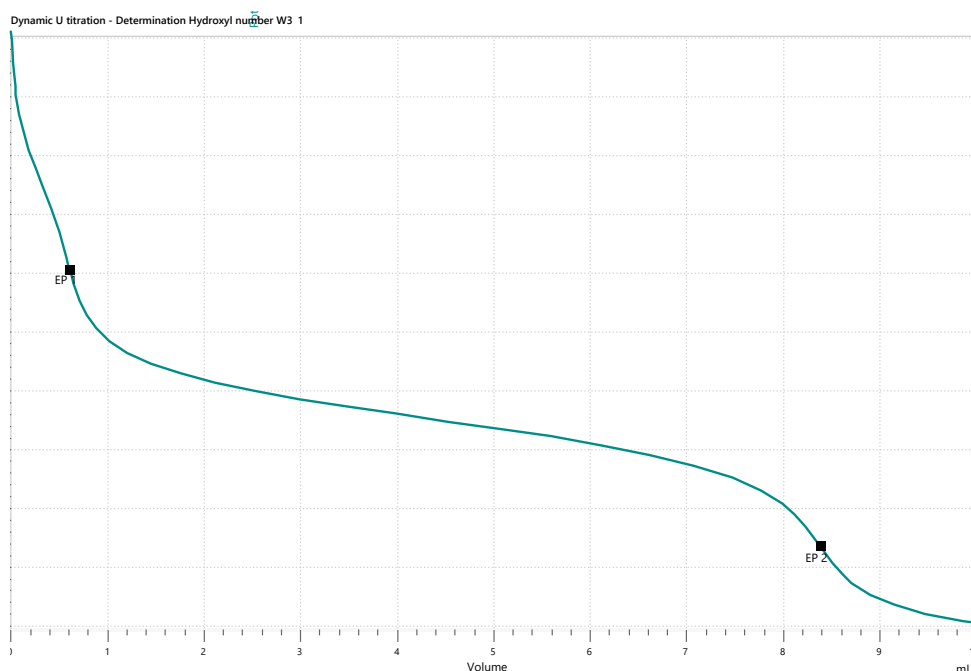


Titration Application Note T-113

Hydroxyl number in castor oil and stearyl alcohol

Fast, pyridine-free method for pharmaceutical samples



The hydroxyl number (HN) is an important sum parameter for quantifying the presence of hydroxyl groups in chemicals. As a key quality parameter, it is determined in various substances. For pharmaceutical samples, USP chapter <401> and Ph. Eur. Chapter 2.5.3 describe the determination. However these methods either use toxic pyridine and require refluxing or have long reaction times.

In this Application Note, an alternative method according to ASTM E1899 is presented. This method is pyridine-free and does not require refluxing or long reaction times. The determination is performed at room temperature with only a small sample size. The analysis can be performed fully automatically and takes about 24 min. Castor oil and stearyl alcohol (1-octadecanol) are used as samples.

The analysis including all preparation steps is performed with a fully automatic OMNIS system. Moreover, the use of an OMNIS Sample Robot allows parallel analysis of multiple samples, increasing productivity in the laboratory by 50%.

Method description

Sample

Castor oil (160–168 mg KOH/g)

1-Octadecanol (Stearyl alcohol) (195–210 mg KOH/g)

Sample preparation

No sample preparation is required.

Configuration



dSolvotrode 6.00203.300
electrolyte c(TEABr) = 0.4 mol/L in
ethylene glycol

Analysis

An appropriate amount of sample is weighed into the titration beaker and dissolved in acetonitrile. In case the sample is not completely soluble in acetonitrile, a mixture of acetonitrile and toluene can be used.

The beaker is automatically covered and the solution is stirred to dissolve the sample. After the TSI reaction solution is added, the beaker is covered again and the solution is stirred for 5 minutes before the reaction is quenched with deionized water. Additional acetonitrile is added and the solution is titrated with TBAOH to determine the hydroxyl number.

Results

Sample (n = 6)	HN in mg KOH/g	s(rel) / %
Castor oil	166.08	0.1
1-Octadecanol	214.10	0.9