



## Contact angle measurements



The contact angle measurement is a direct measure of the water behavior on the materials surface. Indeed, when the surface is water-repellent, water drops assume a spherical shape (and high values of contact angle) to minimize the contact with the surface. Founding in the contact angle, the materials can be classified into: hydrophilic (angle less than 30 °), intermediate (angle between 30 ° and 90 °), hydrophobic (angle between 90 ° and 140 °), superhydrophobic (up to 140 °)<sup>1</sup>. We have performed contact angle measurements on samples of different types of DryFlex<sup>®</sup> polyurethane provided by Pelma, before and after aging in an oven at 125 ° C. The time 0 (t = 0) refers to not heated samples, and then the contact angles were remeasured after 3 and 6 days of heat treatment.

The instrument used was the Kruss G10 Contact Angle Drop Shape Analysis System. It operated at a temperature of 20 ° C with a relative humidity of 55%. The measurements were performed according to the UNI EN 15802: 2004. The drops (approx. 0.05 ml of distilled water) were deposited with the aid of a graduated pipette. The obtained results are the following:

Sample	Contact angle at t=0 with water	Contact angle at t=3 days with water	Contact angle at t=6 days with water
DryFlex <sup>®</sup> 1	141	137	135
DryFlex <sup>®</sup> 2	145	145	145
DryFlex <sup>®</sup> 3	141	140	140

From the obtained measurements we can conclude that the samples of DryFlex<sup>®</sup> polyurethane can be considered superhydrophobic and that their behavior towards water remains almost constant even after accelerated aging.

<sup>1</sup> A. Ressine, Aarhus University, Denmark, iNANO Project.

Bologna, april 9 2015

Dott. Massimiliano Lanzi