

Memory Foam Odor – How Effective is Off-gassing?

A common consumer complaint is that new memory foam beds and/or pillows have an unpleasant odor, sometimes accompanied by negative health effects. Most manufacturers recommend an off-gassing procedure before use. Two different USA-made contour pillows were tested by Prism Analytical to establish a baseline and then tested at 1 through 10 days to evaluate the effectiveness of the recommended off-gas period. Results revealed some interesting findings which may explain an odor contributor.

Baseline Testing: The air inside the original packaging headspace was collected while the room temperature was greater than 70 degrees F. Both pillows showed elevated levels of the compound Triethylenediamine (TEDA). This compound is often used as a catalyst in polyurethane foam production derived from amines and isocyanates. Amine compounds are commonly known to have an unpleasant odor and TEDA is known to be an eye, skin, and respiratory irritant. Interestingly, the pillow with higher foam density showed at least 7 times higher concentration of TEDA and exhibited a substantially stronger odor. These data support the common consumer complaint that higher density foam products have stronger initial odor.

Off-Gas Testing: The lower density pillow was placed in a large home basement room at 70 degrees F and 60% RH for 24 hours. At that time the pillow was placed back inside the original packaging for 30 min before sampling. The data showed a 50% reduction in TEDA, additional testing for up to 10 days showed no additional decrease. Compression of the pillow also showed no change. However, when retested at greater than 70 degrees F the TEDA concentration increased by a factor of 3, 17% of the original concentration! This result is troubling as it indicates that while the manufacturer's off-gas procedure did reduce the odor, TEDA was not fully removed. Thus, during use as body heat elevates the temperature of the pillow TEDA may be released possibly causing odor and irritation.

About Prism Analytical Technologies, Inc.

Prism Analytical Technologies, Inc. is a leading consultative air testing laboratory in the United States that is devoted to the chemical identification and analysis of contaminants in the air. We are a recognized leader in the development and deployment of ambient air testing methodologies for Fortune 100 and 500 companies, industrial hygienists, and environmental consultants. Prism's science-based technologies and wide range of air testing support help clients solve indoor air quality, process control, industrial, and environmental challenges.