capsules are automatically directed to a corresponding sorting machine in the quality control department.

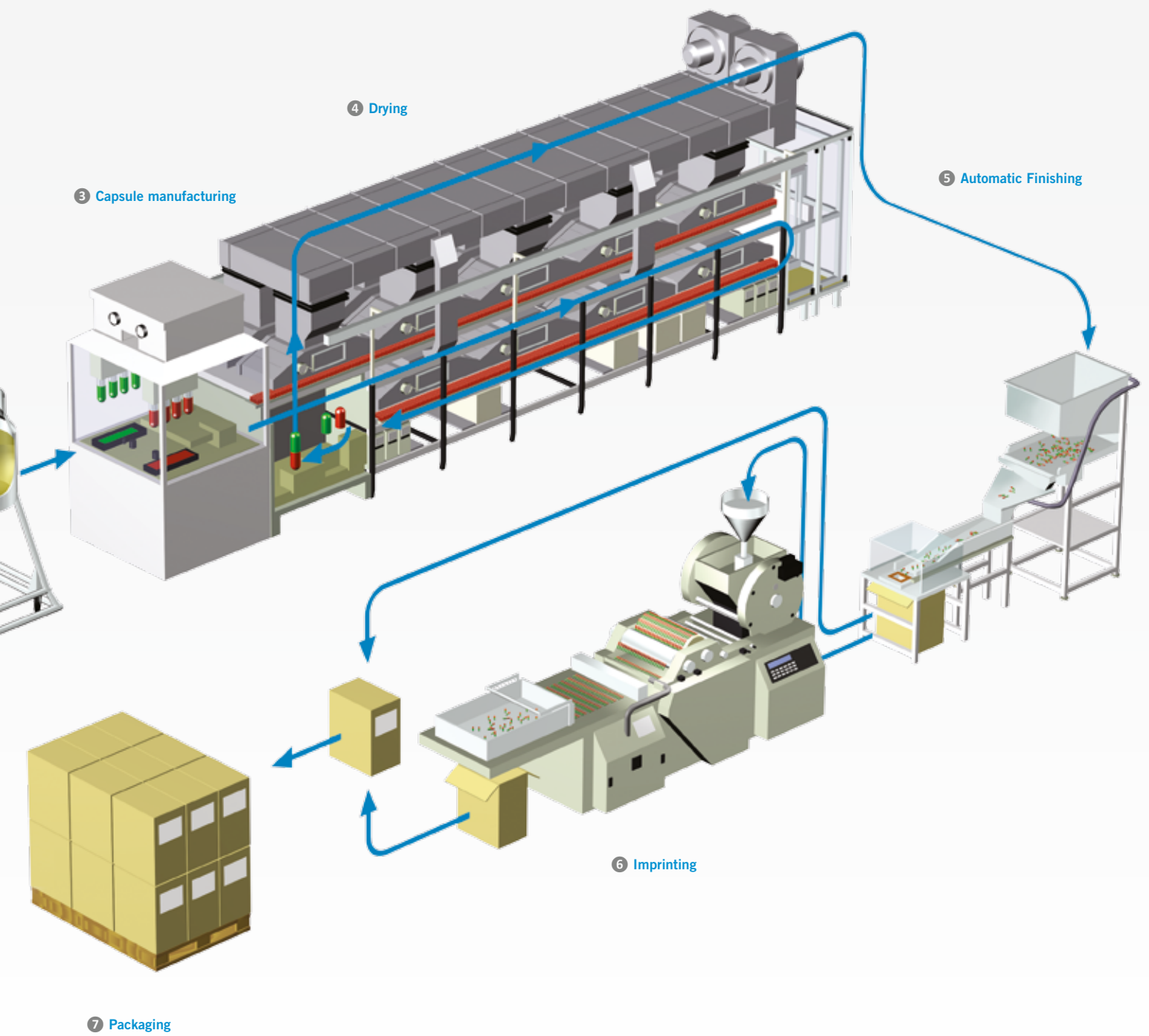
6 Imprinting

Clients frequently ask Capsugel to imprint the pre-closed capsule. All Capsugel hard gelatin capsules can display useful information such as the product name, manufacturer's name or logo, and dosage details in either one or two contrasting ink colours.

