

Process	Primary Products	End Products	Product Benefits	Product Examples
DRYING	Wet Product (e.g. granules, powders, pellets, filter cakes)	Dry Product	<ul style="list-style-type: none"> · Shelf life · Product stability · Short drying time · Controlled, gentle and homogeneous drying · Drying at defined temperatures / profiles · Preservation of functional properties like vitamin content 	<ul style="list-style-type: none"> · Plastic granules · Pharmaceutical granules · Starch · Caffeine extrudate · PTFE powder · Lecithin · Vitamins · Silica gel · Pollen granules · Cellulose · Aluminum oxide
GRANULATION (AGGLOMERATION)	Fine Powder or Powder blending + Binder (e.g. water, suspensions)	Agglomerates	<ul style="list-style-type: none"> · Good instant properties · Good dissolution · Dust-free product · Good flowability · Minimum segregation · Narrow particle size distribution · Defined bulk density · Porous particle structure · Good dispersibility · Tableting characteristics 	<ul style="list-style-type: none"> · Instant drink powders · Soups and sauces · Baby food · Cacao drinks · Cappuccino · Starch · Milk powder · Cellulose · Sugar substitutes · Lactose · Pharmaceutical products
SPRAY GRANULATION	Start Granules (seeds from original or secondary material) + Suspensions, Emulsions, Solutions or Melts	Granules	<ul style="list-style-type: none"> · Nearly round particles · Dust-free product · Good flowability · Good to dosage · Narrow particle size distribution · High bulk density · Compact particle structure · Minimum friability · Building of solid particles from liquid products 	<ul style="list-style-type: none"> · Aromas · Calcium lactate · Aluminum oxide · Starch · Sodium silicate · Zirconium oxide · Urea · Ammonium sulfate · Detergents · Menthol granules · Calcium carbonate
MICRO-ENCAPSULATION	Start Granules (seeds from original or secondary material) + Suspensions, Emulsions or Solutions with Active Agents	Micro-encapsulated Granules	<ul style="list-style-type: none"> · Shelf life · Encapsulation of volatile components · Protection ag. chemical reactions · Protection against oxygen or light · Protection against humidity · Depot effect · Narrow particle size distribution · High bulk density · Building of solid particles from liquid products 	<ul style="list-style-type: none"> · Scent oils · Aromas · Perfumes · Vitamins · Lactic acid bacillus · Enzymes · Starter cultures · Omega-3 fatty acids, fish oils · Pigments · Amino acids · Minerals
SPRAY DRYING AGGLOMERATION	Start Granules (seeds from original or secondary material) + Suspensions, Emulsions, Solutions or Melts	Agglomerates	<ul style="list-style-type: none"> · Good instant properties · Good dissolution · Dust-free product · Good flowability · Defined particle size distribution · Defined bulk density · Good dispersibility · Production of innovative new products through combining any solid and liquid substance 	<ul style="list-style-type: none"> · Malt drink · Plant protectants · Ginseng · Aromas · Vitamins · Plant extracts · Spore ferments · Instant coffee · Proteins · Beverage powders · Enzymes
COATING	Granules, Pellets, Extrudates, Powders or Tablets + Coating material (e.g. suspensions, polymers or fats)	Coated Product	<ul style="list-style-type: none"> · Shelf life · Defined dissolution · Optical effects (color, gloss) · Reducing of hygroscopicity · Protective functions · Taste masking · Odor masking · Functional properties · Defined surface structure · Depot effect · Enteric-coated 	<ul style="list-style-type: none"> · Tablets · Cereals · Sugar · Dietary supplements · Seeds · Aspartame · Lemon acid · Ascorbic acid · Pharmaceutical products · Enzymes · Aromas

The names for the fluid bed processes and the differentiation between granulation and agglomeration isn't always clear. Thus, in some branches are different terms for the procedures.

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