

# Quadrafunctional Hydrophilic Silicone Impression Materials

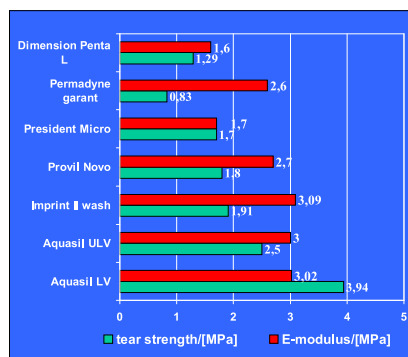
**Dr. J. Fiedler, DENTSPLY DeTrey (Konstanz, Germany)**

## Tear Strength

The use of quadrafunctional modified resins in combination with conventional vinyl silicones and SiH-crosslinkers leads to an extended network density in the resulting elastomeric Polymer. The resulting Aquasil™ products show improved mechanical properties characterised by an exceptionally high tear strength in combination with a moderate E-modulus.

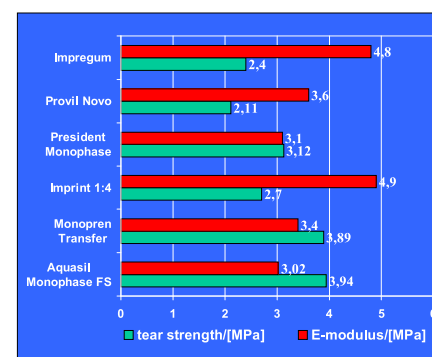
In clinical use: Prevention of tear-off in the case of undercuts in combination with easy removal.

Light Body Materials



strength/[MPa]

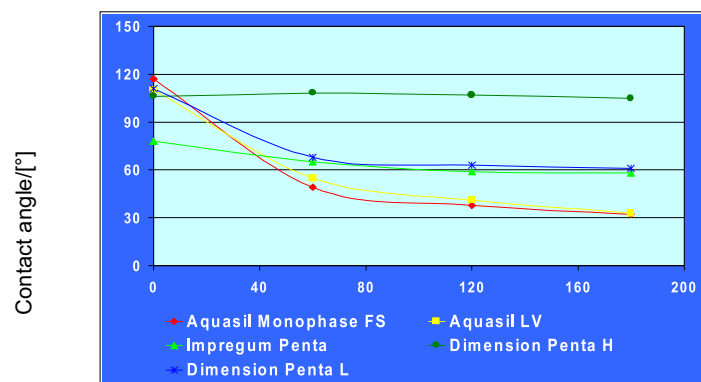
Monophase Materials



strength/[MPa]

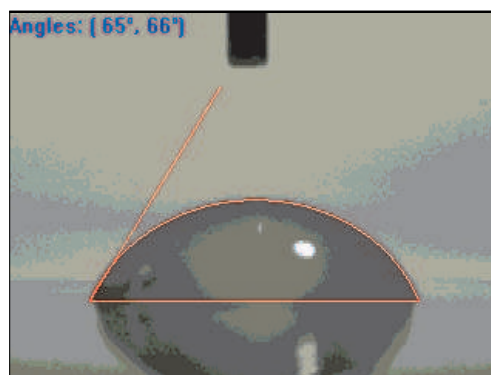
## Hydrophilicity

The use of a proprietary surfactant leads to an extraordinary good hydrophilicity, which guaranties wetting properties during the working time comparable to polyether materials.

