

The Integrated New Products Family “KANZACC-Series” of Kyowa Electric Wire Co., Ltd. “KANZACC anga” Sulfurization Resistant Silver Plating Film

This is the new type of sulfurization resistant silver plating film which maintains sulfurization protection function even with high temperature treatment. The film prevents the degradation of performance due to sulfurization, such as the increase in contact resistance and the reduction in

reflectance due to sulfide discoloration.
Use application: Switches, LED lead flames etc.
Feature: ①High sulfurization resistant function
②Maintaining sulfurization resistant function after heat history ③Low contact resistance and high reflectance

Heat treatment	Normal temperature	100°C 1 hr.	150°C 1 hr.	200°C 1 hr.
Sulfurization test	Ammonium sulfide (0.3% sulfur content) dipping for 5 min.			
anga				
Organic film painting				

Figure 1 Sulfide discoloring comparisons after heat treatment.

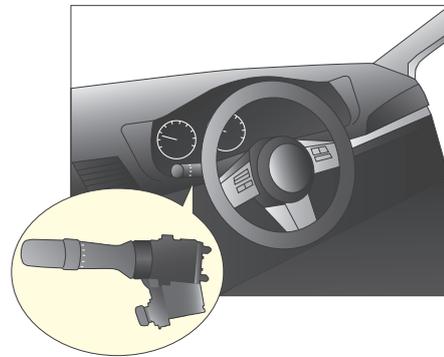


Figure 2 Usage example of wiper switch.

High Hardness and Abrasion Resistant Silver Plating Film “KANZACC anga-U”

This is the new silver plating film with a higher hardness and a higher resistance to abrasion compared to commonly used silver plating film. In addition, this film is difficult to sulfurize and most sulfide discoloration does not occur. Therefore, this film perfectly suits the film for connectors and switches with repeated insertions for long period of time.

Use application: Charger connector for the electric vehicle, Switches etc.
Feature: ①Silver plating film with high hardness and high wearing resistance ②Maintaining stable features with high sulfurization preventing function ③Low contact resistance and high reflectance

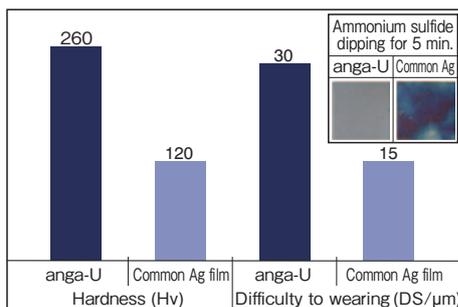


Figure 3 Comparison between anga-U and common silver plating film.

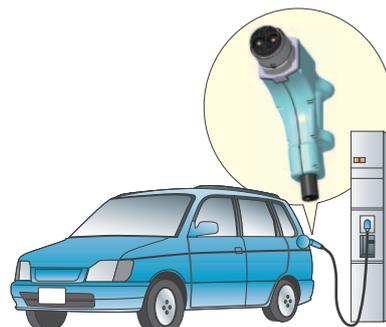


Figure 4 Usage example of the charger connector for the electric vehicle.

Lightweight and High-Performance Tin Coated Aluminum Wire “KANZACC ALC”

This is the lightweight and high-performance wire with tin coating on aluminum wire surface. The easy soldering feature makes possible end face encasing for corrosion prevention.

KANZACC ALC can be implemented in a wide range of application, such as possible soldering of an aluminum wire which saves 30% of weight compared to copper wire

cable and lightweight possible soldering of a magnet wire with insulated coating “ALC-fine”.

Use application: Automotive cables, Robots cables, Magnet wire, Lightweight coils, Litz wires, Wiring materials etc.

Feature: ①Weight reduction ②Soldering possible aluminum wires ③Corrosion reduction

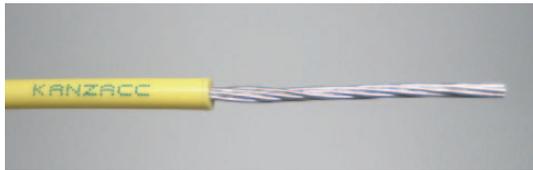


Figure 5 Usage example of the aluminum wire.

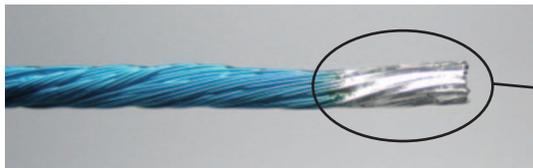
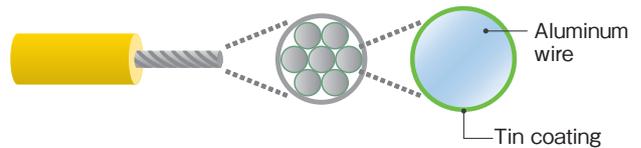
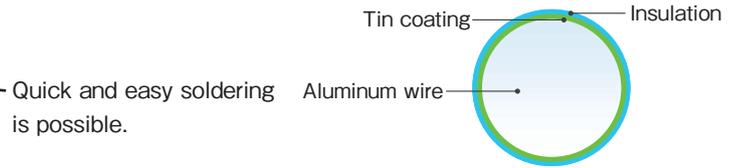


Figure 6 Usage example of ALC-fine litz wire.



