



U.S. Production | Fort Mill, SC

NATION FORD CHEMICAL

- Charleston Port Service
- Convenient to I-77 & I-85
- Rail Access



Family Owned Since 1978 • 80 Employees



ACHIEVED SOCMA'S HIGHEST HONORS





Health & Safety Day

Safety // Improvement Projects

Health // Heart Health Screening

Community // Blood Drive

Safety Participation // Safety Awards Raffle

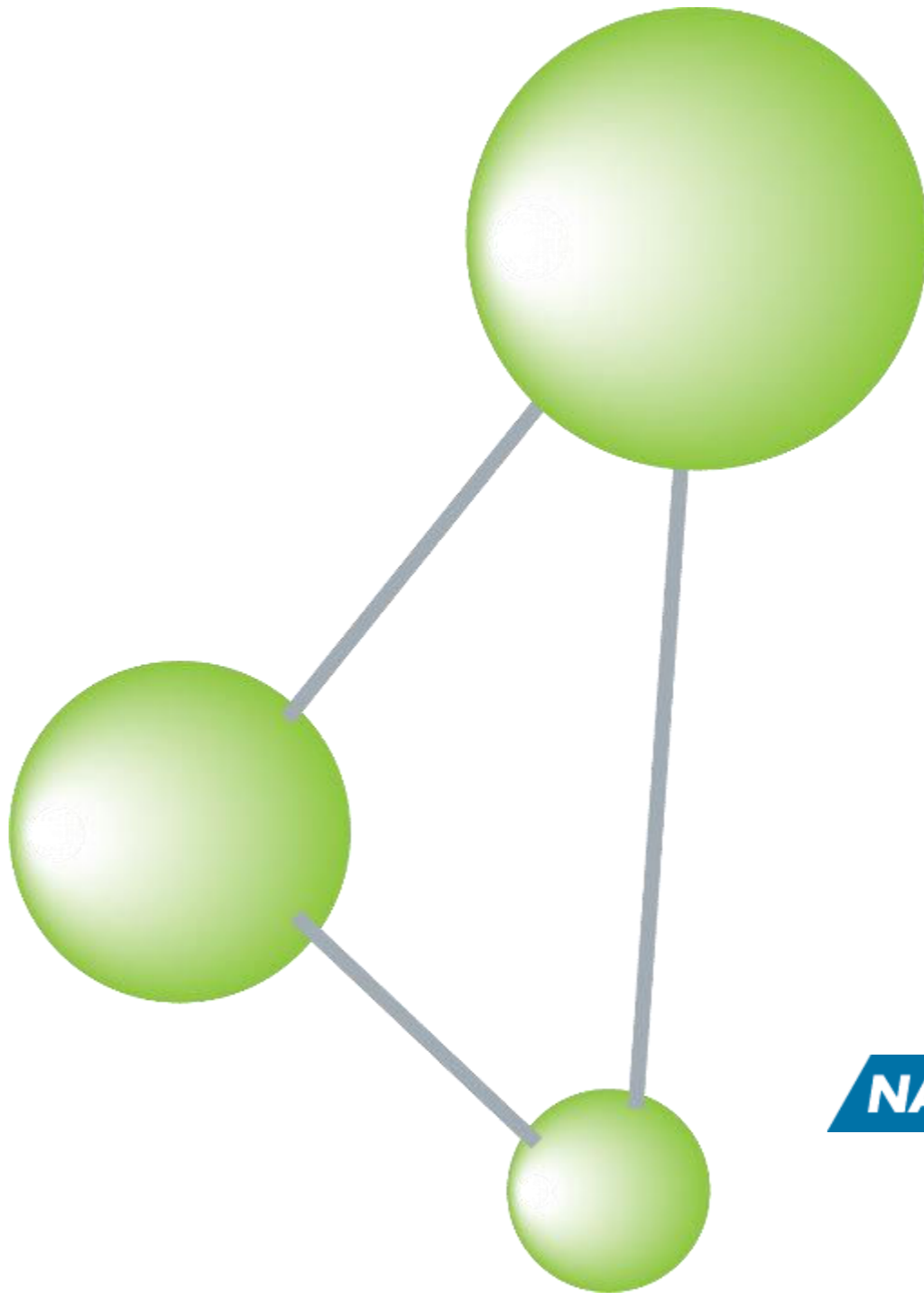
Employee Commitment // Years of Service Awards