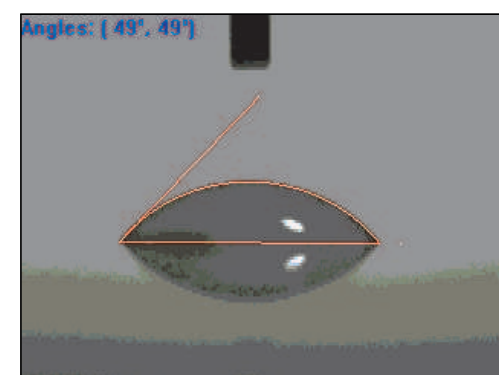


time/[s]

Contact angle to water after 60 sec



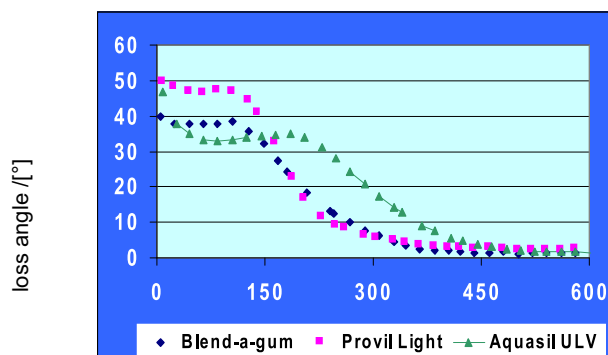
Impregum Penta



Aquasil™ Monophase FS

## Rheology during Setting

Especially the Light Body Aquasil™ ULV and the Monophase Material Aquasil™ Monophase FS show an optimized thixotropic behaviour. Both materials are able to flow into the details of the preparation immediately after application, but as a result of the rebuilt of a rheological structure even the Light Body does not drop from the surface of the teeth.



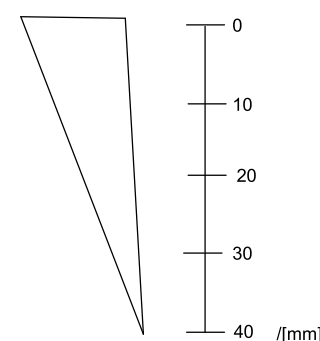
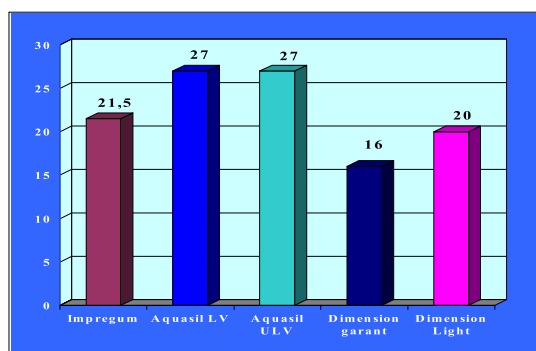
In cases where the loss angle is below 45°, the material behaves as a solid and consequently is not able to flow into the details with the influence of external stress.

In cases where the loss angle is higher than 45°, the material behaves as a liquid that flows into the details but also has a tendency to drop.

Aquasil™ ULV has an optimised flow behaviour with a high loss angle immediately after release and a very short relaxation time for the rebuilt of the rheological substructure.

## Flow Characteristics/Shark Fin Test

The so-called shark fin test shows that the Light Bodies of the Aquasil™ brand have excellent flow characteristics. Due to its low viscosity Aquasil™ LV/ULV flows deeper into the fin as the tested competitive products.

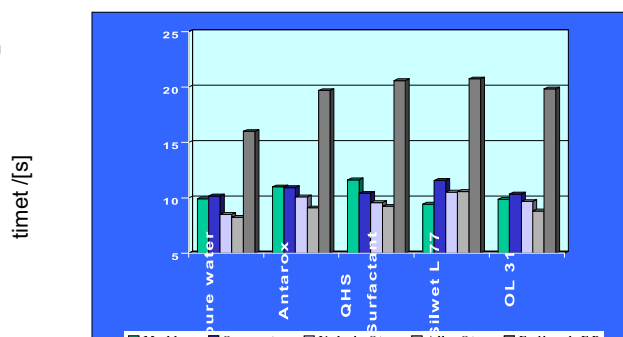


## Compatibility to Gypsum

The proprietary surfactant has no retarding influence on the setting reaction of gypsum when a dental impression made of QHS-materials is poured with gypsum.

In comparison to pure water the proprietary QHS-surfactant shows only a very slight reduction of the compressive strength of the gypsum.

Setting reaction of gypsum



Compressive strength of gypsum