7 Packaging

Arriving directly from imprinting or quality control, each individual package must pass a final shipping confirmation inspection before it is dispatched to the client.





Quality control

Highly effective process

Quality is highly apparent and consistent throughout the entire world-wide Capsugel production process. Every Coni-Snap® Hard Gelatine Capsule conforms to strict requirements. To obtain increased production levels and product quality, Capsugel counts on a highly effective process centred on integrated high-capacity automatic machines. The European production process is ISO 9001 and ISO 14001 certified. Drug master files have been registered with the U.S. FDA and the Canadian Health Authority.

Continuous quality control system

Another aspect of Capsugel world-wide quality, the production process features numerous quality controls. This continuous quality control system guarantees the highest level of product uniformity for visual quality and dimensional parameters.

Strict quality standards

When the capsules meet the strict quality standards, a random sample is taken before the entire shipment is packaged and bar-coded. This pre-sample is individually packaged and sent to the customer as an objective, representative product sample. This means that the delivered capsule boxes can remain hygienically stored and sealed until they are filled. Along with every order, customers also receive a certificate. Coni-Snap® Capsules meet all relevant specifications as described in the Capsugel Technical Reference File (TRF).

Steps in capsule manufacturing and quality control

Production step	Corresponding quality control
Preparation of raw material	
Gelatin	appearance, odour, colour, grain size, solubility, gelling, (bloom), viscosity, pH value, isoelectric point, bacteriology, chemical purity
Water	electrolyte content, pH value, bacteriology
Colouring agents	identity, solubility, bacteriology, and pigments chemical purity
Gelatin solution	viscosity, temperature, colour shade, colour composition
Production machine	
1 Dipping, 2 Rotation, 3 Gelling, 4 Drying, 5 Stripping, 6 Cutting, 7 Joining, 8 Ejection	temperature, relative humidity, viscosity, dimensions, colour shade, dimensions, colour shade,
Inspection	defects
Imprinting	laboratory checks on ink, statistical control
Counting, packaging	final release by Quality Control
Batch release	certificate



Properties and specifications

Colouring agents and pigments

Approved colouring agents and pigments

According to international studies, one of the most reliable means of identifying drugs is colour. Although to avoid confusion, colour must not become over-complicated, creating a risk factor in itself. When defining the colour palette for hard gelatin capsules, Capsugel opted to use only approved colouring agents and pigments cited in most pharmacopoeias and other official regulations. As an opacifying agent, Capsugel exclusively uses the approved standard, titanium dioxide.

In-house colour experts

Prior to production, every particular order is individually checked for regulation conformity. During production, in-house colour experts confirm colour accuracy using a state-of-the-art colour management system. Since permitted colouring agents differ from country to country, Capsugel advises customers regarding colourant selection per specific country or region according to the appropriate regulatory agencies. The Capsugel 'List of Colourants' is a highly informative reference document to help clients select the proper colour combinations per country.

“One of the most reliable means of identifying drugs is colour.”



Imprinting

Clear, easy-to-read text certainly assists all types of people, from medical staff and patients to consumers, correctly identify each capsule. That is why Capsugel hard gelatin capsules can be clearly imprinted in one or two colours with useful information like a logo, product name, company or even dosage details.

Axial-Print

Using an offset printing process, hard gelatin capsules can be printed length-wise using the Axial-Print process. It is a simple solution suitable for several lines of text such as a company and product name.

“Capsugel’s specialised imprinting team is readily available to offer technical advice and expertise.”

Radial-Print










For circumferential printed capsules, Capsugel suggests the Radial-Print process. Introduced by Capsugel in 1978 to meet customer demand, the innovative Radial-Print technique enables circular printing and axial printing for several lines. A specially designed conveyor belt runs the capsules under the offset cylinder. The cylinder rotation rate is somewhat higher than the capsule transport rate. This means that the capsules rotate while being printed and the design is printed around the capsule. Up to 320° of the capsule circumference is printable, including additional room for legibility.

