



Tinned Coated Copper Conductors

Why is it still in Specifications?

In the early days of synthetic rubber electrical insulations, sulfur was the catalyst used to vulcanize synthetic rubber. The presence of sulfur in the insulation caused bare copper conductors in contact with the insulation to react with the sulfur and form copper sulfide during the curing process. This affects the surface of the copper conductor causing it to turn black and affects its conductivity and physical properties. For this reason, the electric cable industry specified lead or tin coated copper conductors to help prevent this undesirable reaction.

By the late 1960's, Okonite had successfully reformulated and qualified electrical insulations that used an organic peroxide catalyst as a replacement for sulfur containing catalysts. This change eliminated the copper sulfide reaction and allowed copper conductors to maintain their original properties and color. Today nearly all synthetic rubber insulations are cured using organic peroxides in the wire and cable industry.

Many customer specifications still have a tinned coated reference in their specifications. While Okonite can still provide this, we often question the reasons for the requirement. Some considerations for copper tinning follows.

- The actual tinning process can be a safety / environmental issue on the factory floor because of the open pot application process. The operators must don PPE equipment whenever they are working on the tin line.
- The total cost of the cable increases because of the extra steps and costs associated with the tinning process are incorporated in the cost of the cable production.
- Manufacturing lead times are longer. Some specialty conductors have to be ordered from outside vendors.

For a majority of user applications, there is no longer a need to require that the copper conductors be tin coated. The spec's still have the requirement mainly due to the fact that this is how they have always ordered their cables. By reviewing their actual cable applications, the cable users can possibly reduce their overall cable costs, reduce cable lead times and be more environmentally conscious.

Please contact your local Okonite Sales Office if you have any questions or need further information.