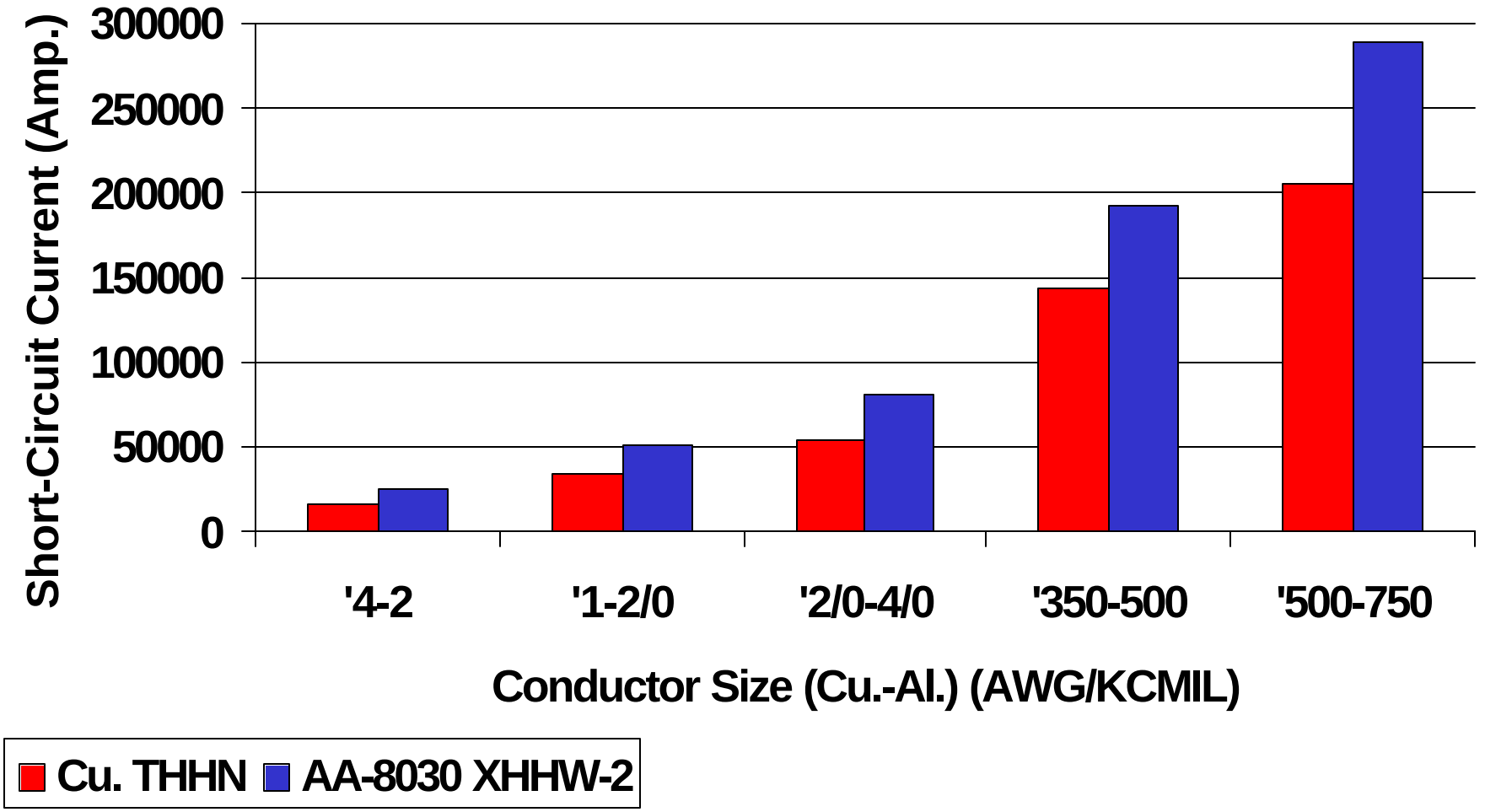
