



VanDeMark

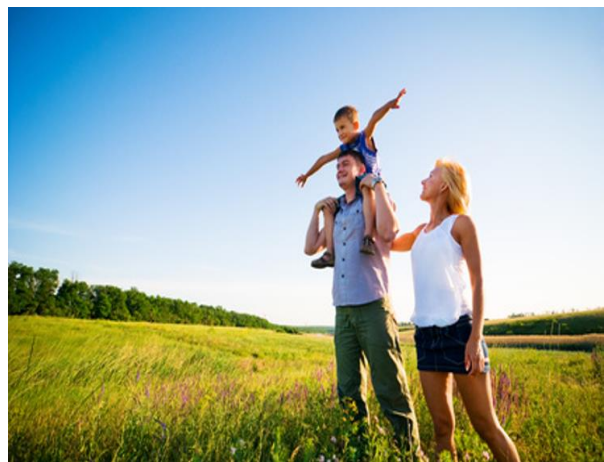
Phosgene Chemistry – Custom Chemicals



Bringing  
Chemical and  
Phosgene Expertise  
to the World



# Mission / Purpose



**At VanDeMark  
we provide our customers  
and the markets we serve  
with a wide range of  
chemical expertise and  
custom capabilities –  
highlighted by  
phosgene chemistry – to  
produce essential products  
that improve the  
quality of our lives**

# Our commitment to the safety of our employees, community and customers is our top priority!



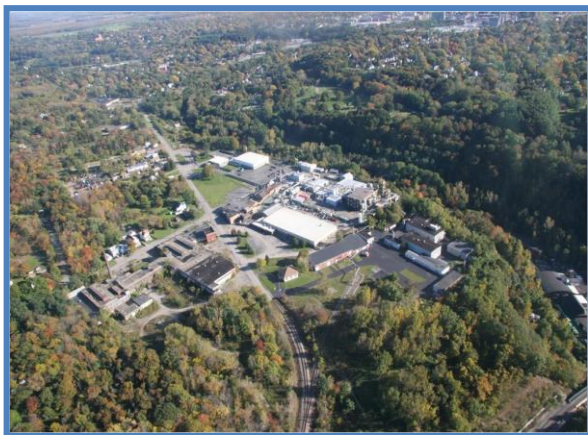
RESPONSIBLE CARE®  
OUR COMMITMENT TO SUSTAINABILITY

- Meet or exceed environmental, health, safety and security regulations
- Conduct community advisory panel meetings
- Annual emergency response training with local hospital and first responders
- Management system based on ISO 9001 and ISO 14001 standards
- SEVESO II definitive authorization in 2001 in Hungary
- IPPC authorization in 2004, certified by the Hungarian Standards Institution (MSZT) in 2008





