Sampling and Weighing

Lab scale weighing procedure for samples in grams

Fill a graduated cylinder to a defined volume with water, weigh it, and record this weight as $m_{H_2O}$. Pour out the water, add the desired amount of activated nickel foam, add enough water to reach the same volume as before, weigh it, and record this weight as $m_s$. Calculate the dry weight of the catalyst ($m_{Cat}$) according to equations 1 and 2 on page 2.
Kg scale weighing procedure for commercial applications

On a kg scale, drums need to be used to determine the dry weight of the catalyst. Weigh the drum containing the catalyst and record this value as \( m_s \). Measure the distance from the top of the drum to the top of the catalyst slurry. Fill an empty identical drum with water exactly to the same level as the drum with the catalyst. This is done by adjusting the distance from the water level to the top of the drum to the same value as was measured on the catalyst drum.

Weigh the drum with the adjusted water volume, record this weight as \( m_{H2O} \), and calculate the dry weight of the catalyst according to equations 1 and 2 below.

**Equation 1:**
\[
m_{Cat} = k \times (m_s - m_{H2O})
\]

**Equation 2:**
\[
k = \frac{d}{(d - 1)}
\]

Where:

- \( m_{H2O} \) = The weight of the container with the defined volume of water in g (grams).
- \( m_s \) = The weight of the container with the defined volume of AMC and water in g (grams).
- \( m_{Cat} \) = The calculated dry weight of the AMC in g (grams).
- \( k \) = The skeletal density correction factor. This accounts for the volume of water displaced by the catalyst solids. \( k \) is calculated by equation 2 where \( d \) is the true catalyst density (g/cm\(^3\)). For activated nickel foam catalysts, \( k \) is equal to 1.2 and \( d \) is equal to 6 g/cm\(^3\).
This novel catalyst type is manufactured under a license from Alantum Europe GmbH.