“KANZACC COFT” for Electric Cables, Lightweight and High Strength Cables with Metalized Aramid Wire or Metalized Carbon Fiber

These are electric cables using aramid fiber which has less elasticity, lightweight and high strength features. Each aramid fiber is metal coated and exhibits tremendous flexibility. Copper, tin and silver can be selected for fiber coating material depending on the application.

Carbon fiber can be coated with these metals in the same way as aramid fiber.

Usage application: Robots cables, Control cables etc.

Feature: ①Lightweight and high strength cables ②High flexibility cables ③Perfect suits for signal cables

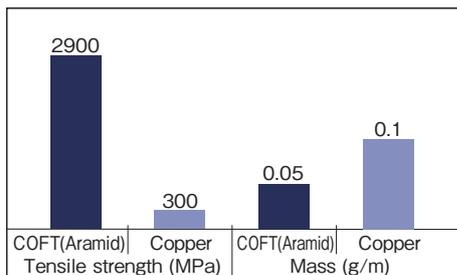


Figure 7 Comparison between COFT (Aramid) and copper cable.



Figure 8 Usage example of COFT/Cable with Ag metalized aramid wire.

Compact Multi-core Conductor for High-Frequency Current “KANZACC enatube”

This cable consists of insulated wire strands and copper tube covering the strands. Hence, the cable forms multi core rectangular cable. A single wire increases the electrical resistance with high frequency current because of the skin effect. The electrical resistance increase can be improved by using multi core cables. Further more, dense structure of this cable reduces 25% of the cross sectional

area in comparison with the same performance litz cable. “KANZACC enatube” provides a compact designing. Usage application: Motors, Transformers, Inverters, Induction heaters etc.

Feature: ①Compact conductor for high frequency current ②Lighten AC resistance increase ③Efficiency increase and energy saving of equipments

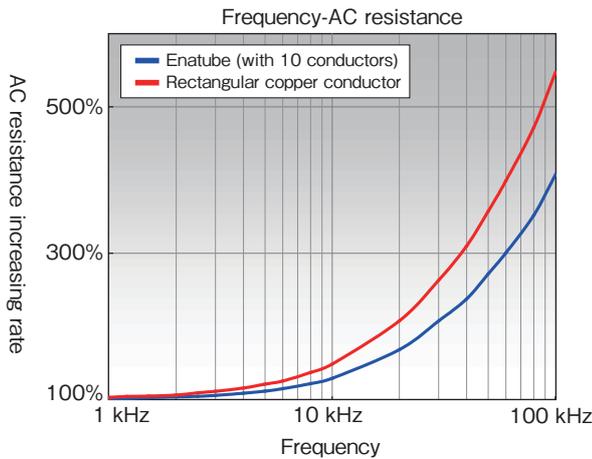


Figure 9 AC resistance increasing rate comparison.

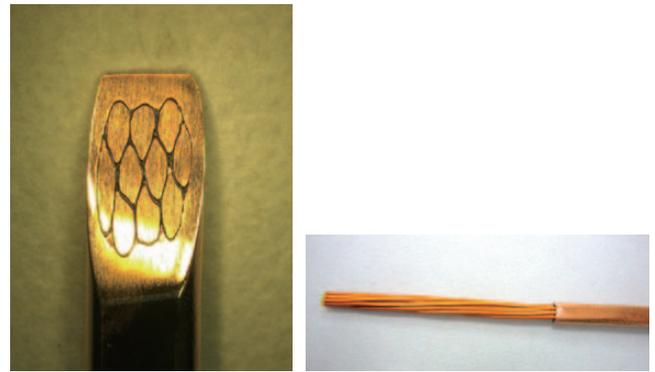


Figure 10 Usage example of enatube (cross section and profile).

High frequency-Current Supply Cable for Noncontact Charging Systems for EVs “KANZACC EMIC-One”

Multiple insulated conductor wires covered with corrugated metallic tube forms this multi core buried cable. This cable supplies a high frequency high current from the power panels of noncontact charging system to the primary coil on the ground. By using multiple conductors, increase in AC resistance is improved and efficiency is increased.

A connector is attached at the cable end and very easily connected. Further more, ground burial is very easy because of the corrugating, so installation work is drastically made easier.

Usage application: Noncontact charging systems etc.

Feature: ①High efficiency cable lightening AC resistance increase ②Easy installation by corrugating and connector

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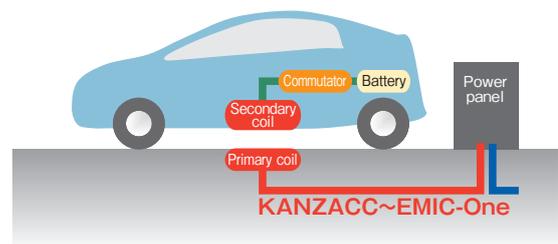


Figure 11 Application image.

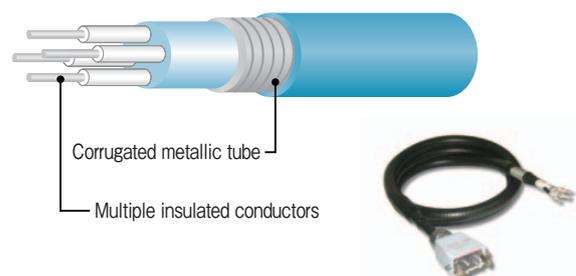


Figure 12 Appearance and construction of EMIC-One.