# VanDeMark at a Glance



Lockport, NY USA



Kazincbarcika, Hungary

**Corporate Headquarters:** Lockport, NY USA

**Production Facilities :** Lockport, NY USA & Kazincbarcika, Hungary

**Business Segments:** Custom Chemical Production & Fine Chemical Intermediates

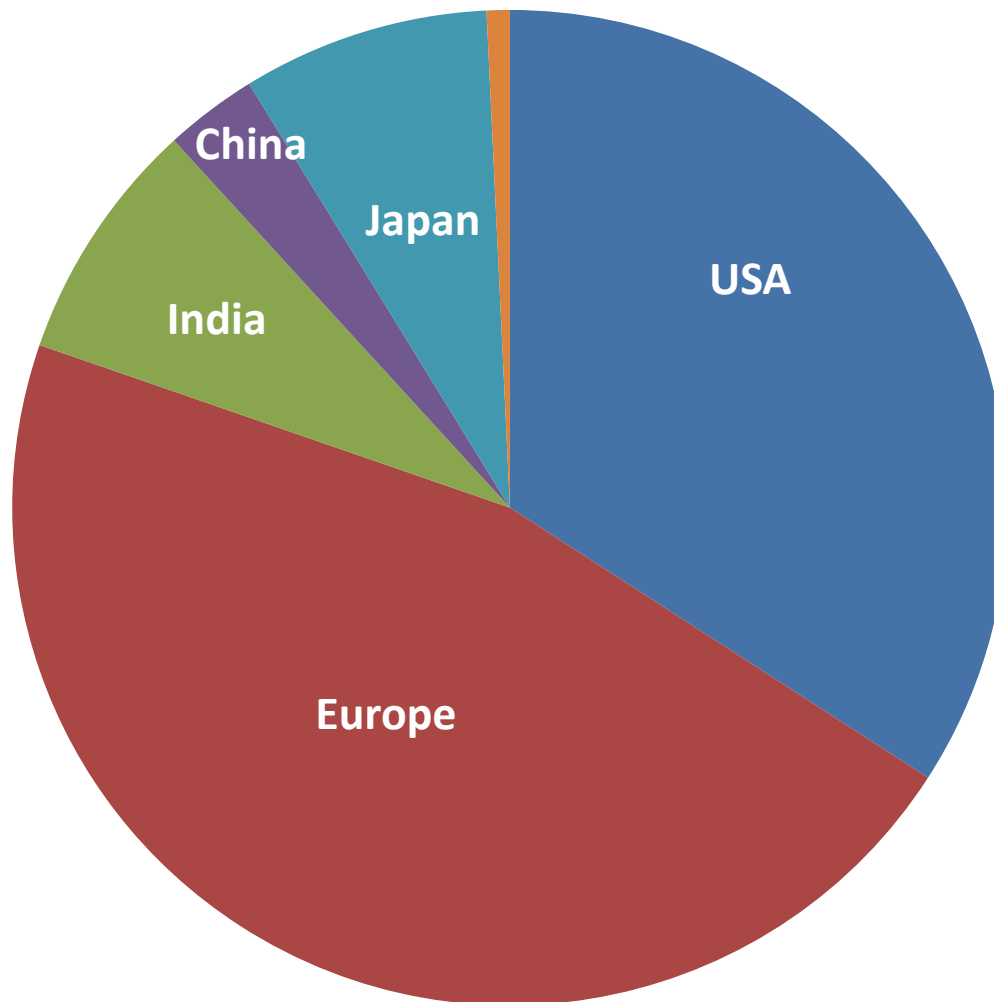
**Key Markets Served:** Pharmaceuticals, Agriculture, Plastics, Sealants

**Specialty:** Phosgene Chemistry and Derivatives

**Company Highlights:**

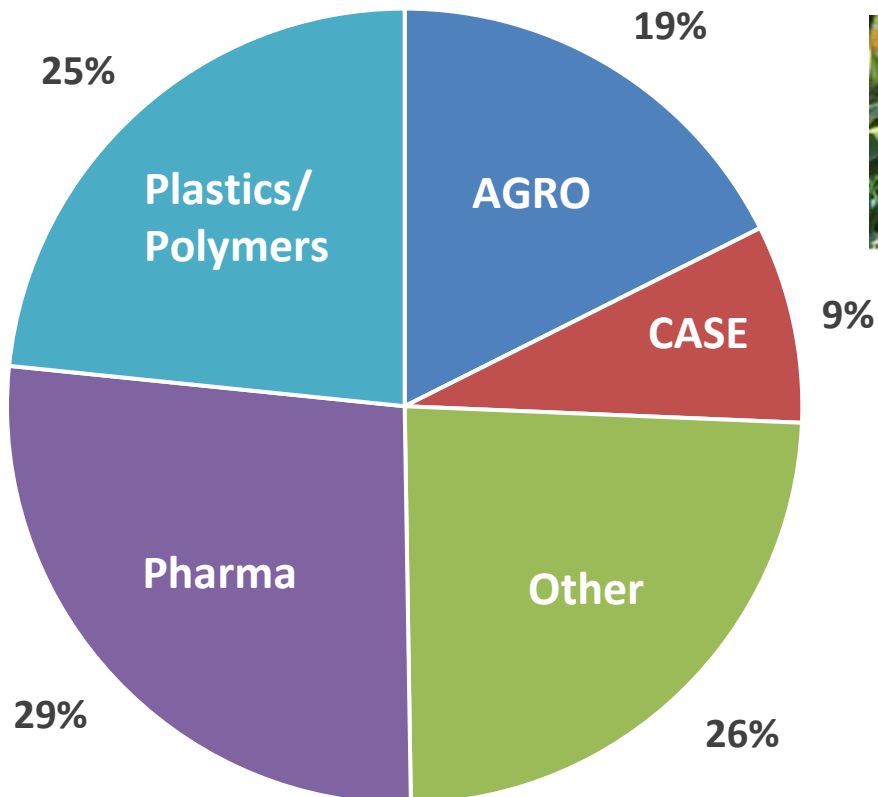
- VanDeMark Chemical founded in 1951, Lockport, NY USA
- Acquired Framochem, Hungary in 2014
- Global reach through direct sales, distribution network and agents
- Approximately 200 employees worldwide
- Only supplier of phosgene to the US merchant market
- Broad portfolio of phosgene derivatives
- New product development capability from bench scale to full commercial production

