Extending the Lead-Lithium Eutectic (Pb16Li) Material Database for the Design of FNT Systems

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Fully validated material databases are needed for coherent technological developments in any R&D field. For Nuclear Fusion Technology, with a near-term perspective of qualification and licensing of nuclear components and systems, this goal is both compulsory and urgent. This mandatory requirement applies for the particular case of the Pb-Li eutectic database as Fusion Reactor Material. Pb16Li is today a reference material breeder in diverse FNT programmes worldwide. Technical consensus on most part of the material database inputs seems a major technological objective.

In this work Pb16Li material database inputs for FNT has been systematically reviewed. Common (historic) database inputs (bulk, thermal, physical-chemistry properties, and isotopes transport) are discussed and extended to input MHD properties, values for non-dimensional parameters and pipe/channel correlations in by-phase dispersion models. Ongoing efforts to develop the Pb16Li Material Database as a Computing Expert System are reported.

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