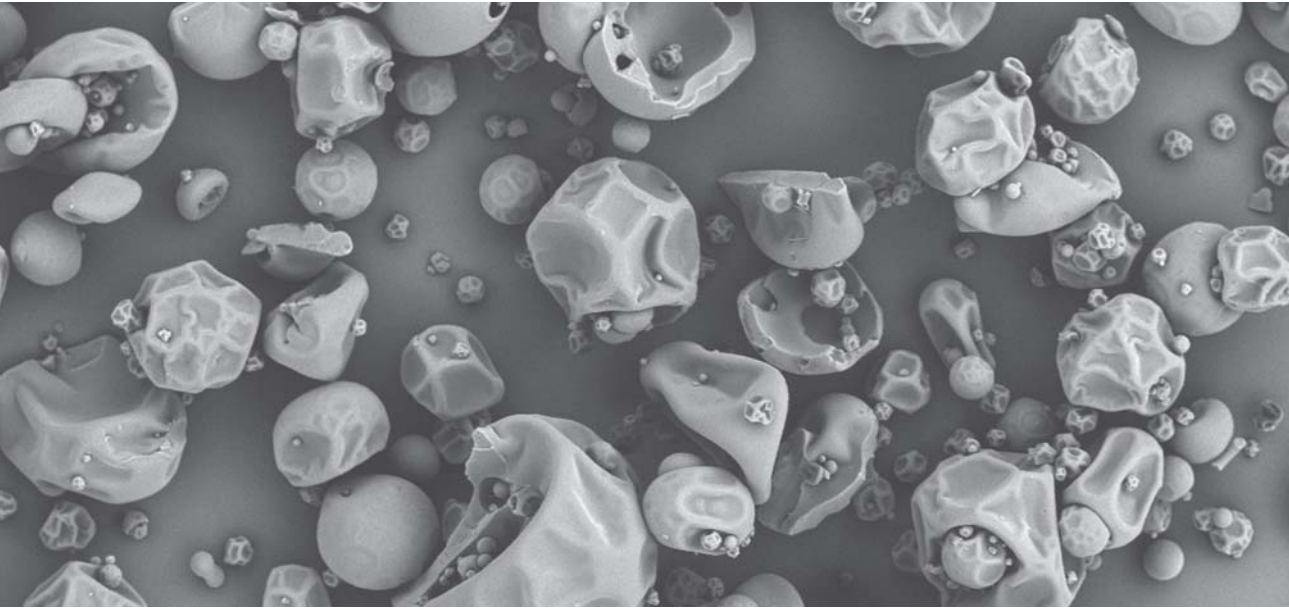


SEM Atlas



Discover the Beauty of the
Microcosmos of Excipients



Introduction

To the naked eye, most of our products are simply white powders with only marginal differences between the various types and grades.

It is only under the electron microscope that these products reveal their amazing variety in terms of morphology, as well as particle shape and size.

In-depth knowledge of these particle properties is essential for every formulator starting a new development project. Achieving a good match between the active and inactive ingredients' powder properties is the key to success for any tableting or capsule filling application. Proper excipient selection enables good blend uniformity and flowability of the powder blend. Ultimately, this translates into consistent tablet weight and high content uniformity of the active ingredient.

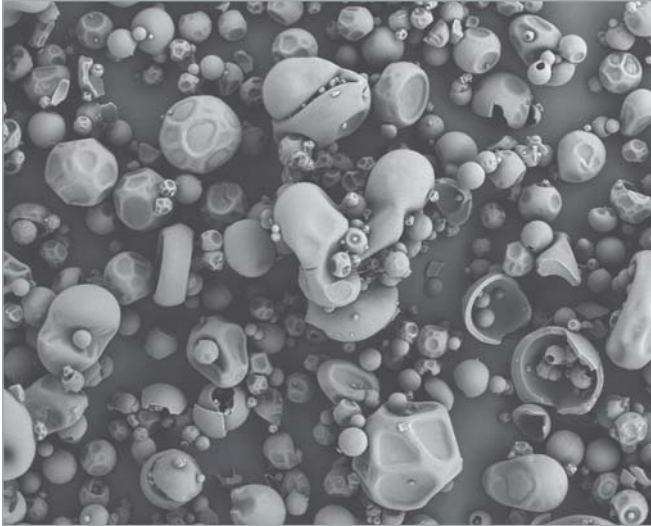
To allow easier comparison between the individual grades, we have paid particular attention to maintaining the same magnification across the micrographs presented in this SEM Atlas.

