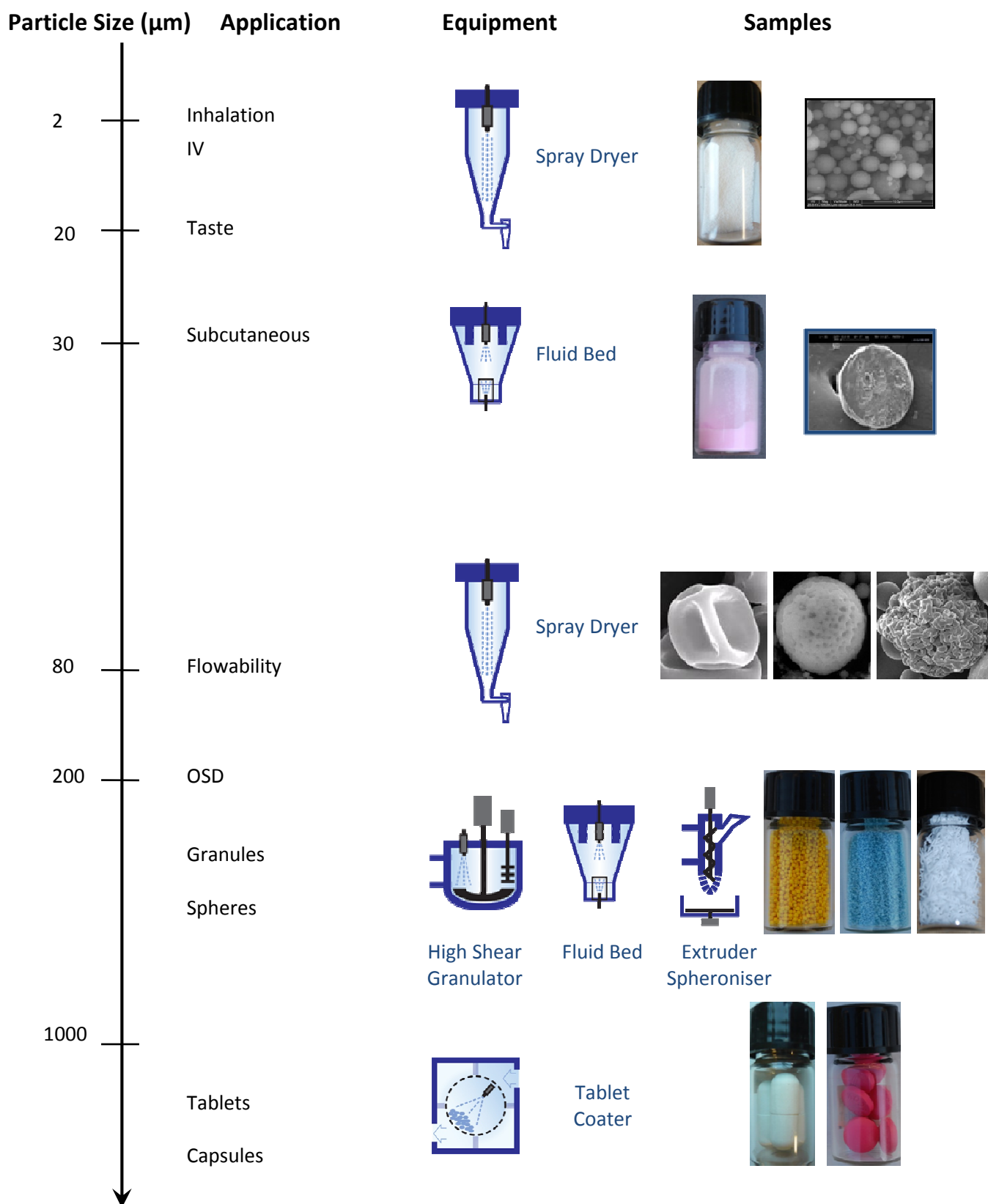
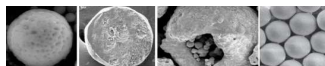


FORMULATION





Equipment	Process	Equipment	Process
	<p>Micro Encapsulation of powders</p> <p>Drug product powder (> 30µm) is made by Spray Drying a solution and is coated in a Fluid Bed process. Powder can as well be encapsulated in a one step spray drying process of a drug & coating polymer solution, resulting in a solid dispersion of the drug into the coating polymer (2-80µm). The drug could as well be encapsulated with the polymer in a Spray Drying process by using a tri-fluid atomizing technique. The coating is used for controlled or prolonged release of the drug product</p>		<p>Micro encapsulation of spheres</p> <p>A wetted blend of drug with excipients is extruded and spheronised. The spheres (500-1500 µm) are coated in a Fluid Bed process for controlled or prolonged release of the drug. These spheres can be compressed into a tablet or filled in a capsule</p>
	<p>Melt agglomeration & spheronisation</p> <p>High Shear Granulation is used to transfer in one-step a mixture of fatty binder(s), excipients and drug product into melt granules and spheres consisting of a water insoluble matrix for controlled release of highly hydrosoluble drug. Extrusion Spheronisation is another technique to make melt extrudate and spheres of a density different from the High Shear Granulation process, influencing the release profile of the drug</p>		<p>Enteric coating of capsules</p> <p>In order to speed up the pre-clinical development of enteric OSD applications, the drug product with excipients is filled as a powder in a hard gelatine capsule that is first film coated to seal the capsule and in the second step enteric coated. Both process steps are made in the same perforated drum technology.</p>
	<p>Low temperature one-step Microwave Drying</p> <p>When the drug product is limited in temperature exposure of max +/- 35°C and water is used as binder solvent, traditional drying techniques such as Fluid Bed or Vacuum Drying will fail due to energy input limitations. As Microwaves are electro magnetic waves they can heat-up polar molecules independently from any temperature gradient limitation. As Microwaves penetrate into the centre of a particle, so dry from the centre to the outside of a granule, the drying process is much more homogenously compared to traditional convection or conduction drying processes.</p>		<p>Wet Agglomeration</p> <p>To improve flowability, compressibility, avoid segregation or to shape powders, different wet agglomeration techniques are applied. Extrusion Spheronisation is applied when a round shaped spherical particle (from 500-1500µm) should be made. With High Shear Granulation, denser and harder granules are generated compared with Fluid Bed granulation. In case the drug product is micronised High Shear Granulation is chosen above Fluid Bed granulation due to process filter limitations.</p>
	<p>Spray Drying to engineer particles</p> <p>Spray Drying is a perfect process to engineer particles to size (2-100µm), improve solubility, flowability, controlled release, stabilisation,.... By atomising polymer solutions with drug product a solid dispersion is obtained to improve solubility. Using different atomising techniques and process conditions, particles are sized from 2-100µm depending on the final drug application; inhalation, OSD,....By using multiple atomising nozzles, particles can be encapsulated for release requirements. Biomolecules can be dried with a stabilizing carrier, allowing nano sizing after resuspending the particles</p>		<p>Homogenising semi-solids, cremes, ointments</p> <p>Creams, ointments, gels and other semi-solids are processed in a single step Mixer Homogeniser using a Low Shear High Flow rotor-stator combined with a contra rotating mixing set-up and vacuum to pull in powders directly in the homogeniser and to de-aerate gels and creams.</p>