# VanDeMark: A Global Company



# VDM Services Many Markets

## 2019 Revenue by Market Usage



# VDM Product / Process Capabilities

## Custom Products



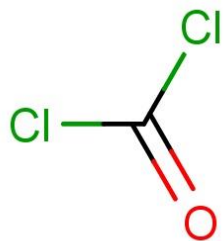
- **Non-cGMP Multi-step synthesis**
- **Chemical Process Expertise**

## Multi-Client Products

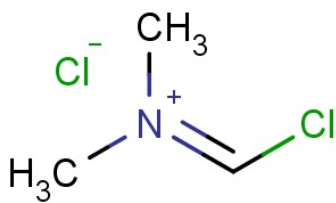


- **Phosgene**
- **Phosgene derivatives**
  - **Acid Chlorides**
  - **Chloroformates**
  - **Vilsmeier Reagent**
- **D-BAD**
- **+ Many Others**

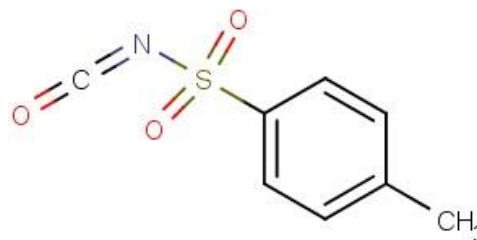
# A Sample of Multi-Client Products



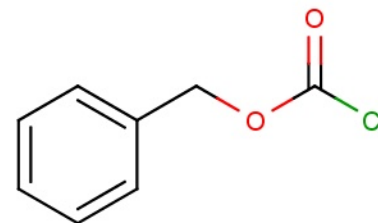
Phosgene  
(75-44-5)



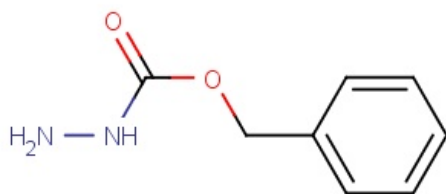
Vilsmeier Reagent  
(3724-43-4)



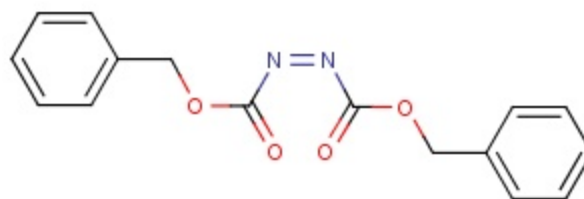
p-Toluenesulfonyl isocyanate (PTSI)  
(4083-64-1)



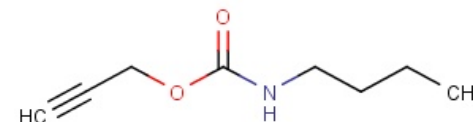
Benzyl chloroformate  
(501-53-1)



