

Updated Curve Fit Equation Tool Eases Magnetics Design

[Magnetics](#) has updated their Curve Fit Equation tool to include the new EQ and LP shape powder cores, the new Kool M μ Hf and Edge powder core materials, and multiple new permeabilities. Equations have been updated to reflect performance improvements across multiple product lines. The tool is an Excel file for design engineers working on calculations from the formulas in the 2020 Magnetics Powder Core catalog.

Using this tool, magnetic component engineers can compare core performance including permeability vs. dc bias, core loss density, normal magnetization, permeability vs. frequency, and permeability vs. temperature (see the figure). Magnetics provides five comparison tables in this file for various core shapes based on eight different powder core materials: MPP, High Flux, Kool Mu, XFlux, Kool M μ MAX, Kool M μ Hf, Edge, and the 75 series.

To download the Excel file, see the Magnetics web [page](#).

The image shows a screenshot of an Excel spreadsheet titled 'MAGNETICS' with three main sections:

- 1. Permeability vs DC Bias:** Contains a formula $\mu_{eff} = \frac{1}{a + bH^2}$ and a table with columns for Material, Permeability, a, b, c, Roll-off (%), and Roll-off (µ). Rows include MPP, High Flux, Edge, Kool M μ Hf, Kool M μ , XFlux, 75-Series, Kool M μ MAX, and Kool M μ E-core, U-core, Block.
- 2. Core Loss Density:** Contains a formula $P_L = aB^b f^c$ and a table with columns for Material, Permeability, a, b, c, and Core Loss (mW/cc). Rows include MPP, High Flux, Edge, Kool M μ Hf, Kool M μ , XFlux, 75-Series, Kool M μ MAX, and Kool M μ E-core, U-core, Block.
- 3. Normal Magnetization:** Contains a formula $B = \frac{a + bH + cH^2}{1 + dH + eH^2}$ and a table with columns for Material, Permeability, a, b, c, d, e, and B (Tesla). Rows include MPP, High Flux, Edge, Kool M μ Hf, Kool M μ , XFlux, 75-Series, Kool M μ MAX, and Kool M μ E-core, U-core, Block.

Figure. Equations in Magnetics' Curve Fit Equation tool been updated to reflect performance improvements across multiple product lines including the new EQ and LP shape powder cores, the new Kool M μ Hf and Edge powder core materials, and multiple new permeabilities.