360° COMPETENCE IN PELLETS: *An overview on process technologies*

CORE PELLETS

DRUG LAYERED CORE PELLETS

MATRIX CORE PELLETS

COATED PELLETS

	DRUG LAYERED CORE PELLETS		MATRIX CORE PELLETS				COATED PELLETS
structure of **· core pellets** **· coated pellets**	500 µm		500 µm	500 µm	500 µm	500 µm	500 µm
Glatt Technology	Wurster (bottomspray)	CPS / rotor powderlayering	CPS / rotor pelletisation	Extrusion / Spheronisation	MicroPx	ProCell	Wurster (bottomspray)
process mode	batch	batch	batch	batch / continuous	continuous		batch
solid starting material	starter pellets ≥ 100 µm	starter pellets ≥ 100 µm	microcrystalline cellulose powder API etc.	microcrystalline cellulose powder API etc.	no		
processing of API /coating liquid **solvent(s)**	from a liquid (solution, suspension, emulsion, melt) water, organic solvent(s)	as powder water, organic solvent(s)	as powder water, organic solvent(s)	wetted mass of API + microcrystalline cellulose water, organic solvent(s)	from a liquid (solution, suspension, emulsion, melt) water, organic solvent(s)		**coating liquid:** · solution · dispersion · melt **solvents:** · water · organic solvent(s)
API dosage	strength / drug load	strength / drug load	strength / drug load	strength / drug load	strength / drug load	strength / drug load	
low	• • • • • ~0,01 - 10 %	na ~0,01 - 10 %	• • • • ~0,01 - 10 %	• • • • ~0,01 - 10 %	• • • ~0,01 - 10 %	• • • ~0,01 - 10 %	
medium	• • • • • ~10 - 50 %	• • • ~10 - 50 %	• • • • ~10 - 50 %	• • • • ~10 - 50 %	• • • • ~10 - 50 %	• • • • ~10 - 50 %	
high	• • • • ~50 - 80 %	• • • • • ~50 - 80 %	• • • ~50 - 80 %	• • • ~50 - 80 %	• • • • • ~50 - 80 %	• • • • • ~50 - 80 %	
very high	na ~80 - 100 %	na ~80 - 100 %	na ~80 - 100 %	na ~80 - 100 %	• • • • • ~80 - 100 %	• • • • • ~80 - 100 %	
properties of API	chemically stable in water, organic solvents	sensitive to moisture	chemically stable in water, organic solvents	chemically stable in water, organic solvents	chemically stable in water, organic solvents, melt		
smallest pellet size achievable	~ 150 - 400 µm micropellets possible	~ 300 - 400 µm micropellets possible	~ 150 - 400 µm micropellets possible	> 700 µm micropellets **NOT** possible	~ 150 - 400 µm micropellets possible		~ 200 - 500 µm coated micropellets possible
comment	preferred technology for drug layering with **chemically stable APIs**	preferred technology for medium / high dosed **moisture sensitive APIs**	high impact of physico-chemical properties of API on the process quality (sticking of wetted API)	often imperfect sphericity and surface smoothness potential impact on coating quality and performance	usual drug load: 90 - 95% preferred technology for high drug loaded micropellets	usual drug load: 90 - 95% preferred technology for high drug loaded pellets including **temperature sensitive API**	preferred technology for all coating applications · controlled drug release · taste masking · seal coating · pH dependent coating · immediate release top coat
high potent / containment feasibility	smart high potent processing approach				smart high potent processing approach		smart high potent processing approach