Benzyl Carbazate  
(5331-43-1)



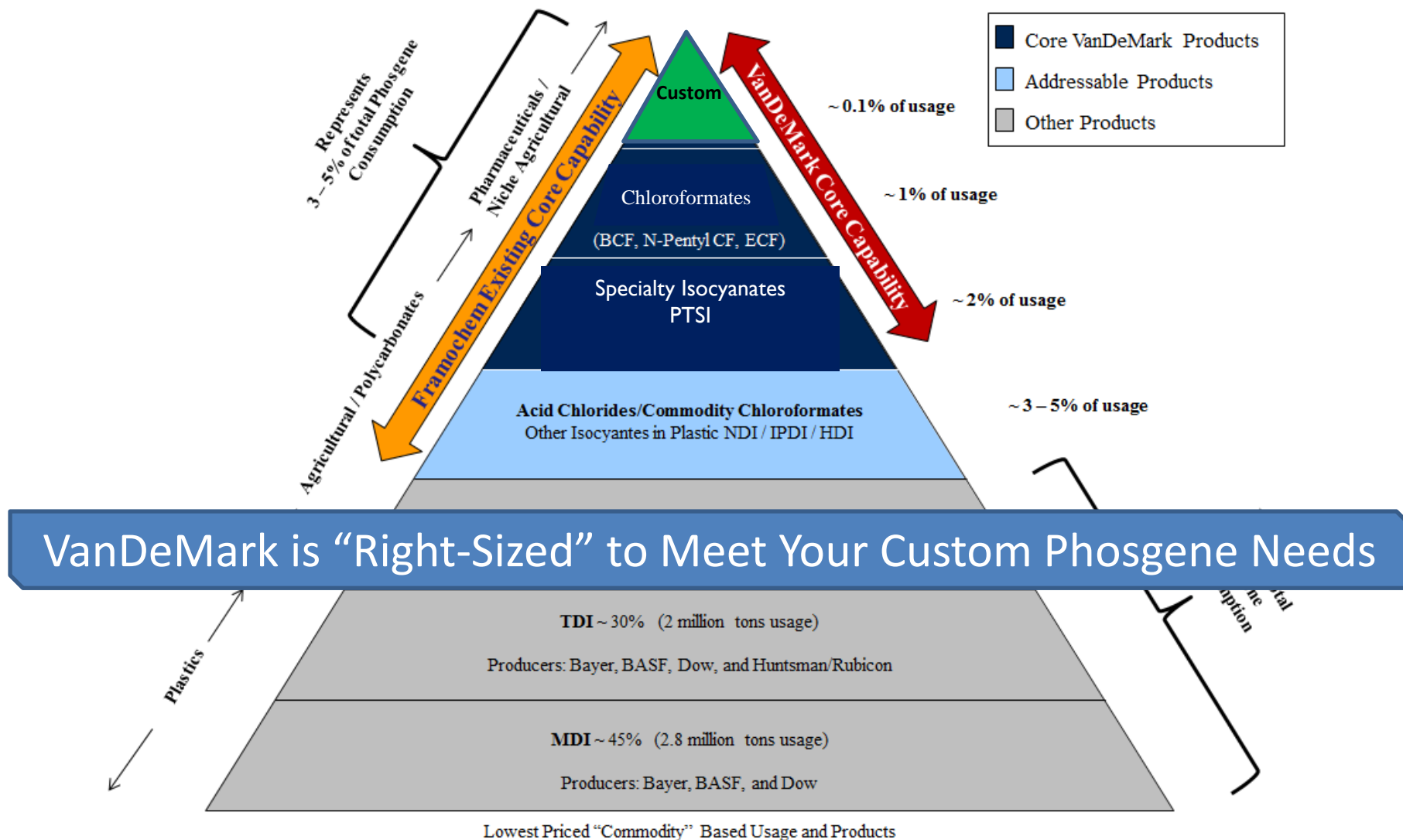
Dibenzylazodicarboxylate (DBAD)  
(2449-05-0)