The SEM Atlas was designed to provide guidance to the formulator with the goal of making rational excipient selections.

Beyond this practical aspect, however, we hope that you share our appreciation for the beauty of the microcosmos of excipients.

This brochure shows a small selection of pictures from the SEM Atlas.

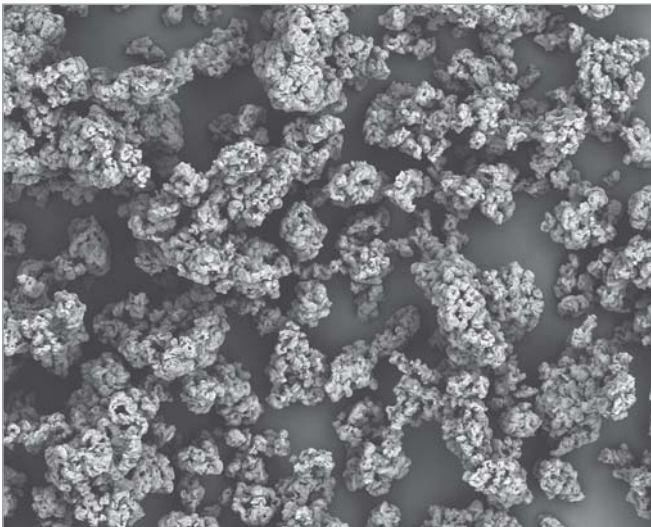
To view micrographs of the entire range of JRS Pharma's excipients, please visit www.jrspharma.com ➔ Category Resources



VIVAPHARM® PVP K30

Povidone

VIVAPHARM® PVP K30 is a synthetic water-soluble homopolymer consisting of N-vinylpyrrolidone. It is a free-flowing powder with spherical particle morphology, which ensures rapid dispersibility and ultimate flexibility in the solvent of choice. This classic wet binder achieves an optimal balance between adhesive strength and ease of handling.

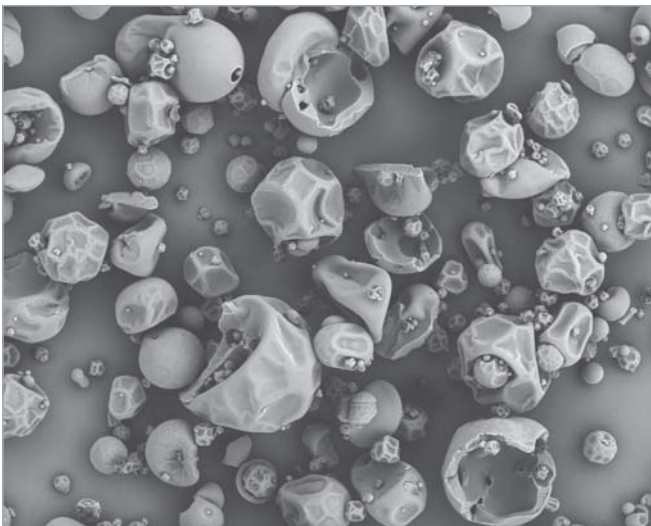


VIVAPHARM® PVPP

Crospovidone

VIVAPHARM® PVPP is made up of water-insoluble synthetic crosslinked homopolymers of N-vinylpyrrolidone. It has a granular and porous structure with a large surface area and is insoluble in most solvents, but is hygroscopic and will swell significantly without forming a gel.

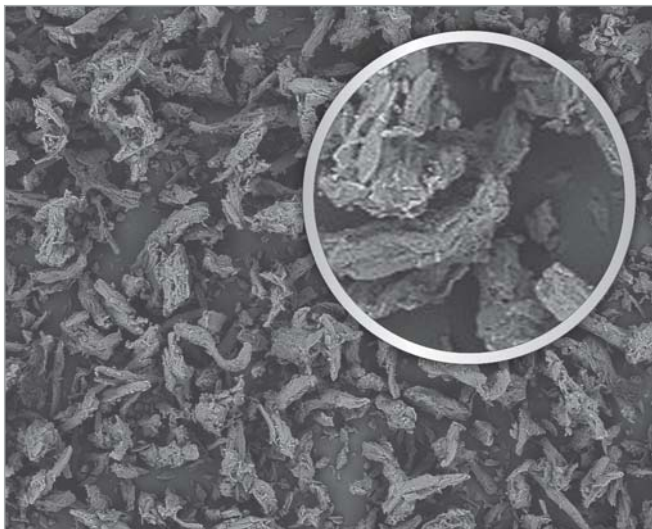
VIVAPHARM® PVPP exhibits all three disintegration mechanisms – swelling, wicking, and shape recovery – making it the choice superdisintegrant for rapid tablet disintegration at low concentrations.



