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FORMALDIMETER – Introduction

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FORMALDIMETER - A quick test method for formaldehyde

Summary:

The FORMALDIMETER offers a fast, efficient and reliable test method for determination of formaldehyde in textile fabrics. The two most commonly used tests are possible:

- A. FREE FORMALDEHYDE which corresponds with Jap. Law 112 and EN ISO 14184-1
- B. RELEASED FORMALDEHYDE which corresponds with AATCC Test 112, SHIRLEY II and EN ISO 14184-2

Procedure: Free or Released Formaldehyde on the test fabric is transferred by using MORAPEX extraction system into a solution containing a special reagent. The solution is conditioned at specified temperature in a thermo block to form a coloured complex. The colour intensity is in proportion to formaldehyde concentration and is measured in a special photometer. Total test time about 40 - 60 min.



Why is formaldehyde found on fabrics?

There are many reasons because after textile manufacturing processes formaldehyde is found on fabrics. Especially “wash and wear”, “wrinkle free” and “non iron” treatments for textiles often use resins, which can set free small or big quantities of formaldehyde. Also preservatives in chemicals e.g. auxiliaries for coating, printing and finishing can deliver formaldehyde after processing.

There is a strong demand in textile industry to have common methods and standards to measure residual formaldehyde on fabrics. Until now there are no uniform conceptions to analyse free/released formaldehyde in the laboratory and to specify common limits and tolerances regarding influences in ecological and health aspects. There are world-wide more than 10 different methods available for analysing formaldehyde on textiles.

Which testing standards do exist?

However, in the last few years two methods were most commonly used and accepted by industry:

- A. Determination of free and hydrolyzed formaldehyde according to the international standard EN ISO 14184-1. This corresponds with Jap. Law 112 method.
- B. Determination of released formaldehyde according to the international standard EN ISO 14184-2. This corresponds with AATCC 112 and SHIRLEY II method.

Many companies are using these or very similar methods for ecology and quality inspection.

History:

After conclusion of several R&D projects over a period of 6 years and with the cooperation of several teams (Textile College Dornbirn Austria; University of Leeds, Marks & Spencer, Habotex Consulting, Prior Engineering, R J .Wardle, Mathis AG, Treepoint AG) we were able to launch the FORMALDIMETER product and concept. Market introduction will be done officially at ITMA 2003 in Birmingham. Already for several months pilot projects have been working successfully in different companies in industry.

Procedure:

The procedure can be divided into 3 steps:

Extraction:

Formaldehyde on the test fabric is transferred into a solution containing a special reagent by forced desorption in the MORAPEX system. The test reagent is delivered in pre filled, sealed test tubes. The extraction process takes a few minutes. Parameters and timing are pre programmed on the MORAPEX machine and depend on the selected method.

Developing a coloured complex:

The solution is conditioned in a special thermo block for 30 min. at a specified temperature of 60°C to form a coloured complex. After colour development the test liquid has to cool down to room temperature.

Measuring:

The test liquid is then measured in a special programmed and calibrated photometer. The colour intensity is in proportion to the formaldehyde concentration. The specific fabric weight is entered on keyboard. The application range for fabrics is 100 500 g/m². The result is directly determined and indicated on display.

Total test time is about 40 - 60 min.

Targets and goals of FORMALDIMETER:

- Provides a technique which is very easy to use.
- Delivers results much faster than standard methods.
- Cost per test lower than before.
- Allows an easy Pass / Fail decision for tolerances.

Restriction:

There are some restrictions on coated fabrics or membrane type fabrics. In general, the commonly accepted limits for rapid tests concerning accuracy and precision have to be taken into account.

MORAPEX and **FORMALDIMETER** are manufactured by **Mathis AG**, Switzerland

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