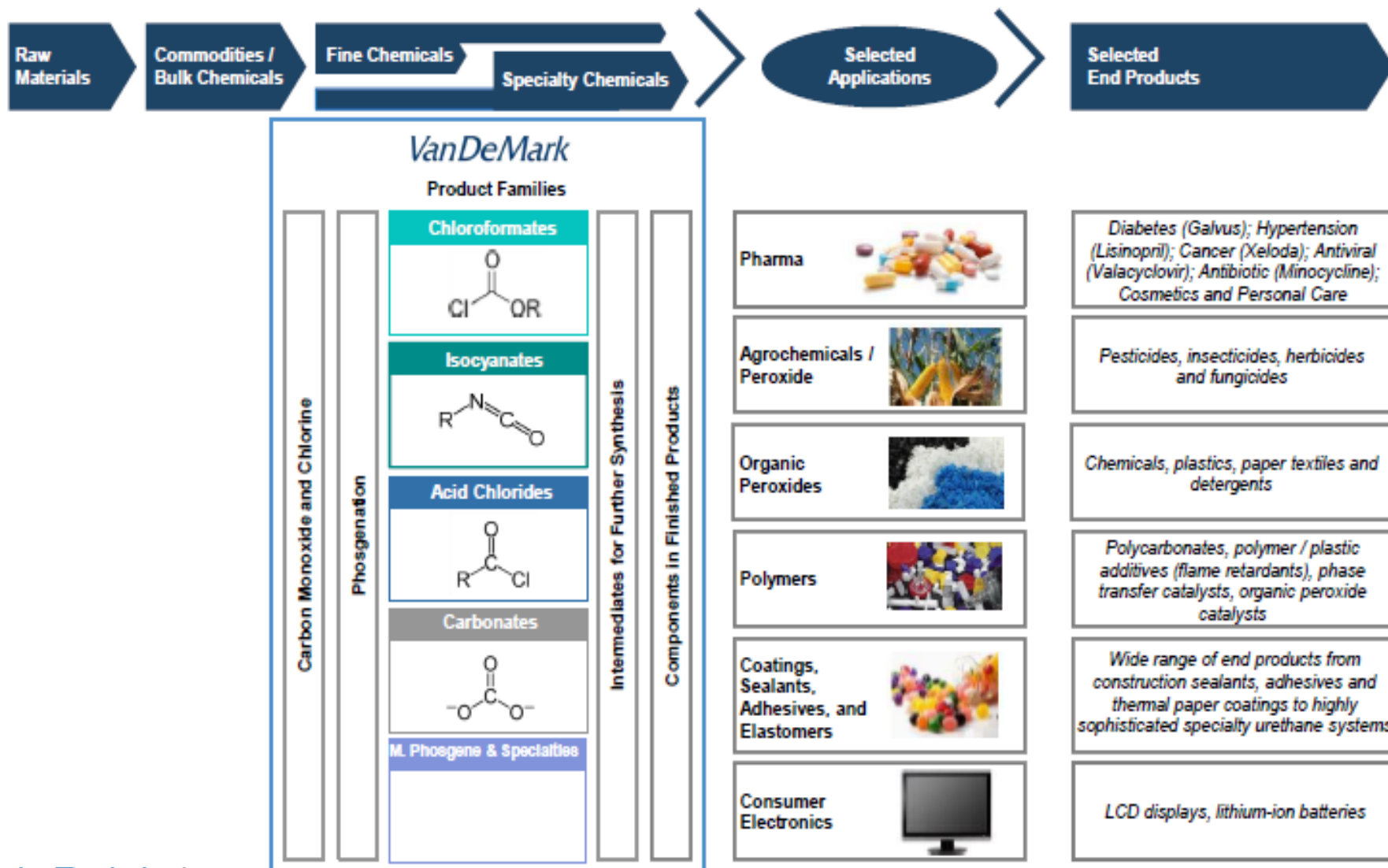
Propargyl n-butylcarbamate  
(76114-73-3)



