

# Health care mattresses put to the acid test.



DETERMINING THE **COMPRESSION** SET IN THE HEATING OVEN



**Health care mattresses, especially those used to prevent bedsores, are subjected to stringent tests before they can be used in nursing homes or hospitals. MMC (Medical Mattress Care), a Belgian manufacturer of health care mattresses, uses the Memmert heating oven UNB200 to bring its foam test specimens to the temperature required by ISO 1856.**



**Memmert Universal Oven U**

"There is no pillow so soft as a clear conscience" is a proverb attributed to the Roman poet Ovid 2,000 years ago. Many of those who suffer of back pain or tension can only partially agree to this statement. In order to get good, restorative sleep, they also need a mattress with perfect pressure relief that provides the best possible support of their musculoskeletal system in any position. Additional factors that influence the choice of mattress are hardness, hygiene, whether they are easy to clean, suitable for allergic people, breathable and easy to handle.

**Health care mattresses for maximum comfort**



Health care mattresses and anti-decubitus mattresses for hospitals and nursing homes have to live up to even higher demands. Michel Marynissen, managing director of Medical Mattress Care (MMC), located in the Belgian town Lokeren, already had gathered much experience with the manufacturing and sale of foam products before starting his own company in 2005. Therefore, he had a very good idea of how he wanted to improve the quality and hygiene of mattresses. In addition to the core product 'health care mattresses' the company now also produces mattress covers, mattress overlays, blankets, positioning cushions, wheelchair cushions, pillows and the ergonomic MMC Relax armchair. "We offer a Total Care Package for home care, nursing homes and hospitals," says Managing Director Marynissen, who collaborates with the German nursing bed manufacturer Malsch, among others. Together, they want to venture onto new territory. "We want to push the usual sterile look and feel of nursing beds to the back seat in favour of more comfortable surroundings and pleasant, high-quality materials while still giving top priority to safety, hygiene and, of course, cost-efficient cleaning and handling. Marynissen is certain that the market has barely begun to discover the innovative potential of mattresses. For instance, MMC has a mattress in its portfolio that increases oxygen uptake at night by 30 %, speeding up regeneration and making sleep more restorative.



Test to determine the compression set as per ISO 1856 in the Memmert heating oven.

## **Implementing ISO 1856 in the heating oven**

MMC has a production output of 4,000 mattresses per day. However, before the products go to serial production, they are put to the acid test in the lab. The main tests are fire resistance, indentation resistance, density and hardness, elasticity, air permeability, loss of thickness in percent and pressure resistance during the fatigue test and the determination of the compression set according to ISO 1856. Nearly every material test is an indicator for the durability of the mattress, especially considering that permanent indentations in health care mattresses are absolutely unacceptable for bed-ridden patients and bedsore prevention. Just like any other product, every single mattress that leaves MMC's production line has to fulfil strictest quality

## **Testing of colour fastness in the drying oven**

Specialising in swimwear as well as underwear, Van de Velde, uses a Memmert drying oven for the testing of color fastness of textile samples.

[more information](#)

criteria and its origins can be traced back along the entire delivery chain.

Determining the compression set of soft-elastic polymer foams, the material conventional and health care mattresses are usually made of nowadays, underlies the ISO 1856 standard. MMC has equipped its testing lab with a Memmert heating oven UNB200 for this test as it is very easy to use. The cylindrical foam test specimen has exactly defined dimensions and is compressed by 50 % in a hardness testing device. Then, it is stored at 70 °C in a heating oven for 22 hours. After this time, the test specimen is left to cool down to room temperature for 30 minutes before measuring its height again. The difference to its original height is the permanent compression in percent. The lower the compression set, the better. In practice, a high-quality foam mattress will present a compression set not greater than 4 to 5 %.

AtmoSAFE thanks [Medical Mattress Care](#), in particular Managing Director Michel Marynissen, as well as Carmen Van Waeyenberghe from the Memmert distribution partner in Belgium, [Voor't Labo](#) for their friendly collaboration on this article.

## Overview of the main topics

- Material testing, testing procedures
- Compression set test
- ISO 1856
- Mattresses
- Care mattresses, bedsore prevention mattresses
- MMC (Medical Mattress Care)
- Memmert heating oven

## Laboratory equipment for material testing

[Universal Oven U](#)

[Vacuum oven VO](#)

[Constant climate chamber HPP](#)

[Climate chamber ICH](#)

[Climatic test chambers CTC](#)

[Temperature test chambers TTC](#)

[Humidity chamber HCP](#)

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