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Polyamide 6

PA 6 Technology

Single stage

Two stage

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Refeeding Options

The raw material caprolactam accounts for approx. 80 % of all costs in PA 6 production. A production process with complete utilization of the raw material is thus indispensable.

Only around 90% of the caprolactam can be converted in the polymerization process because of the chemical equilibrium. The unconverted caprolactam and its oligomers have to be removed from the PA 6 raw polymer by hot water extraction and need to be recycled in an economical and ecological process.

Apart from polymerization with virgin caprolactam (VLP®), Uhde Inventa-Fischer use modern technologies for direct extract recycling in the polymerization process such as the

- direct refeeding process DRP®,
- over-proportional refeeding process OPRP®, and
- re-polymerization process RPP®.

In the **Direct Refeeding Process** (DRP®), the concentrated extracts from one polymerization line are re-fed directly into the same polymerization line and added to the virgin caprolactam. This process is ideal for single-line production for all product qualities.

Over-Proportional Refeeding (OPRP®) is when the extracts from two or more production lines are directly re-fed into only one polymerization line (up to 75% of the total caprolactam intake of that line). This process is ideal for multi-line plants.

A two-stage polymerization is recommended in this case.

In the **Repolymerization Process** (RPP®), the feed consists mainly (more than 75%) of extracts from several polymerization lines. During this process, one line is used for the treatment of the extracts while the other production lines produce chips made from virgin caprolactam only. The re-polymerization of concentrated extracts is performed by two-stage polymerization. The main cracking of the cyclic dimer is carried out in the pre-polymerizer under pressure.