The advantage of the Radial-Print technique is space: the printable area is five times larger than the area available using the Axial-Print technique. For example, with larger capsules in the 0 to 000 range, several lines of text can easily be printed on both the cap and the body. For both Axial-Print and Radial-Print techniques, Capsugel offers rectified and non-rectified imprinting.

Ink colours

Capsugel capsules can be imprinted with a variety of standard-approved inks that easily contrast with the many capsule colour combinations. To meet specific marketing and labelling needs, special ink colours can be developed on demand.

Ink colours*

black	white	grey
		
red	medium blue	light blue
		
green	orange	yellow
		

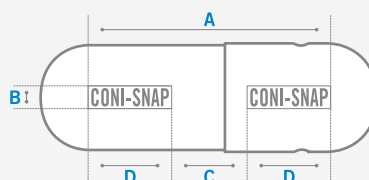
* Please note that ink colours shown here may differ from the original. This should be considered a guideline only.

Imprinting Coni-Snap: dimensions



Axial-Print

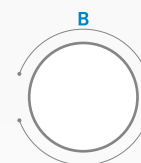
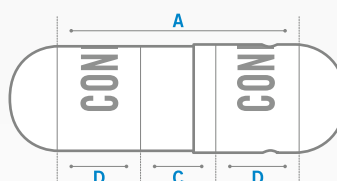
- A** Overall length of total imprinting in mm
- B** Height of imprinting in mm
- C** Distance between cap and body imprintings in mm
- D** Maximum length of cap or body imprinting in mm
- I** Minimum distance between letters in mm



Size	A	B	C	D	I
00	16.40	3.00	4.60	5.90	0.20
0 EL	18.00	2.80	4.60	6.70	0.20
0	15.70	2.80	4.40	5.65	0.20
1 EL	14.50	2.50	5.00	4.75	0.20
1	13.90	2.50	4.40	4.75	0.20
2 EL	13.50	2.30	5.00	4.25	0.20
2	12.70	2.30	4.40	4.15	0.20
3	11.50	2.10	4.00	3.75	0.20
4	10.40	1.90	4.00	3.20	0.20

Radial-Print

- A** Overall height of total imprinting in mm
- B** Maximum overall length of cap or body imprinting in mm
- C** Distance between cap and body imprintings in mm
- D** Maximum length of cap or body imprinting in mm
- I** Minimum distance between letters in mm



Size	A	B	C	D	I
00	16.40	19.00	4.60	5.90	0.20
0 EL	18.00	17.00	4.60	6.70	0.20
0	15.70	17.00	4.40	5.65	0.20
1 EL	15.00	15.50	4.60	5.20	0.20
1	13.90	15.50	4.40	4.75	0.20
2 EL	13.50	14.20	5.00	4.25	0.20
2	12.70	14.20	4.40	4.15	0.20
3	11.90	13.00	4.40	3.75	0.20
4	10.80	11.80	4.40	3.20	0.20

Axial and Radial-Print combined

For specific marketing and identification needs, it is also possible to combine both methods to maximise the capsule presentation.



Specifications

Below is a table covering a wide variety of Coni-Snap® capsule specifications in regards to size, weight and filling capacity. The various dimensions are listed in metric and standard.

Consult the chart to select the optimal Coni-Snap® Capsules.

