Etching Bend Allowances & K Factor for Fusion 360

Fusion 360 automatically tries to calculate bend allowance based on a given K Factor. For etching, we generally know our bend allowance (usually 1.5x material thickness), so we need to work backwards to find our K factor. We need to know the equivalent K factor for a full thickness bend with our stated Bend Allowance, so that Fusion will create the correct flat pattern as a result. It will not ad the half etch in automatically, but if you wish to model it, it can be extruded after unfolding.

Where: $BA = \frac{2\pi R_N}{4}$ $R_N = \frac{2\mathrm{BA}}{\pi}$ $t = R - R_N$ $K = \frac{t}{T}$

BA = Bend Allowance
R_N = Neutral Axis Radius
R = Bend Inside Radius
T = Sheet Thickness
t = Deflection of Neutral Axis (from inside)
K = K factor

Fusion360 limits minimum value of R to 0.01mm

Etch Sheet Thickness (mm)	Bend Allowance Factor	Bend Allowance BA (mm)	Neutral Radius R_N (mm)	Axis Deflection t (mm)	K factor
0.1	1.5	0.15	0.0954929659	0.0854929659	0.8549296586
0.15	1.5	0.225	0.1432394488	0.1332394488	0.8882629919
0.2	1.5	0.3	0.1909859317	0.1809859317	0.9049296586
0.25	1.5	0.375	0.2387324146	0.2287324146	0.9149296586
0.3	1.5	0.45	0.2864788976	0.2764788976	0.9215963252
0.375	1.5	0.5625	0.358098622	0.348098622	0.9282629919
0.4	1.5	0.6	0.3819718634	0.3719718634	0.9299296586
0.45	1.5	0.675	0.4297183463	0.4197183463	0.9327074363
0.5	1.5	0.75	0.4774648293	0.4674648293	0.9349296586
0.55	1.5	0.825	0.5252113122	0.5152113122	0.9367478404
0.6	1.5	0.9	0.5729577951	0.5629577951	0.9382629919
0.7	1.5	1.05	0.668450761	0.658450761	0.9406439443
0.75	1.5	1.125	0.7161972439	0.7061972439	0.9415963252
0.8	1.5	1.2	0.7639437268	0.7539437268	0.9424296586
0.9	1.5	1.35	0.8594366927	0.8494366927	0.9438185474
1	1.5	1.5	0.9549296586	0.9449296586	0.9449296586
1.5	1.5	2.25	1.4323944878	1.4223944878	0.9482629919
2	1.5	3	1.9098593171	1.8998593171	0.9499296586