

## Manufacturing Equipment for drug development

Production Step	Equipment Type	Description	Batch size	Standort
Mixing/Granulating	High shear mixer	Diosna P1-6/P1-25	0.5-10 kg	APW
Mixing/Granulating/ Vacuum drying	High shear mixer	Somakon	0.2-10 kg	APW
Mixing	Tumble mixer	Mixomat A 20, Fuchs	0.5-10 kg	APW
Mixing	Tumble mixer	J. Engelsmann type RRM 200	10-80 kg	APW
Mixing	Tumble mixer	Bohle container mixer	5, 20, 40 L	APW
Mixing	Tumble mixer	Turbula Mixer T2 C	0.1-1.6 L	FFM
Sieving	Sieving machine	Quadro® Comil® U3	Up to 10 kg	APW
Sieving	Sieving machine	Quadro® Comil® U5	Up to 20 kg	APW
Sieving	Sieving machine	Frewitt type MG-205	5-120 kg	APW
Compressing/ Extruding	Flat die press	Kahl 14-175	Up to 75 kg	APW
Coating	Drum coater	Erweka AR 400 E	0.5-3 kg	APW
Tabletting	Rotary press	Riva Piccola 10 EU B	max. 30,000 pcs/h	APW
Tabletting	Rotary press	Korsch XL 100 EU D	max. 86,400 pcs/h	APW
Tabletting	Rotary press in isola- tor for high potent APIs	Korsch XL 100	max. 60,000 pcs/h	APW
Filling of hard capsules	Automatic capsule fill- ing machine	Bonapace IN-CAP XL	max. 3,000 pcs/h	APW
Granulation/Drying/ Coating	Fluid bed granulator/ coater	Romaco Innojet Venti- lus®	0.5-2.5 kg	APW
Coating	Drum coater	Brucks	70-120 kg	APW
Coating	Pan coater	Stechel ADG 50	2.5-5 kg	APW
Mixing/Homogenising	Homogeniser	Becomix RW 15 CD	1-12 L	FFM
Mixing/Granulating	Semi-solid processor	Stephan UMC 5	Up to 3 kg	APW
Drying	drying oven	Memmert ULM 800	Up to 10 kg granulate	APW
Drying	Vacuum drying oven	Memmert VO500	--	FFM
Dedusting	Dedusting of tablets and capsules	Pharmaproject	Up to 10.000 pcs/h	APW
Weight Control	Weight control	Sade SP 140	Up to 3.000 pcs/h	APW

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Weigh filler	Weigh filler	Collischan type S 704	15 weighing procedures/min	APW
Drying/Lyophilisation	Freeze dryer	Christ Epsilon 2-6D LSCplus	--	FFM
Homogenisation	High pressure homogenisation	Emulsiflex-C3	--	FFM
Wet ball milling	Dual centrifuge/ball mill with integrated cooling system	DeltaVita 1 (Netzsch) ZentriMix 380 R (Hettich)	(40 samples with max. 2ml)	FFM
Wet ball milling	Wet bead mill incl. 10 L container and master flex pump	Dispermat SL50-Nano (Fa. Getzmann)	1-10 L	FFM
Autoclaving/ Terminal sterilisation	Autoclave	Systec DB-23	--	FFM
Autoclaving/ Terminal sterilisation	Autoclave	Systec VX-95	--	FFM
Working with API up to OEL 3b	Safety working bench	WiboBarrier® Vertical Plus	--	APW
Multiple Isolator Containment Systems for handling of APIs up to OEL 5	Isolators	ART	--	FFM
Walk-in laminar flow areas	Laminar flow	Bleymehl	--	FFM
Safety laminar flow cabinet	Laminar flow	Bleymehl	--	FFM
Blistering	Semi-automatic sealing of PVC/Alu; PVC-PVDC/Alu; Alu-Alu	Maxi-Pack	max. 100 pcs/h	APW
Blistering	Pull deeply, seal	OMAR Fantasy plus	20-40 pcs/h	APW
Deblistering	Deblistering of blister packs including Alu/Alu, PVC/foil and child resistant	Pharma Engineering Ltd.	20 blisters/min	APW
Printing/Serialisation	Serialisation machine	WIPOTEC-OCS	max. 60 pcs/min	APW

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Labelling/ Printing of batch data	Labelling machine/ Printer	HERMA 211 S	max. 20 pcs/min	APW
Mixing (for parenteral solutions, suspensions)	Several stainless-steel double jacket vessels with 10, 20, 25, 60, 100 L	Diessel, Plantech	--	FFM
Cross flow double jacket stainless steel system	Up to 20 L (to remove organic solvents after precipitation without agglomeration of particles)	Plantech	Depending on process	FFM
Cooling systems	Cooling systems	Lauda	-30 to 150 °C	FFM
Filling of solutions & suspensions	Semi-automatic filling system	Base Europe Typ 533	0.15-28 ml	FFM
Sealing of vials	Semi-automatic sealing of different vials types	Base Europe Typ 511	--	FFM
Transfer of material under containment	Stainless steel split valves	Andocksystems	--	FFM