Coni-Snap® Capsules

Size	000	00e1	00	0e1	0e1*	0	1e1	1	2e1	2	3	4e1	4	5
Weight														
mg	163	130	118	107	110	96	81	76	66	61	48	40	38	28
Tolerance mg	±10	±10	±7	±7	±7	±6	±5	±5	±5	±4	±3	±3	±3	±2
Capacity														
Capsule volume ml	1.37	1.02	0.91	0.78	0.78	0.68	0.54	0.50	0.41	0.37	0.30	0.25	0.21	0.13
Powder density / Capsule capacity mg														
0.6 g/ml	822	612	546	468	468	408	324	300	246	222	180	150	126	78
0.8 g/ml	1096	816	728	624	624	544	432	400	328	296	240	200	168	104
1g/ml	1370	1020	910	780	780	680	540	500	410	370	300	250	210	130
1.2 g/ml	1644	1224	1092	936	936	816	648	600	492	444	360	300	252	156
Length of the capsule parts (body and cap)														
Body inches	0.874	0.874	0.796	0.795	0.826	0.726	0.697	0.654	0.656	0.601	0.535	0.538	0.480	0.366
Tolerance inches	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.016
Body mm	22.20	22.20	20.22	20.19	20.98	18.44	17.70	16.61	16.66	15.27	13.59	13.69	12.19	9.30
Tolerance mm	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.40
Cap inches	0.510	0.510	0.462	0.460	0.472	0.422	0.413	0.385	0.382	0.352	0.318	0.308	0.284	0.244
Tolerance inches	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.018	±0.016
Cap mm	12.95	12.95	11.74	11.68	11.99	10.72	10.49	9.78	9.70	8.94	8.08	7.84	7.21	6.20
Tolerance mm	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.46	±0.40
External diameter**														
Body inches	0.376	0.322	0.322	0.289	0.290	0.289	0.261	0.261	0.240	0.239	0.219	0.199	0.199	0.184
Body mm	9.55	8.18	8.18	7.34	7.36	7.34	6.63	6.63	6.09	6.07	5.57	5.05	5.05	4.68
Cap inches	0.390	0.336	0.336	0.301	0.301	0.300	0.272	0.272	0.250	0.250	0.229	0.209	0.209	0.193
Cap mm	9.91	8.53	8.53	7.65	7.66	7.64	6.91	6.91	6.36	6.35	5.82	5.31	5.32	4.91
Overall closed length***														
Inches	1.029	0.995	0.917	0.909	0.953	0.854	0.804	0.765	0.760	0.709	0.626	0.621	0.563	0.437
Tolerance inches	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.012	±0.016
mm	26.1	25.3	23.3	23.5	24.2	21.7	20.4	19.4	19.3	18.0	15.9	15.8	14.3	11.1
Tolerance mm	±0.3	±0.3	±0.3	±0.3	±0.3	±0.3	±0.3	±0.3	±0.4	±0.3	±0.3	±0.3	±0.3	±0.4

* Europe only. ** All tolerances ±0.002 inches or ±0.06 mm.

Please note that Capsugel Coni-Snap® Capsules specifications are subject to change without notice.

Please consult your Capsugel representative for updated information.

The information in this leaflet is not intended to be used as a claim. It is the responsibility of the customers to check with the current regulations in their respective countries.


Storage and packaging

Ideal storage conditions

When the capsules are packaged, the job still is not finished. Correct storage and packaging are important performance factors. Finished gelatin capsules leave the factory with a moisture content range of 13% to 16%. To maintain this, ideal storage conditions are 50% R.H. (relative humidity) at 21°C.

Original Capsugel package

Consisting of corrugated cardboard boxes lined with anti-static polyethylene bags, the original Capsugel package is a highly suitable storage option. The recommended storage conditions using Capsugel packaging are 35%-65% R.H. and 15-25°C. Each bag is closed with a tamper-proof safety seal and clearly labelled with the specific contents and recommended storage conditions. This includes a new label designed with two small, removable stickers for use by the customer on product bags and documents.



When the storage recommendations are followed, the shelf life for Capsugel hard gelatin capsules is 5 years.”

“A hard gelatin capsule is a highly functional and versatile container suitable for numerous market segments.”



Fill material for capsules

Formulation advantages

Highly functional and versatile

Hard gelatin capsules continue to succeed on the market. Clearly, this is due to the numerous advantages for all key players in the sector, from scientists and R&D experts to manufacturers and marketers and finally, of course, the consumer. A hard gelatin capsule is a highly functional and versatile container suitable for numerous market segments including traditional medicines and dietary supplements.

