

PROCESS EQUIPMENT



Horizontal Reactors

- > 130 liter FV, 150 psig MAWP, hot/cold oil
- > 1,200 liter FV, steam heated, water cooled
- > 4,200 liter FV, 50 psig MAWP, tempered water
- > 7,000 liter FV, 50 psig MAWP, tempered water
- > 10,000 liter FV, 50 psig MAWP, tempered water
- > 15,000 liter FV, tempered water

Vertical Reactors

200 Gallons

- > 316L SS, FV, 75 psig MAWP, tempered glycol

2,000 Gallons

- > 316 SS, 50 psig MAWP, tempered water
- > Pfalder glass-lined, 100 psig MAWP, tempered water

2,500 Gallons

- > 316 SS, steam heated, water cooled internal coils

3,000 Gallons

- > 316L SS, FV, 100 psig MAWP, tempered water

4,000 Gallons

- > 316 SS, FV, 75 psig MAWP, tempered water
- > 316L SS, FV, 50 psig MAWP, hot/cold oil
- > 316L SS, FV, 200 psig MAWP

PROCESS CAPABILITIES

DanChem is the expert at batch organic synthesis and this is complemented with knowledge of key unit operations such as blending, formulation, and crystallization.

Among others, the key chemical reactions undertaken are:

- > Acetylation
- > Amidation
- > Condensation
- > Esterification
- > Etherification
- > Hydrolysis
- > Methylation
- > Oxidative coupling
- > Phosphation
- > Polymerization
- > Quaternization
- > Sulfonation

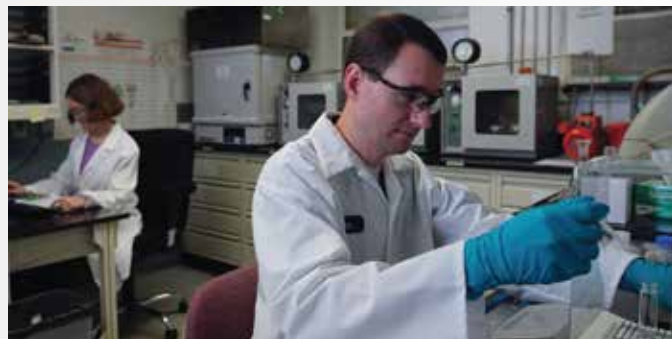


Key unit operation include:

- > Blending
- > Centrifugation
- > Crystallization
- > Drying
- > Emulsification
- > Encapsulation
- > Filtration
- > Distillation
- > High Viscosity (up to 1,000,000 cP)
- > Mixing
- > Milling
- > Sifting
- > Impregnation
- > Coating

AUXILIARY EQUIPMENT & PROCESS UTILITIES

- > Centrifuges (36" and 48")
- > Blend Tanks (5,000-7,000 gallons SS)
- > Compressed Air (100 psig)
- > Steam Boilers (100 psig)
- > Bulk Storage Tanks (3,000-20,000 gallons)
- > Water Chillers (80-100 tons)
- > Glycol Chillers (100-300 tons)
- > Air Liquide Self-generating Nitrogen System
- > Packed Distillation Column



LABORATORY & ANALYTICAL EQUIPMENT

- > HPLC (UV or RI Detectors)
- > GC
(Direct Injection and Headspace, ID and TCD Detection)
- > Atomic Absorption Spectrometer
- > UV/Vis Spectrophotometer
- > FTIR Spectrometer
- > Autotitrators (Colorimetric, Potentiometric, Redox)
- > Karl Fischer
(Volumetric and Coulometric, Coulometric Headspace)
- > Automated Flashpoint
- > Brookfield Viscometers (LV, RV, HAHB)
- > Muffle Furnace (to 1,000 °C)
- > Vacuum Ovens
- > Moisture Analysis (Microwave & Halogen Lamp)
- > Colorimeters (Solids & Liquids, Various Color Scales)
- > Melt Point
- > Sieve Analysis
- > GPC (UV or RI Detectors)
- > Density (Fluids, Solids, Tapped)
- > pH Meters
- > TGA
- > Ion Chromatography
- > Turbidity
- > Refractive Index