



OUR TECHNOLOGIES & SERVICES

Our proactive project management and commitment to operational excellence ensures a fast speed of response whilst maintaining a rigorous approach.

As part of our contract and custom manufacturing service package, we offer expertise in process development, scale-up, optimisation and analytical support.

We employ a pragmatic and transparent 5 stage process for project evaluation and implementation, built upon our core values of Safety, Integrity, Quality, Delivery and People.

- Laboratory scale up through to 50 litres
- Robust process safety evaluation protocols
- Development, validation and implementation of analytical methods
- Gas chromatography (GC)
- High performance liquid chromatography (HPLC)
- GC-MS and HPLC-MS
- Ion chromatography (IC)
- Inhibition to nitrification
- Inductively Coupled Plasma Optical Emission spectrometry (ICP-OES) for metals analysis
- UV / FTIR and Wet Chemistry

- Ammonolysis
- Bromination
- Cyanation
- Diazotisation
- Esterification
- Iodination
- Nitration
- Oxidation
- Recovery and recycle of solvents and copper salts
- Sulphonamide formation
- Sulphur Dioxide reactions
- Thionyl chloride reactions
- Formulation and packing (from bulk down to 0.25l)
- Warehousing and shipping



your dependable partner of choice



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WE EMPLOY AN EXTENSIVE RANGE OF MANUFACTURING ASSETS

- Total reactor capacity in excess of 700m³
- Materials of construction include Glass Lined MS, Stainless Steel, Hastelloy, Titanium
- Reaction vessels from 2.3m³ to 25m³ (approx. 500 - 5000 US gallons)
- Batch and continuous distillation
- Solids handling capability to include pan and rotary paddle driers, centrifuges, pressure filters, belt filters, rotary sieves
- Recovery and recycle of solvents and copper salts
- Bulk storage for raw materials, intermediates, finished products



Overview

New three stage synthesis introduced within 18 months of receipt of enquiry

- Handling of two new hazardous raw materials
- Specialised, cost effective handling facilities were successfully installed (using in-house design) for ammonia and sulphur dioxide

Challenges

The process was successfully scaled up and implemented with some challenges to address

- Lower than expected yields due to competing side reactions
- Whilst most impurities could be successfully removed from the product during the isolation procedures, one impurity was consistently found in the isolated product at levels approaching the specification limit
- A liquid-liquid phase separation step proved problematic - long settling times and poor separation interface
- One step of the process was quickly identified as being the main low yielding stage

Outcomes

Our approach - identification of process improvements with the following benefits

- +25% yield improvement
- Process impurity reduced by > 50% and further reductions were realised as the process became established
- Phase separation step improved
- Settling times reduced by 70% and very clean phase interfaces achieved
- All our processes (both new and existing) are subject to continuous improvement with primary focus on yields, cycle times and waste minimisation

Safe | Efficient | On time