

Dielectric properties of polymers at microwaves

Polymers are typically insulators and in the frequency range called "microwaves" (between 300 MHz and 300 GHz), they behave as lossy dielectric materials, with a permittivity or dielectric constant (**Dk**) ranging between 2 and 4 and a dielectric loss or tandelta (**Df**) ranging from 0.00001 to 0.1 (see [here a selection of experimental data](#)).

The dielectric data in this frequency range are strongly affected by [water](#): in particular, Df data can vary of more than one order of magnitude as a function of humidity conditions and water uptake.

The measurement of the dielectric properties at microwaves can be performed by [several non-contact methods](#), with a variety of [commercial](#) or home-made fixtures. Specific methods allow to determine the dependence of the values on the water content. [Here a summary of the equipment available in Solvay Materials](#)

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