

ISSO EQUIPMENT OVERVIEW				Initial & Early Development			Late stage	
Location on-site	Detailed location	Activity or Equipment Overview	Further Detail	Process Development	Analytical Development	Pre-clinical to Phase I/II	Phase III	Commercial
Process and Analytical R&D Labs	Process Development	Organic Synthesis Development	Glass reactors (up to 7 L), -90°C to +150°C	•		•		
			High Pressure Capabilities (up to 5 L) @10 bar	•		•		
			Mettler Toledo OptiMax (up to 1L)	•		•		
		Reaction Calorimetry/Safety	PE double-furnace, power compensation DSC 8000, Mettler Toledo OptiMax HFCal Reaction Calorimeter, Mettler Toledo RC1e Process Safety Workstation	•		•		
		Solid State	Mettler Toledo Particle Track FBRM G600, Mettler Toledo Particle View V19, Horiba Laser Scattering Particle Size Distribution Analyzer, Rigaku Miniflex XRPD	•		•		
	Monitoring	HPLC, LCMS, KF, GC, UPLC, NMR, XRPD, Mettler Toledo ReactIR 15	•		•			
	HP Suite	Bench top hood with Process Development Isolator	1 x Wet Chemistry up to 2-3 L (balances and vacuum oven built into isolator; containment performance up to OEL 0.1ug/m³)	•		•		
Analytical	Analytical Development	HPLC/UPLC (UV, MS, DAD), GC (FID, MS), NMR, LOD, KF, FT-IR, DSC, titration, melting point, Chromosword software	•	•	•			
Production Plant	Glass Lined Reactors	10 (from 3,000 L to 9,000 L, -20°C to +150°C)	•		•	•	•	
		Stainless steel 316 Reactors	8 (from 5,000 L to 8,000 L, -20°C to +150°C)*	•		•	•	
		Stainless steel 316 Reactor	1 6,000 L, -90°C to +150°C)	•		•	•	
	Centrifuges	5 total- Stainless steel (SS) 1,250 mm (3); Halar coated (2) 1,250 mm	•		•	•	•	
	Press Filter Dryer	2 total- SS (with active glovebox) 2,000 mm (3,000 L); 1,900 mm (2,800 L)	•		•	•	•	
	Other dryers	3 total- SS double cone dryer (4,000 L); Hastelloy double cone (2,000 L); SS static tray dryer (50 kg max)	•		•	•	•	
	Milling/Blending	Manual Screening, Delumper	•		•	•	•	
	Containment Equipment	Drum loader with isolator, Powder Transfer System, Continuous liner	•		•	•	•	
	Cryogenic capabilities	Reactor (stainless steel 316) 5,000 L, -90 °C via direct liquid nitrogen in the jacket	•		•	•	•	
	Special technology	Thionyl chloride handling technology (BTC Box); Liquid and gas anhydrous ammonia handling; Hydrogen (low pressure); Organometallics in solution distribution line, Cryogenic system for methylene chloride off-gas abatement, Storage capability: 15-25°C, 2-8°C, -20°C	•		•	•	•	
	Temperature range & vacuum	From -90°C to 150°C, full-vacuum to 6 barg	•		•	•	•	
QC	Analytical	Analytical Equipment	HPLCs (UV, DAD), GCs (FID), FTIR, KF Volumetric, Polarimeter, UV-VIS, Melting Point, Thermobalance, TOC	•	•	•	•	•

* Hydrogenation 6,000L SS (to 5 bar)