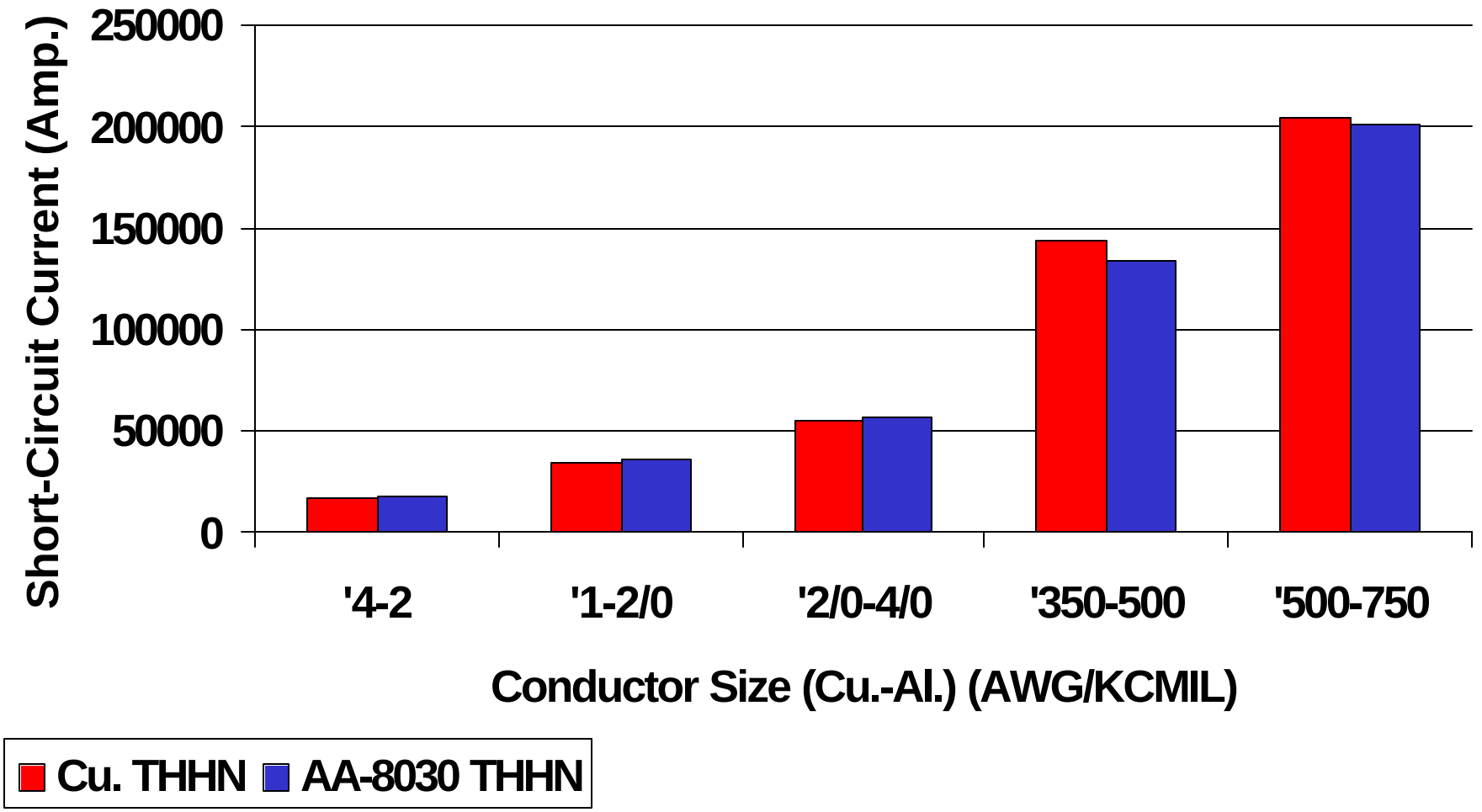
A Comparison of Short Circuit Ratings

