

Caprolactam Production: Determination of Permanganate Absorption Number (PAN)

The world's caprolactam production capacity is about 5 million tons and the majority is used for the production of Nylon6 which is mainly used to manufacture fibers for clothing, carpets and industrial fibers. About 30% is used for resin production. Most production technologies use aromatic feedstock's based on the Beckmann oleum rearrangement of cyclohexanoneoxime. The resulting ammonium sulphate by-product, considered undesirable in some regions, can be used in fertilizer manufacturing. One of the quality tests for caprolactam is the PAN analysis and is described in several norms like ISO 8660. The permanganate index, expressed as the permanganate absorption number (PAN), defines the stability of a caprolactam sample to potassium permanganate and is a measure of the purity of the caprolactam in relation to the presence of oxidizable impurities, e.g. unsaturated caprolactams. The 2045TI Process Analyzer is capable to meet all the process criteria and is suitable to analyse the impurities in caprolactam 24/7.



Application: Oxidizable impurities in caprolactam according to ISO 8660 for on-line purposes, with precise time and temperature controlled colorimetric measurement.

Typical Range: Permanganate Index: 0-35

Remarks: Other applications depending on the production process are NH_4OH , NH_4NO_2 , SO_3^{2-} , alkalinity, moisture, iron, high/low acidity in cyclohexanone (analon), $(\text{NH}_4)_2\text{SO}_3$, H_3PO_4 and other related components.