VIVAPHARM® PVP/VA 64

Copovidone

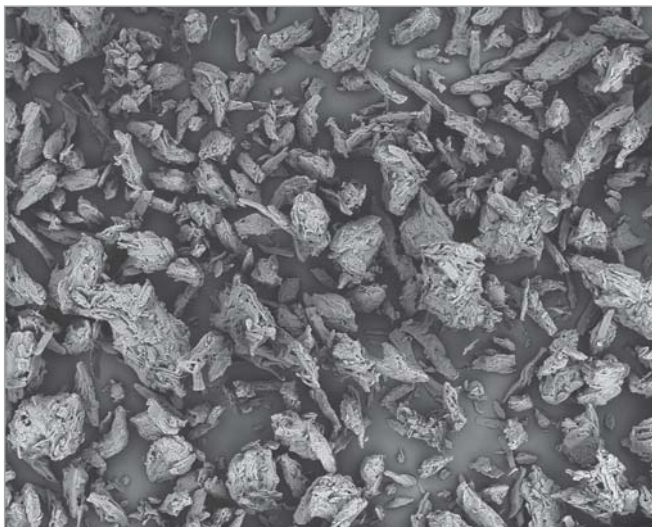
VIVAPHARM® PVP/VA 64 is a 6:4 linear random copolymer of N-vinylpyrrolidone and vinyl acetate. Due to its spherical, hollow particle morphology and high plasticity, it performs exceptionally well as a binder for direct compression. The spherical structure leads to good flowability and the hollow particle morphology leads to an increased surface area that enhances particle bonding and good compressibility.



PROSOLV® SMCC

Silicified Microcrystalline Cellulose

PROSOLV® SMCC is a high functionality excipient with a homogeneous distribution of colloidal silicon dioxide on the surface and throughout the pores of its MCC particles. Silicification leads to a unique particle structure with a five-fold increase in the specific surface area compared to traditional MCC. As a result of this modification, **PROSOLV® SMCC** displays a significantly improved powder flowability and compactability. In addition, the enlarged and silicified surface contributes to enhanced blend homogeneity and content uniformity.



PROSOLV® EASYtab SP

Microcrystalline Cellulose, Colloidal Silicon Dioxide, Sodium Starch Glycolate, Sodium Stearyl Fumarate

PROSOLV® EASYtab SP is more than just a simple blend. It is a homogeneous, lubricated high functionality excipient composite. Each component (binder, disintegrant, glidant, and lubricant) maintains its chemical identity, while synergistically providing increased functional performance. This synergy means: better compactability, better flowability, and better content uniformity for the finished product. **PROSOLV® EASYtab**'s versatility and high carrying capacity makes tableting of almost any active ingredient possible by simple blending and compaction.



EXPLOTAB®

Sodium Starch Glycolate Type A

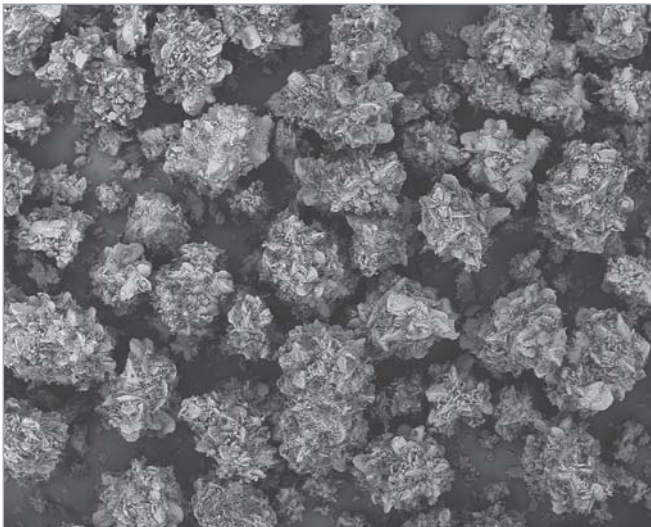
EXPLOTAB® is a rapidly swelling superdisintegrant for tablet and capsule formulations. Due to its precisely balanced chemical cross-linking, its disintegration power outperforms common starch-based disintegrants. It is used in low concentrations for both wet granulation and direct compression applications. Its spherical particles lead to excellent powder flow and guarantee homogeneous distribution of **EXPLOTAB®** after a short blending time. The renowned disintegration power of **EXPLOTAB®** is unimpaired by hydrophobic lubricants and high compression forces, making **EXPLOTAB®** a universally applicable superdisintegrant.



