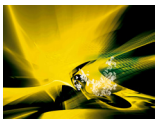
Crystallization of Amino Acids



Amino acids are building blocks for protein and essential as human and livestock feed. Especially, amino acids like Methionine, Lysine, Threonine in which the human bodies are not able to produced are of great importance. In general, amino acids are produced in fermentation process.

GEA Messo PT is well-known as a core center for crystallization technologies. With over 60 years of experiences, we provides the continuous crystallization plants starting from the preconcentrated broth until the product separation and handlings. Each plants are tailor-made to fit with the customer special requirements like energy optimization , product qualities and grades against reasonable cost.

We have been in strong co-operation with GEA Wiegand for the preconcentration of the amino acid broths prior to the crystallization steps.

Our related products:

- Methionine
- Lysine
- Threonine
- Valine
- Tryptophan
- Leucine
- Arginine

Our range of services:

Assistance:

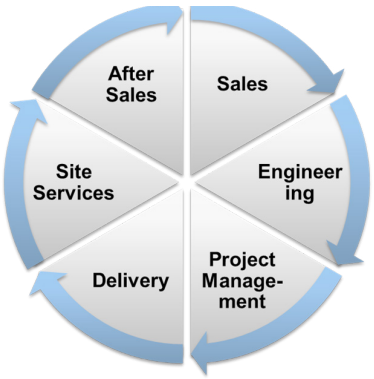
- Erection
- Commissioning
- Training
- Performance testing

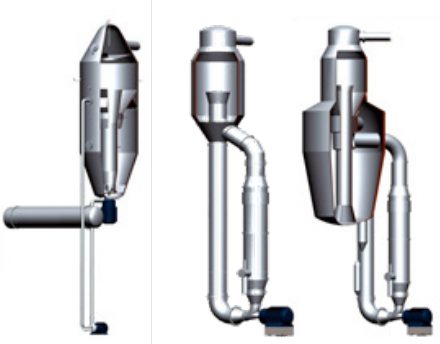
Innovative process designs

Pilot plant testing

Basic and Detailed Engineering

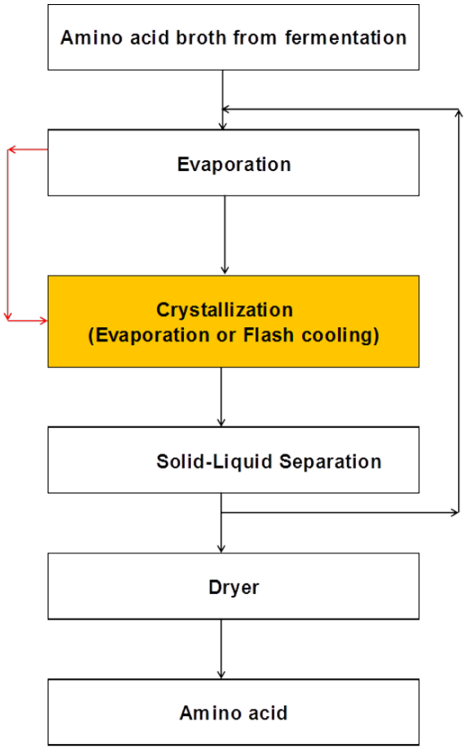
Plant component and delivery





Process Description

Essential amino acids are generated from the fermentation process. Their fermented broth after preconcentration by evaporation is undergone the crystallization process to obtain the crystal slurries of the amino acid in its solution.
The crystallization process can be based on evaporation or flash cooling depending on the broth characteristics and the availability of the energy systems.
The crystal slurries are then brought to the separation step i.g. by means of thickening and centrifuge in which the mother liquor leaving the separation step is fed back to the process. This will increase the yield of products.
However, a minor amount of concentrated mother liquor is purged out of the system to control the impurity concentrations which strongly influence the final product qualities.
The wet crystals of amino acids can be dried and stored according to the customer requirement.



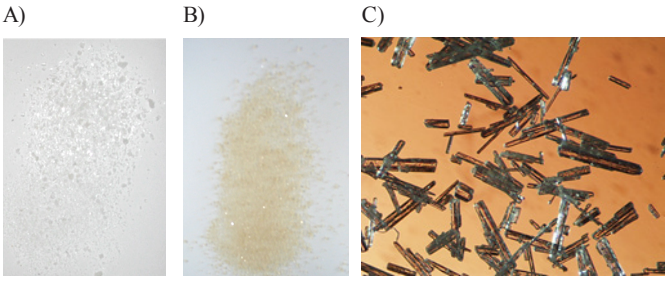


Figure: A) crystals of „food grade“ Lysine, B) „Animal grade“Lysine and C) micrograph of Threonine

This concept has already been implement successfully several times. One of our notable production plants for amino acid is in the range of 80,000 t/a capacity.
In many cases, the concept for crystallization plant for amino acids is extended to produced different product grades. Multiple stage systems are also developed along with larger components to allow for any capacity expansions.

Keys to the design concepts:

- Long operating cycles
- Consistent product qualities
- Energy optimization
- Plant flexibility and stability
- Handling of the final products

Next Steps

For more information regarding this technology and your specific configuration requirements, please contact us at: info.geamesso.de@gea.com or phone +49 2065 903-0.

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