Easy to differentiate

A wide selection of colour possibilities and imprinting options means hard gelatin capsules are widely identifiable. From a marketing point of view, hard gelatin capsules are easy to differentiate and highly attractive. With high formulation versatility, hard gelatin capsules are an excellent choice for a speedy market introduction.

A vast range of combinations

Either separately or combined, a variety of materials can be enclosed in the capsules, ranging from granules, powders, liquids and even semi-solid formulations. Opting for granules, pellets and spherical micro-capsules reduces the volume compared to powder.

Another practical solution for taking two incompatible substances together is to make film-coated pellets and place them in hard gelatin capsules. Delayed release products are much easier with hard gelatin capsules. For example, polymer-coated pellets or granules that dissolve in different pH values can extend the half-life of a drug substance, creating a once-a-day dosage.

Filling possibilities

Suitable for a wide range of formulations

Logically speaking, hard gelatin capsules are a minor yet vitally important part of the final product. In order for the final product to take effect, it must be released from the capsule. Even under very extreme conditions, Capsugel hard gelatin capsules dissolve in vivo without difficulty. This makes them a popular medical choice. Active substance mixtures filling hard gelatin capsules must have guaranteed content uniformity to be used in automatic filling machines. In most cases, the hard gelatin capsule is filled with a powder or granule. However, pellets, micro-capsules, tablets, dragées, small gelatin capsules, pastes, semi-solids and liquids can also be placed without difficulty.

Outstanding quality

When determining the viability of a filling, scientists and experts must consider numerous factors. This includes substance size and shape, uniformity, mixture homogeneity, consistency, moisture content and compression ability. The filling must be able to withstand extremely high speeds. Because of the absolute need for constant and accurate quantities not all substances are suitable for automatic dosage machines. These speciality cases are best addressed using other Capsugel products.

“Clearly, Capsugel hard gelatin capsules offer almost unlimited possibilities. It is probably why Capsugel’s Coni-Snap® Hard Gelatin Capsules are one of the world’s most popular brands of two-piece gelatin capsules.”

Filling possibilities

The diagram illustrates six basic filling options and three combinations for capsules. Each option is shown as a cross-section of a capsule with its internal contents:

- Powder:** A fine, uniform layer of particles at the bottom.
- Granulates:** Larger, irregular particles filling the bottom.
- Pellets:** Small, spherical particles filling the bottom.
- Liquid:** A clear, uniform liquid filling the bottom.
- Tablets:** Two small, round tablets stacked on top of each other.
- Capsule:** A single, larger capsule-shaped tablet.

A selection of filling combinations

- Two different pellets and tablets:** A mixture of small spherical pellets and two tablets.
- Liquid and powder:** A layer of powder above a layer of liquid.
- Liquid and capsules:** A layer of liquid above a single capsule-shaped tablet.

Automatic hard capsule filling machines

Capsugel products are suitable for use with a selection of brand name filling machines. Below there is information regarding capsule characteristics, and machine production rates and compatibility.