# Phosgene Usage Pyramid

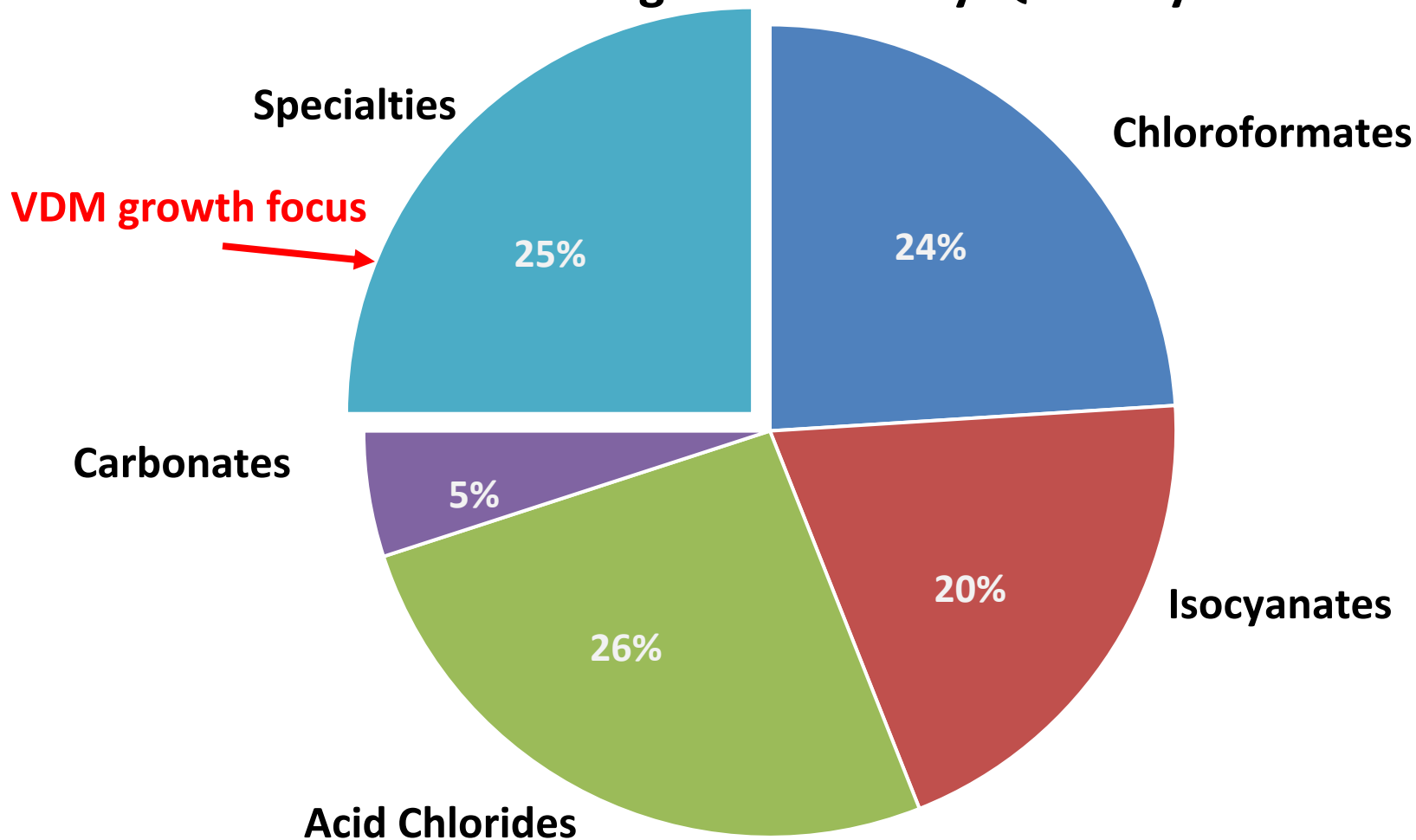


# Serving the Specialty Phosgene Niche

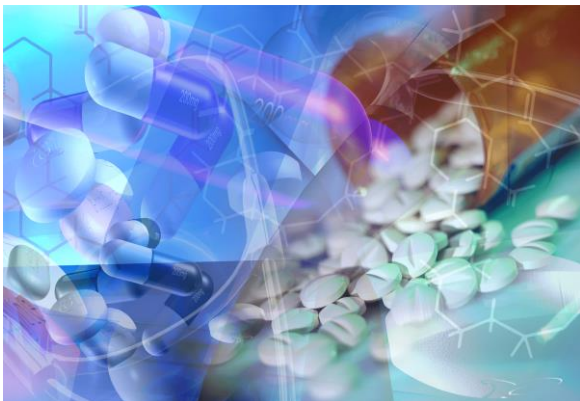


# Diversified Specialty Chemical Experience

Product Segmentation by Quantity



# Chemical Process Expertise



- **Primary Phosgenation**
  - ❖ “Bread and Butter” for 80 years
- **Secondary Phosgenation**
  - ❖ Carbamates, Carbazates, Carbonates
  - ❖ Carbodiimides, Carbamoyl Chlorides
  - ❖ Azodicarbonyls, Triazoles
  - ❖ N-Protected Amino Acids
  - ❖ Ureas, Peptide Chemistries
- **Chlorination / Oxidation / Acylation**
- **Hydrazination**
  - ❖ Azodicarboxylates & Carbazates
- **Multistage Synthesis**
- **Polymerization Reactions**
  - ❖ Oligomer Removal
  - ❖ Purification
  - ❖ Separation and Drying
  - ❖ Specialty Polycarbonates

# New Product Development Excellence

- **Experienced and proven new product development team**
  - ❖ Average 2-3 new products / year
- **Chemical process development expertise at both Hungary and Lockport**
  - ❖ Successful bench scale to full commercialization
  - ❖ Lab development chemists and equipment
  - ❖ Wide range of analytical capabilities
- **R&D performed jointly at both plant sites**
- **Seamless technology transfer to production**
- **Stringent stage gate process to evaluate all new products**



# VDM – Core Manufacturing Competencies

- **Safety**
- **Custom manufacturing – 25% of Revenue**
- **Industry recognized quality and reliability**
- **Hazardous chemicals handling experience**
  - ❖ Chlorine by rail
  - ❖ Hydrazine
  - ❖ Corrosives, such as HCl
  - ❖ Solvent handling (toluene, xylene, etc.)
