

## MOISTURE

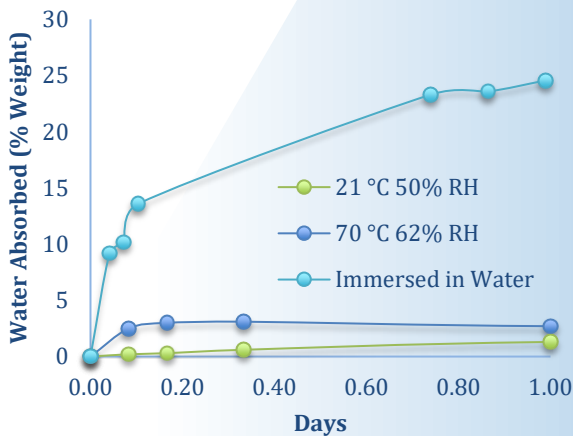
ZOTEK N is the brand name for a range of low density foams based on cross-linked polyamide (nylon). They have a closed cell structure, excellent thermal and chemical resistance, and can be thermoformed into simple and complex parts.

This document explains the effects of moisture content on ZOTEK N.

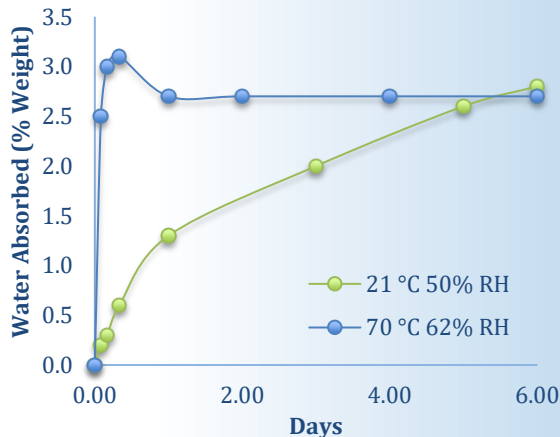
### NYLON AND MOISTURE

ZOTEK N being of a base polyamide (nylon) polymer is hygroscopic in nature meaning it will both absorb and desorb moisture. The environment in which the material is stored has a great effect on the amount of moisture diffusion.

The following graph shows the percentage of water absorbed when exposed to three different conditions: standard conditions at 21 °C 50% RH; Hot conditions at 70 °C 62% RH; and full water immersion for just one day.

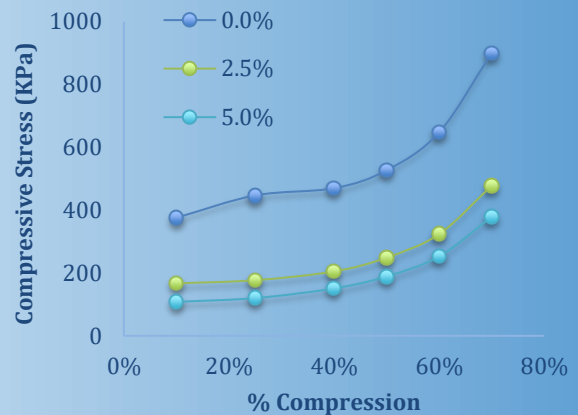


The graph below demonstrates that temperature and humidity affect the rate of moisture absorption.

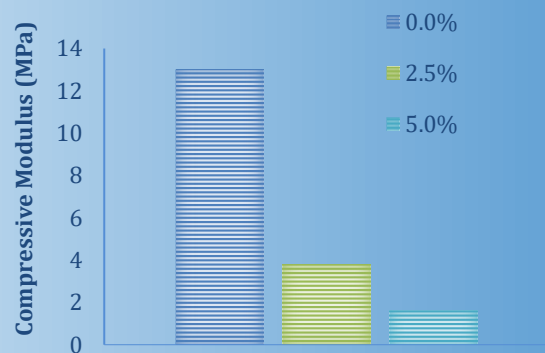


### MECHANICAL PROPERTIES

The *compressive stress* of polyamide foam is affected by moisture. The following graphs indicate that the *compressive strength* and *modulus* of ZOTEK NB 50 decreases with increased moisture content.

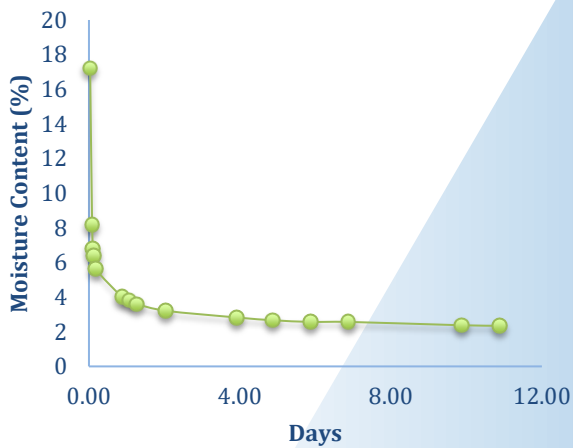


At 0% moisture absorbed, the foam becomes stiff and prone to brittleness. Increasing the moisture decreases the glass transition temperature making the material more ductile.



## WHAT TO DO IF NYLON ABSORBS MOISTURE

If ZOTEK N sheets are exposed to high levels of moisture, they can be reconditioned at 23 °C 50% RH over time.



## RECOMMENDED SHIPPING & STORAGE CONDITIONS

ZOTEK N should be stored inside at ambient conditions; ideally 23 °C and 50% relative humidity where possible and care should be taken to avoid exposure to moisture or heat.

ZOTEK N sheets are manufactured and prepared for despatch by Zotefoams PLC fully wrapped on a pallet in a typical pre-conditioned state.

## FABRICATION GUIDELINES

It is recommended to split ZOTEK N sheets with a water content of 2-4% down to 15 °C

It is not recommended to subject ZOTEK N to water jet cutting for parts requiring tight dimensional tolerances