Automatic hard capsule filling machines

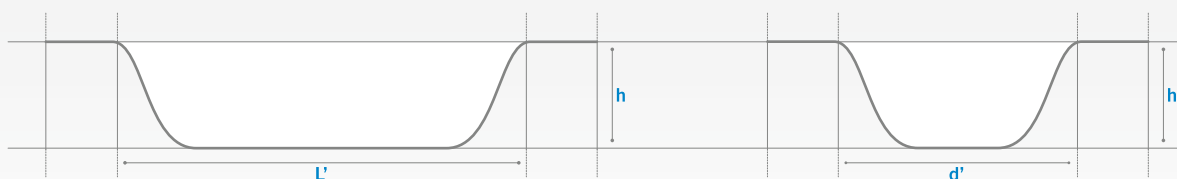
Machine	Dosing principle	Output caps/h	Products to be filled
Bosch further information: www.bosch.de			
GKF 701	Dosing disk	42.000	Powder, Pellets, Tablets, Liquid
GKF1400	Dosing disk	84.000	Powder, Pellets, Tablets, Liquid
GKF2500	Dosing disk	150.000	Powder, Pellets, Tablets
GKF3000	Dosing disk	175.000	Powder, Pellets, Tablets
GKF705	Dosing disk	42.000	Powder, Pellets, Granulates
GKF1505	Dosing disk	92.000	Powder, Pellets, Granulates
GKF3005	Dosing disk	175.000	Powder, Pellets, Granulates
Dott. Bonapace further information: www.dottbonapace.com			
In-Cap	Dosing disk	3000	Powder, Pellets, Tablets , Liquids (Lower output)
Harro Höfliger further information: www.hoeffliger.de			
Modu-C High speed	Multi functional	200.000	Powders, Pellets, Tablets, Paste, Thixotrope media, Liquids, Micro dose, Granulates, Micro tablets, Capsule in capsule
Modu-C Mid speed	Multi functional	100.000	Powders, Pellets, Tablets, Paste, Thixotrope media, Liquids, Micro dose, Granulates, Micro tablets, Capsule in capsule
Modu-C Low speed	Multi functional	25.000	Powders, Pellets, Tablets, Paste, Thixotrope media, Liquids, Micro dose, Granulates, Micro tablets, Capsule in capsule
IMA further information: www.ima.it			
Zanasi 6/12 25/40	Dosator	6.000 – 40.000	Powder, Pellets , Liquid, Tablets
Zanasi 8/16	Dosator	8.000 – 16.000	Powder, Pellets, Liquid, Tablets, Micro-tablets
Zanasi plus	Dosator	48.000 – 85.000	Powder, Pellets, Liquid, Tablets, Micro-tablets
Zanasi 70C	Press-Fit	55.000	Tablet coating with gelatine
Adapta	Multi functional	100.000	Powder, Pellets, Liquid, Tablets, Micro-tablets
Imatic 100 - 200	Dosator	100.000 – 200.000	Powder and pellets
MG2 further information: www.mg2.it			
Labby	Multi functional	3.000	Powder, Pellets, Tablets, Liquids, Micro-tablets, Capsule in Capsule, Micro dosages
Alterna	Dosing disk	70.000	Powder, Pellets, Tablets
Suprema	Dosator	48.000	Powder, Pellets, Micro-tablets
MG Compact	Dosator	6.000 – 48.000	Powder, Pellets, Tablets, Micro-tablets, Low- dosages
G70 – 140 S	Dosator	70.000 – 140.000	Powder, Pellets
G70 – 140	Dosator	70.000 – 140.000	Powder, Pellets, Tablets, Micro-tablets, Low-dosages
Planeta 100	Dosator	100.000	Powder, Pellets, Tablets, Liquids, Micro-tablets, Capsule in Capsule, Low-dosages
Planeta	Dosator	6.000 – 50.000	Powder, Pellets, Tablets, Liquids, Micro-tablets, Capsule in Capsule, Low-dosages
G100 pre-weight	Dosator	90.000	Powder, Pellets, Tablets, Micro-tablets, Low-dosages
G250	Dosator	200.000	Powder, Pellets, Tablets, Micro-tablets, Low-dosage
Romaco-Macofar further information: www.romaco.com			
CD40	Dosator	40.000	Powder, Granules, Pellets, Tablets
CD60	Dosator	60.000	Powder, Granules, Pellets, Tablets

Blister packaging recommendations

A highly popular packaging solution, especially in the over-the-counter pharmaceutical sector, blister packaging is becoming more and more common. To ensure rapid and trouble-free blister packaging of the capsules, the overall length of the filled and closed capsules must be as precise as possible.

The following minimum die-roll cavity dimensions for blister packaging machines are recommended.

