



## ISOPLETH RANGES OF HISTORIC MATERIALS

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### ABSTRACT:

The objective of the work presented was to test the historical materials regarding mould vulnerability. For durability and hygiene reasons it is vital to know the hygrothermal limits of historical materials at which they might be prone to mould growth in order to prevent critical situations. An excellent possibility to compare the resistance of different construction materials against mould infestation offers the assessment of material specific isopleth ranges. Furthermore the data gained enables to calculate the potential susceptibility of the materials tested during changing conditions. In order to improve a software module for mould growth regarding culturale heritage materials isopleth ranges of 10 different materials were measured.

The microbiological investigations in order to determine resistances of the choosen historic materials against mould growth were performed under defined conditions (temperature, relative humidity) using a special test facility developed at the Fraunhofer-Institute for Building Physics. [1]. The results were integrated in isopleth models according to [2].

The results of the measurements confirmed different susceptibilities against mould growth of the materials tested and a preliminary lowest isopleth for artwork was generated (LIM<sub>Artwork</sub>). The results can now be implemented as a risk assessment software module for mould growth regarding cultural heritage materials (WUFI Bio-upgrade). Results show a general tendency of historic and art materials to be prone to mould attack already at lower temperatures.

### References

- [1] Hofbauer Wolfgang, Breuer Klaus, Tschakner Angelika, Krus Martin, Sedlbauer Klaus and Schoch Torsten: (2005) Vergleichende Untersuchungen zum Schimmelpilzwachstum auf verschiedenen Baustoffoberflächen – materialspezifische Wachstumsisoplethen. *IBP-Mitteilung*, **32**, 2005.
- [2] Sedlbauer, Klaus: Prediction of mould fungus formation on the surface of and inside building components. Dissertation Universität Stuttgart, 2001