- **Flexible and diverse operations**
  - ❖ High volume continuous reactions
  - ❖ Batch production
- **Solids Handling – raw materials and final product**
- **Refrigerated storage**
- **Typical product volumes: 2 tpy to over 1,000 tpy**
- **Flexible environmental permits to allow timely new chemical approval**
- **Small company environment for fast new product development**

# On Site Lab Facilities and Services



- **New product synthesis in our own facilities**
- **Commercial process development – lab to commercial quantities**
- **Lab-scale production and the development of analytical procedures with inhouse capability**
  - ❖ GCs, HPLCs, GPC
  - ❖ FTIR, UV-Vis, ICP, PT
  - ❖ Numerous others with local partner
- **Expertise, flexibility and resources are available to produce a wide range of specialty chemicals**
- **Our laboratories are specifically designed and equipped for safely conducting hazardous chemical reactions**
- **Lab-scale reactors 100 milliliters to 15 liters glass equipment with distillation column**

# Why Partner With VanDeMark?



- More than 80 years experience in phosgene chemistry and custom synthesis
- Dedicated to continuous improvement resulting in efficient, high quality and safe production
- Innovation in chemical processing technology and new product development
- Technology driven to efficiently meet customer needs
- Action oriented company acting with speed and flexibility
- Experienced and proven new product development team
- Customer focused with high quality standards

# Together We Can Do Great Things



**Bringing Chemical and Phosgene Expertise to the World**