

Application Note AN-T-136

Epoxide equivalents in epoxy resin

Reliable determination according to EN ISO 3001 and ASTM D1652 by potentiometric titration

The epoxy content of epoxy resins has a strong influence on the reactivity of the resins as well as on the properties of the coating obtained from the resin curing process. The epoxy content is thus an important quality control parameter for manufacturers as well as consumers.

The analysis of the epoxy content is based on the reaction of hydrogen bromide with the epoxy groups of the sample. Hydrogen bromide in turn is produced by the reaction of

tetraethylammonium bromide (TEABr) with standardized perchloric acid.

The standards EN ISO 3001 and ASTM D1652 describe the determination of the epoxy content expressed as epoxy equivalent weight (EEW) by titration. The use of a Titrando and Solvotrode easyClean instead of manual titration greatly increases the reproducibility and repeatability of the determination.



SAMPLE AND SAMPLE PREPARATION

This application is demonstrated on the epoxidecontaining portion of a two-component

EXPERIMENTAL

This non-aqueous titration is performed on a 905 Titrando system equipped with a magnetic stirrer and a Solvotrode easyClean for indication. The sample is weighed into a titration beaker, and then dissolved in either chloroform or methylene chloride. Afterwards, TEABr reaction solution and glacial acetic acid are added, and the sample is titrated with standardized perchloric acid until after the equivalence point is reached. adhesive. No sample preparation is required.



Figure 1. 905 Titrando equipped with a Solvotrode easyClean for the analysis the epoxide equivalents controlled by a 900 Touch Control.

RESULTS

The analysis demonstrates acceptable and reproducible results and well-defined titration curves. For the tested two-component adhesive

an epoxy equivalent weight (EEW) of 186.35 (n = 3, SD(rel) = 0.98%) is determined. An example titration curve is displayed in **Figure 2**.







CONCLUSION

The determination of the epoxide equivalent weight (EEW) in epoxy resins can be performed easily using a 905 Titrando. The use of the Solvotrode easyClean, which is suitable for nonaqueous titrations, ensures reliable determinations of the equivalence point. A flexible sleeve diaphragm facilitates its cleaning. Using the correct electrode greatly increases the precision and reliability of the results. Thus, the reliable determination of the epoxy content in epoxy resins according to EN ISO 3001 and ASTM D1652 becomes possible in a simple manner.

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CONFIGURATION



OMNIS Titrator Oil

OMNIS Titrator Oilは、あらゆる一般的な石油化学 製品の分析のための完璧なハッケーシを提供します 。ハッケーシには、マクネチックスターラおよひフ ロヘラスターラ付きOMNIS Advanced Titrator、 20 mLのシリンターユニット、非水溶媒による酸 /塩基滴定のためのd-Solvotrode、およひOMNISソ フトウェアのスタントアローンライセンスか含まれ ています。