Minimum die-roll cavity dimensions for blister packaging - indication



h Depth of cavity of blister die-roll (mm)

L' Length of cavity of blister die-roll measured at $h/2$ and along the axis to the capsule (mm)

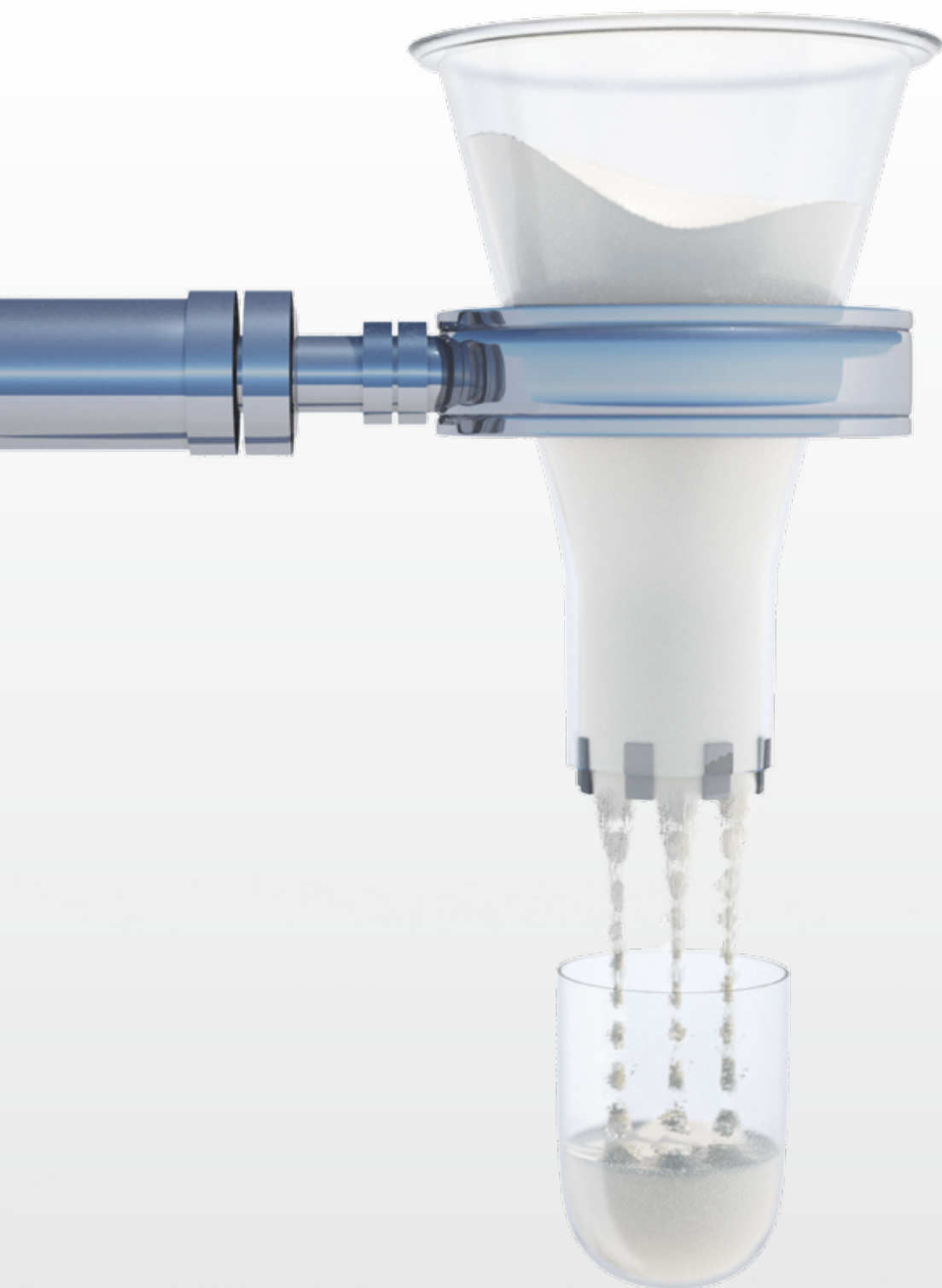
d' Width of cavity of blister die-roll measured at $h/2$ and along the perpendicular axis of the capsule (mm)

	000	00	00el	0	0el	1	1el	2	2el	3	4	5
Depth (h)	10.4	9.0	9.0	8.1	8.1	7.3	7.4	6.7	6.7	6.2	5.7	5.3
Length(L')	28.4	25.4	27.4	23.8	26	21.4	22.4	19.6	21.0	17.8	5.7	13.3
Width (d')	11.8	10.2	10.2	9.4	9.4	8.4	8.4	8.0	8.0	7.4	6.8	6.3

“Blister packaging, the ideal solution for both marketers and customers.”