ARBOCEL®

Powdered Cellulose

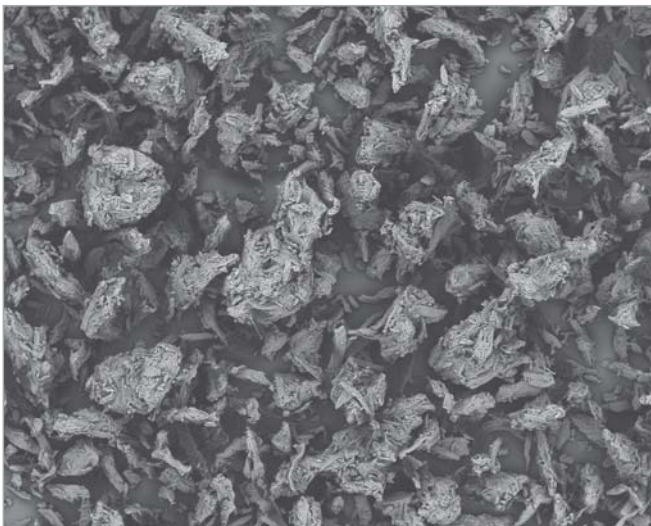
ARBOCEL® is a chemically inert, plant-based functional filler. Due to its fibrous structure. It can help accelerate the disintegration times of tablets. Even though microcrystalline cellulose outperforms powdered cellulose in terms of binding capability, **ARBOCEL®** is often used to produce stable tablets with low friability. **ARBOCEL®** may also be used as a bulking agent in two-piece hard gelatin capsules, in which the compacted grades help to maintain constant fill weight due to their good flowability.



EMCOMPRESS®

Dibasic Calcium Phosphate

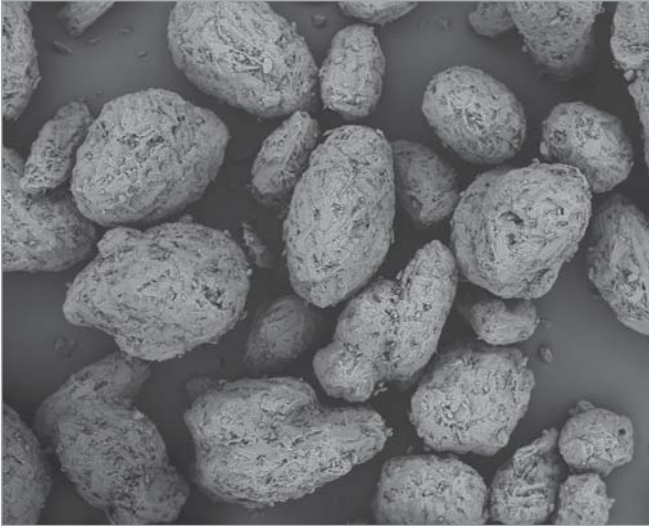
EMCOMPRESS® is a widely used insoluble filler. Its granular form and relatively high density impart great flow characteristics and its brittle fracture provides excellent compaction. It is commonly used in wet granulation and direct compression applications.