Copper THHN versus STABILOY® (AA-8030) XHHW-2

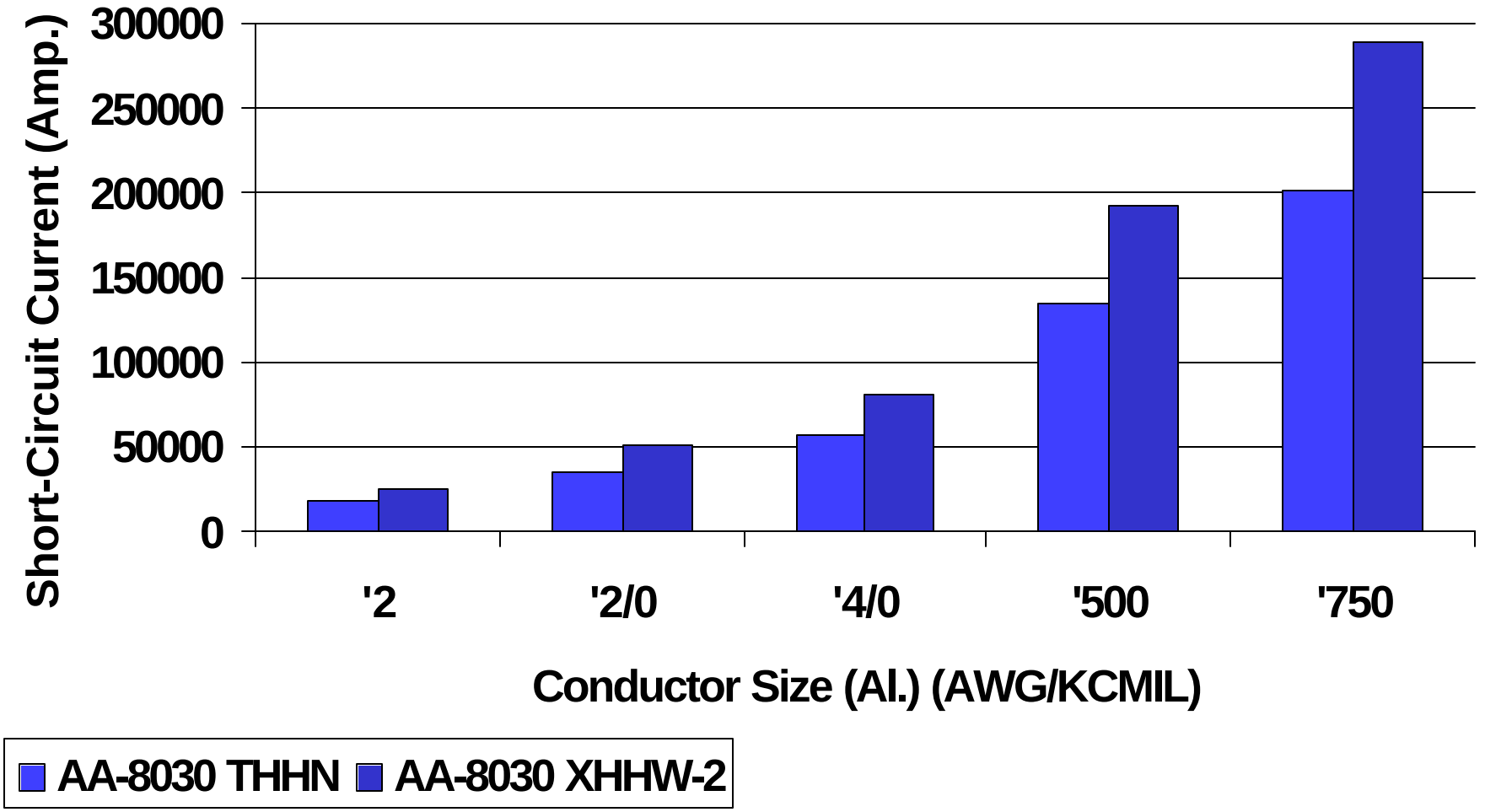
Maximum Short-Circuit Withstand Capability of Copper THHN and Electrically Equivalent AA-8030 XHHW-2 Conductors for 1 Cycle



Maximum Short-Circuit Withstand Capability of Copper THHN and Electrically Equivalent AA-8030 THHN Conductors for 1 Cycle



Maximum Short-Circuit Withstand Capability of AA-8030 THHN and AA-8030 XHHW-2 Conductors for 1 Cycle



Short Circuit Rating

For Aluminum Conductors

> I = A * SQ.RT.(0.0125*(60/n)*Log((T2+228)/(T1+228)))

- Where:
- I = Short Circuit Current - Amperes
- A = Conductor Area - Circular Mils
- n = No. of cycles (1 in above tables)
- T1 = Max. Operating Temperature - 75 Deg. C
- T2 = Max. Short Circuit Temperature
  - - 250 Deg. C (For Cross-Link (XLPE) Materials)
  - - 150 Deg. C (For Thermoplastic Materials)

Short Circuit Rating

For Copper Conductors

> I = A * SQ.RT.(0.0297*(60/n)*Log((T2+234)/(T1+234)))

- Where:
- I = Short Circuit Current - Amperes
- A = Conductor Area - Circular Mils
- n = No. of cycles (1 in above tables)
- T1 = Max. Operating Temperature - 75 Deg. C
- T2 = Max. Short Circuit Temperature
  - - 250 Deg. C (For Cross-Link (XLPE) Materials)
  - - 150 Deg. C (For Thermoplastic Materials)

Conclusions

> Cross-Linked (or Thermoset) Insulations Provide Higher Short-Circuit Ratings Than Thermoplastic Insulation

> For Given Insulation, Copper and Electrically Equivalent Sizes of Aluminum Alloy Conductors Provide Comparable Short-Circuit Ratings

> Electrically Equivalent Sizes of Aluminum Alloy Conductors With Cross-Link Insulation (Ex: AA-8030 XHHW-2) Provide Higher Short-Circuit Ratings Than Copper Conductors with Thermoplastic Insulation (Ex. Cu. THHN)