“Our solutions help you succeed.”



Applications

The right capsule for the right application

For healthcare companies of all sizes, Capsugel has a solution to help your ideas succeed. From assistance with dosage form options for challenging compounds to differentiating existing products, we work with you to find the right dosage form to meet your needs.



Over-encapsulation

Using over-encapsulation for double-blind clinical trials is an effective way to shorten development time and reduce costs.



Brand Protection Technology

Pharmaceutical products are increasingly threatened by counterfeit drugs entering the market that pose safety risks to consumers and may be harmful to your brand.



Product Differentiation

Create uniquely recognizable dosage forms through Capsugel's unmatched market knowledge and technology innovations.



Dry Powder Inhaler (DPI) Capsules

DPIs provide a major drug development opportunity for respiratory or systemic drug delivery and we have the technology platform to help.



Line Extensions

Extend your reach and grow your brand by leveraging Capsugel's extensive array of solutions for expanding or enhancing your pharmaceutical, consumer healthcare or dietary supplement products.



Liquid-filled Products

Capsugel's advanced liquid-filled technologies and manufacturing facilities can help deliver unique solid oral dosage products to market faster.



Taste and Odor Masking

Successful taste and odor masking of ingredients strengthens your brand while helping improve patient compliance.

About Capsugel

Innovative dosage solutions for the healthcare industry

From assisting our customers with formulation challenges to helping them bring innovative new products to market faster, the world-class people at Capsugel provide a unique combination of scientific, technological and global market expertise, delivering high-quality capsules and services at every step of the dosage form development process.

Innovative Products

Capsugel's focus on innovation has led to a number of advanced products to meet all your capsule needs. From our outstanding colour and printing options, to our variety of gelatin, alternate polymer and liquid-filled capsules, we're always looking for new ways to make capsules your dosage form of choice. Contact someone at Capsugel today to learn more about our latest innovations.

Outstanding Quality

To ensure our customers receive the very best quality products and services, we employ the principles of Six-Sigma throughout our entire organization. Our drive to deliver high quality capsules with speed and efficiency has led us to regularly implement process quality initiatives that continuously reduce defect rates and improve the overall quality of our products.

Global Reach

Our customers span the globe, and Capsugel's manufacturing and business centers do as well. With multiple production and business facilities worldwide, Capsugel is able to offer an unmatched certainty of supply, ensuring your capsules are where you need them, when you need them.

World Class People

At Capsugel, we're not just a business – we're a group of people who care about our customers and making the best possible products for them. And with over 300 engineers and 50 scientists on staff, we have the know-how to do just that. We have over 2,800 colleagues in more than a dozen locations around the world, so there's always someone there when you need us.

Customer Focus

Many of our customers have been with us for decades, which is just one sign that at Capsugel we give our customers what they're looking for – that's why we're always looking for new products to address unmet dosage form needs. Whether it's help with formulations or methods to help combat counterfeiting, we're pleased to offer our customers more than just capsules.

“At Capsugel, we uniquely combine our global reach and resources with a collaborative spirit to drive innovation and growth for our customers.”

Two white flags are flying on tall, silver poles against a light blue sky. The word "CAPSUGEL" is printed in a dark, serif font across the middle of the flags. A registered trademark symbol (®) is visible to the right of the word. The flag on the right is partially cut off, showing only "CAPS".

CAPSUGEL® CAPS

Contact a Capsugel expert today

For more information contact us at marketing.emea@capsugel.com or visit www.capsugel.com.

Worldwide locations

Capsugel can meet your global capsule supply needs no matter where you are in the world – providing you peace of mind that our products will be there when you need them.



Worldwide Manufacturing Capabilities and Product Development Centers

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