VIVAPUR®

Microcrystalline Cellulose

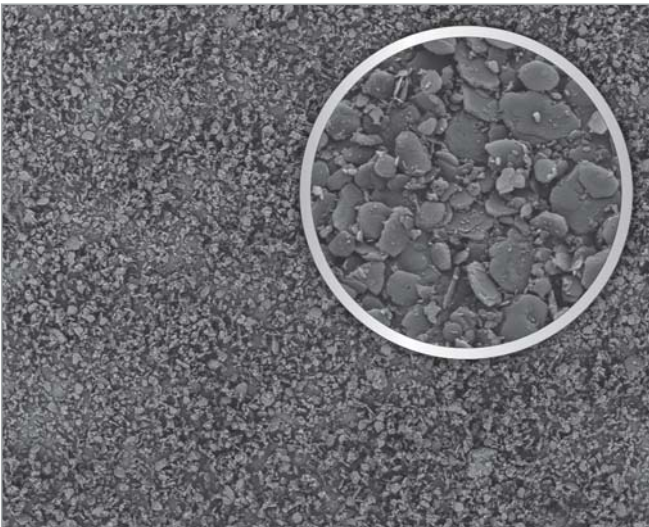
VIVAPUR® is a binder that exhibits plastic deformation and possesses high bonding characteristics. These characteristics impart high mechanical strength to tablets made with **VIVAPUR®**. In addition to its high binding, **VIVAPUR®** has a degree of porosity, which gives it a tendency towards wicking, making it a good disintegrant, too.



EMDEX®

Dextrates

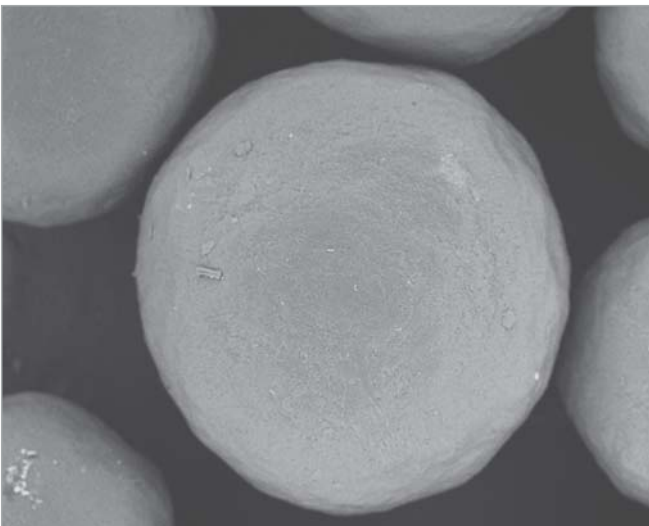
EMDEX® is a directly compressible, water-soluble tablet binder and filler. It exhibits a narrow particle size distribution with an average particle size of 200 µm. Its spherical particle shape and high density ensure supreme flow properties. Additionally, the porous structure of the spray-dried **EMDEX®** particles enables excellent content uniform, even for low-dose, micronized APIs.



PRUV®

Sodium Stearyl Fumarate

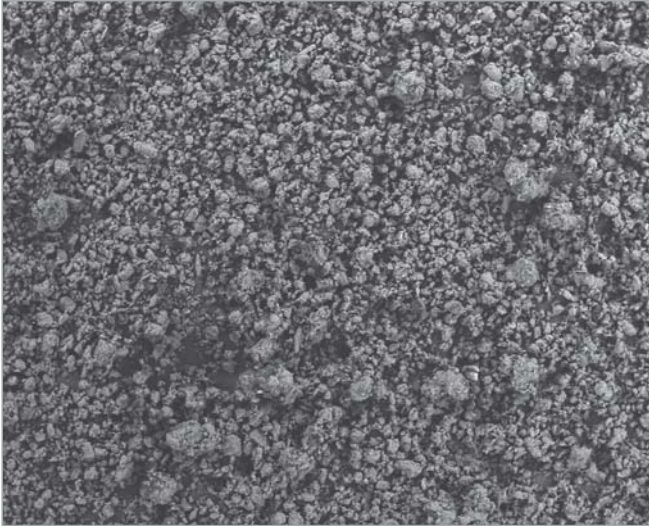
PRUV® is a tablet lubricant specifically designed for formulations, in which other lubricants lead to formulation and/or manufacturing challenges. Its relative hydrophilicity (compared to other common lubricants) make it the lubricant of choice for poorly water-soluble APIs. Its carefully designed, narrow particle size distribution enables a perfect balance between high lubrication efficiency and good tablet binding. The unique particle morphology of **PRUV®** presents the formation of coherent lubricant layers in the tableting blend and, therefore, imparts extreme robustness against overblending and overlubrication.



