

■ **Course title:**

How to Improve the Urea Product Quality?

■ **Introduction:**

This training course will discuss the various forms of solid urea products and its challenges. It will discuss the fundamentals of caking and how to prevent and mitigate caking effects. Further it will elaborate in detail the cooling process in a prilling tower and during storage and transportation. How the moisture content in the final urea products (prills and granules) can be influenced. What are the various product strength parameters and how these can be improved. Recommendations are shared to store and ship urea product and an innovative proven solution to reduce dust is presented.

■ **Course outline:**

Module 1: Caking and moisture (duration 1hr)

- Various forms of solid urea products
- What is caking
- Factors influencing caking
- Phase diagram urea – water
- How to influence moisture content in prills
- How to influence moisture content in granules
- Various coatings and how to apply these

Module 2: Other quality parameters (duration 1hr)

- Urea products strength parameters
- How to improve strength parameters
- How to lower prill temperature
- How to lower granule temperature
- Recommendations for storage
- Recommendation for shipment
- How to reduce dust content

Author / Trainer:

Mark Brouwer



Process & Safety Engineer,
Urea Expert

Mark has over 25 years of licensing, revamping, engineering and consultancy experience in urea projects. He has been visiting more than 100 urea plants located in almost all continents.

Mark has experience in all project phases starting from Concept and Front End Engineering (FEED) through Commissioning and Operation. He is a Master of Chemical Engineering, Post Bachelor in Safety for Engineers, Marketing and Business Strategy Courses at the Rotterdam School of Management and a Member of American Institute of Chemical Engineers (AIChE).

Mark has extensive experience in revamp studies, engineering and process safety consultancy services to EPCM companies and urea plants including the preparation of Revamp and Plant Assessment and Safety Reports, hazard identification and analysis, troubleshooting, risk registers, corrosion inspections, procurement services, training services, etc.

Mark's expertise are Process technology, Corrosion, Licensing, Engineering, Revamping, Marketing, Sales, Contract negotiations, Troubleshooting, Project Management, International business, Safety, high pressure urea valves, high pressure urea equipment.

Mark has provided extensive training programs to more than 1000 urea engineers, managers, (shift)supervisors and operators from all over world.

Mark has published numerous technical papers in reputable industry magazines and presented at numerous CRU Nitrogen & Syngas and AIChE Ammonia Safety Conferences.

■ Learning Outcomes:

By the end of this course you will understand:

- The various forms of solid urea products and its challenges.
- The fundamentals of caking and how to prevent and mitigate caking effects.
- The cooling process in a prilling tower and during storage and transportation.
- How the moisture content in the final urea products (prills and granules) can be influenced.
- What are the various product strength parameters and how these can be improved.
- Recommendations are shared to store and ship urea product
- How to reduce dust content.
- In which plant section explosion risks are present
- What measures one can take to prevent and mitigate explosions.
- In which plant sections where explosion risks exist and why
- Which upset conditions and incidents can create explosion risks.

■ Who will benefit:

Anyone who is involved in the design, engineering, operation and maintenance of any urea plant including marketing, sales, business development of solid urea products. urea production technologies or production, storage and logistics equipment including:

- Engineers and Managers
- Operations
- Maintenance
- Marketing and Business Development Managers
- Quality Managers

■ Course materials:

- Hand Out Presentations in pdf format
- Several background Technical Papers

■ Price:

€ 300

■ Discounts:

- 2 places – 10% discount
- 3 places – 15% discount
- 4 or more places – 20% discount.

■ **In-company training:**

This course is also available as an in-company course (face-to-face or online) where content can be customised to meet your organisation's specific needs and delivered on a date/location that suits your requirements.

[Contact us](#) for more information.

■ **Training code:** UREA08