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: ① High sulfurization resistant function ② Maintaining sulfurization resistant function after heat history ③ Low contact resistance and high reflectance

<table>
<thead>
<tr>
<th>Heat treatment</th>
<th>Normal temperature</th>
<th>100℃ 1 hr.</th>
<th>150℃ 1 hr.</th>
<th>200℃ 1 hr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfurization test</td>
<td>Ammonium sulfide (0.3% sulfur content) dipping for 5 min.</td>
<td></td>
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<td>anga</td>
<td></td>
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<tr>
<td>Organic film painting</td>
<td></td>
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</tr>
</tbody>
</table>

Figure 1 Sulfide discoloring comparisons after heat treatment.

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 suites 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: ① Silver plating film with high hardness and high wearing resistance ② Maintaining stable features with high sulfurization preventing function ③ Low contact resistance and high reflectance

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

“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
**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:

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

![Figure 9 AC resistance increasing rate comparison.](image)

**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:

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

For more information, please contact:

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![Figure 11 Application image.](image)

![Figure 12 Appearance and construction of EMIC-One.](image)