VIVAPUR® MCC SPHERES

Microcrystalline Cellulose Spheres

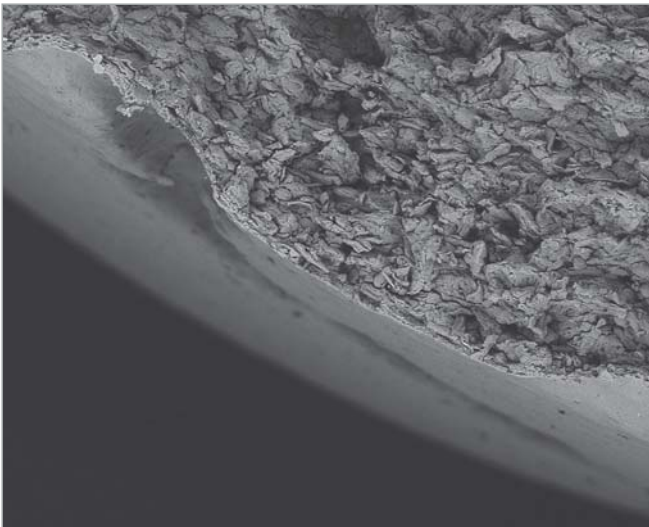
VIVAPUR® MCC SPHERES are extremely robust, chemically inert microcrystalline cellulose spheres typically used as API carriers. Their tight particle size distribution minimizes segregation risk, ensuring excellent content uniformity. Additionally, the spheres' high degree of sphericity prevents erosion and minimizes potential risks during drug-layering and coating processes.



VIVAPUR® MCG 811P

Dispersible Cellulose

VIVAPUR® MCG is a free-flowing powder consisting of microcrystalline cellulose (MCC) and sodium carboxymethyl cellulose (Na-CMC). More than just a physical blend, the Na-CMC is interwoven with the microcrystalline cellulose, resulting in unique synergistic properties. The Na-CMC acts as a protective colloid to prevent the re-aggregation of the microcrystalline cellulose and ensure easy dispersibility.



VIVACOAT®

Ready-to-Use Coating System

VIVACOAT® is a ready-to-use coating system which combines polymer, plasticizer, and pigment into one formulation. The dry powder can be easily dispersed in aqueous and organic solvents. **VIVACOAT®** enables excellent adhesion on various pharmaceutical and nutraceutical tablet cores. This guarantees elegant appearance and crisp logo definition on the finished product.



VIVAPHARM® Sugar Spheres

Sugar Spheres

VIVAPHARM® Sugar Spheres are specially designed carrier systems for advanced tableting technologies. Made from sugar and starch, they are mechanically stable, thus exhibiting low friability. Furthermore, the osmotic pressure resulting from the dissolving sugar helps to increase drug dissolution rates. The tight Gaussian particle size distribution of the **VIVAPHARM® Sugar Spheres** ensures consistent and controlled drug delivery patterns. Their uniform sizes minimize the risk of segregation, making **VIVAPHARM® Sugar Spheres** an excellent basis for multiparticulate tablet and capsule systems.

Bringing Health Science to Life

Products and Services

Excipients

Family of High Functionality Excipients

- Binders
- Functional Fillers
- Lubricants
- Thickeners+Stabilizers
- Carriers
- Superdisintegrants
- Calcium Supplements

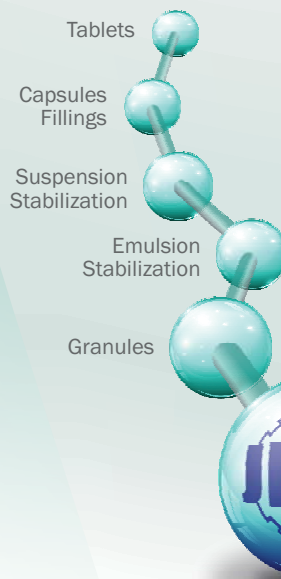
Coatings

Biopharma Services

ProJect Pharmaceuticals www.project-pharmaceuticals.com

C **CELONIC** Pharmaceuticals www.celonic.com

First Class Manufacturer of Excipients and Coatings for



Customer Benefits

- Convenience
- Total Cost Savings
- Global Services
- Innovation

GMP Manufacturing Sites

- Excipients
- Coatings
- Biopharma Services
- JRS Sales Companies

Additionally, dedicated representatives in almost every country.