Health & Safety Improvements // Latest Safety Products



Business Units

NATION FORD CHEMICAL
NFC Products



NATION FORD CHEMICAL
Tolling Services

NATION FORD IMPORTS
Imports & Distribution



PRODUCTS

PANA – Jet Lubricant Additive



Smoke Dyes



Sulfanilic Acid

Worldwide

#1 Producer
Highest Quality

Uses

Pharmaceutical
Yellow Food Dyes
Optical Brightener
Concrete Additive





PRODUCTION & PROCESSES

Custom Chemical Production

- Aniline derivatives
- Organic intermediates
- Solution polymerization
- Solvent dyes
- Bio-degradable polymers
- Ag chems
- Pigments
- Organic oxidations



Tolling Capabilities

- Scale-up from lab or pilot plant
- Commercialization
- Technology transfer
- Strength in engineering
- Process Improvement
- Computer control



Plant Processes

- Reaction chemistry
- Batch and continuous distillation
- High temp and deep vacuum
- Hydrogenation
- Filtration
- Flaking
- Drying
- Blending
- Repackaging
- Bulk storage and distribution



Reaction Experience

- Acetylation
- Alkylation
- Amination
- Chloroacetylation
- Catalytic Reduction
- Condensation
- Diazotization
- Ethylation
- Friedel-Crafts
- Hydrogenation
- Oxidation
- Polymerization
- Nitration
- Ring Closure
- Sulfonation
- Thiophenylation



Plant Equipment

REACTORS

(many outfitted with solvent recovery capability)

- (3) 6,000 gallon Hastelloy reactor
- (1) 6,000 gallon Furan reactor
- (7) 2,000 gallon glass-lined reactors
- (1) 750 gallon glass-lined reactor
- (1) 15,000 gallon SS reactor
- (1) 12,000 gallon SS reactor
- (3) 6,000 gallon SS reactors
- (3) 4,000 gallon SS reactors
- (1) 3,000 gallon SS reactor
- (9) 2,000 gallon SS reactors
- (2) 1,500 gallon SS reactors
- (1) 1,350 gallon SS reactor
- (1) 1,000 gallon SS reactor

DISTILLATION

High temp and high vacuum
batch and continuous

Many of our reactors are outfitted
with solvent recovery capability.

GRINDING / MILLING / BLENDING EQUIPMENT

- (1) 6' x 6' SS ball mill; heated/cooled
- (1) 8' x 10' SS ball mill; heated/cooled
- (1) ACM air classifying mill
- (1) Pin mill
- (3) Fitzmill grinders
- (2) 250 ft³ SS solids blenders

FLAKING

- 2' x 30' Sandvik SS Belt Flaker
- 48" x 40" Blaw Knox Flaker
- 24" x 60" Buflovak Flaker
(with agitator roller or feed pan)

HYDROGENATION

ON-SITE BULK STORAGE

FILTRATION / DRYING

- (4) 7' diameter SS vacuum Nutsche filters
- (1) 48" SS basket centrifuge filter
- (1) 48" Hastelloy basket centrifuge filter
- (6) Sparkler SS pressure leaf filters
- (1) 2' x 7' SS vacuum belt filter
- (1) 308 ft² Hastelloy clad DrM filter
- (1) 672 ft² Hastelloy DrM filter
- (1) 2' x 12' Witte SS fluidized bed dryer
- (1) 1' x 6' Witte SS fluidized bed dryer
- (1) 40 ft³ SS double cone vacuum dryer
- (1) 90 ft³ SS double cone vacuum dryer
- (3) 140 ft³ SS rotary vacuum dryers
- (1) 130 ft² Luwa SS thin film dryer/evaporator
- (1) 43 ft² Pfaudler SS wiped film dryer/evaporator
- (1) 26 ft³ tray dryer

BIO-BASED CHEMICAL SCALE-UP



Utilities

- 125 psig/175°C steam
- 650°F/340°C hot oil
- Cooling water
 - River water
 - Chilled water, 8°C
 - Glycol chilled water, -12° C
- Vacuum <10 torr
- On-site wastewater treatment



Hebei Nation Ford

Office in Shijiazhuang

Purchasing Chinese
Intermediates for NFC use

Low overhead/
Competitive prices



Distribution

- Aniline
 - Drum, Tank Truck, ISO, Rail
- 1-Naphthol
 - 25kg, 500kg bags, molten
 - Technical & Pure Grades

NATION FORD CHEMICAL

BOOTH 202

