



Core Magnetic Specifications

| Material Specifications for C-Cores & Uncased Toroids | | | | | | | | |
|---|----------------------|--------------------|--------------|----------|-------|--------|-----------|--------------------------------------|
| Material Description | Material Type Letter | Thickness (Inches) | Space Factor | Watts/lb | VA/lb | B (kG) | Freq (Hz) | Gap VA per inch ² @ .001" |
| 3% Silicon Steel Silectron ^{®1} | A | .001" | .83 | 12.0 | 20.3 | 12.5 | 400 | 16.3 |
| | A&B | .002" | .89 | 10.0 | 15.0 | 15.0 | 400 | 29.2 |
| | A | .004" | .90 | 10.0 | 13.1 | 15.0 | 400 | 29.9 |
| | B&C | .004" | .90 | 15.0 | 39.5 | 17.6 | 400 | 41.1 |
| | B | .007" | .92 | 15.0 | 39.5 | 17.6 | 400 | 43.0 |
| | A | .009" | .95 | 0.89 | 1.7 | 15.0 | 60 | 5.0 |
| | B&C | .009" | .95 | 0.89 | 1.5 | 17.6 | 60 | 6.9 |
| | T | .011" | .95 | 0.89 | 1.7 | 15.0 | 60 | 5.0 |
| | B&C | .011" | .95 | 0.89 | 1.5 | 17.6 | 60 | 6.9 |
| | A | .012" | .95 | 0.89 | 1.7 | 15.0 | 60 | 5.0 |
| 80% Nickel-Iron Supermalloy ^{®2} | D | .0005" | .65 | 12.0 | 18.0 | 5.0 | 10,000 | 57.7 |
| | D | .001" | .83 | 14.0 | 21.0 | 5.0 | 10,000 | 70.6 |
| | D | .002" | .89 | 20.0 | 30.0 | 5.0 | 10,000 | 81.2 |
| | D | .004" | .90 | 15.0 | 22.0 | 5.0 | 5000 | 41.5 |
| 50% Nickel-Iron Deltamax ^{®3} | G | .0005" | .65 | 30.0 | 40.0 | 10.0 | 5000 | 115.3 |
| | G | .001" | .83 | 37.0 | 47.0 | 10.0 | 5000 | 141.2 |
| | G | .002" | .89 | 55.0 | 70.0 | 10.0 | 5000 | 162.4 |
| | G | .004" | .90 | 3.5 | 6.0 | 10.0 | 400 | 13.0 |
| 50% Cobalt-Iron Supermendur ^{®4} | J | .002" | .89 | 20.0 | 72.0 | 20.0 | 400 | 52.0 |
| | J | .004" | .90 | 19.0 | 66.0 | 21.0 | 400 | 58.6 |
| Metglas ^{®5} 2605SA1 | L | .001" | .83 | 20.0 | N/A | 2.0 | 20,000 | 18.5 |
| Nanocrystalline Finemet Finemet ^{®6} FT3 | M | .0007" | .83 | 5.5 | N/A | 2.0 | 20,000 | 18.5 |

B (kG) is flux density in kilogauss. Watts/lb & VA/lb are power loss and excitation VA when measured at the indicated flux (B) and frequency (Hz) under sine wave excitation. Gap VA for a 0.001" total air gap was calculated using the following formula: Gap VA = $4.1 \times 10^{-4} \times B^2 \times \text{frequency (Hz)} \times \text{SF}^2 \times A_g$. Cores under 25lbs use 0.001" air gap and those in excess of 25lbs use 0.002" air gap. Total core watts = material watts/lb \times core wgt in lbs. Total core excitation VA = material VA/lb \times core wgt in lbs + gap VA. Note: Odd or small core geometry may impact performance.

Material Specifications for E-Cores

| | | | | | | | | |
|--|-----|-------|-----|------|-------|------|-----|-------|
| 3% Silicon Steel Silectron ^{®1} | A | .004" | .90 | 12.0 | 22.7 | 15.0 | 400 | 51.8 |
| | B&C | .004" | .90 | 18.0 | 68.4 | 17.6 | 400 | 71.0 |
| | B | .007" | .92 | 18.0 | 68.4 | 17.6 | 400 | 74.0 |
| | B&C | .009" | .95 | 1.1 | 4.0 | 17.6 | 60 | 11.9 |
| | A | .012" | .95 | 1.1 | 2.9 | 15.0 | 60 | 8.7 |
| | T | .011" | .95 | 1.1 | 2.9 | 15.0 | 60 | 8.7 |
| | B&C | .011" | .95 | 1.1 | 4.0 | 17.6 | 60 | 11.9 |
| 50% Cobalt-Iron Supermendur ^{®4} | J | .004" | .90 | 22.0 | 120.0 | 21.0 | 400 | 101.0 |

Total 3-phase core excitation VA = material VA/lb \times core wgt in lbs + gap VA. VA for a total air gap of 0.0015" was calculated with the following formula: Gap VA = $6.15 \times 10^{-4} \times B^2 \times \text{frequency (Hz)} \times \text{SF}^2 \times A_g$. E-cores under 25 lbs use 0.0015" total air gap, E-cores over 25lbs use total air gap of 0.003". Total 3-phase core excitation VA = material VA/lb \times core wgt in lbs + gap VA. Note: Odd or small core geometry may impact performance.

1. Silectron[®] is a registered trademark of Allegheny Ludlum Steel Corp. 2. Supermalloy[®] is the discontinued product name of Western Electric Co. 3. Deltamax[®] is the discontinued product name of Allegheny Ludlum Steel Corp. 4. Supermendur[®] is the discontinued product name of Carpenter Technology. 5. Metglas[®] is a registered trademark of Honeywell Metglas Solutions. 6. Finemet[®] is a registered trademark of Hitachi Metals Corp.

➤ MK Magnetics will gladly test cores to your specific needs