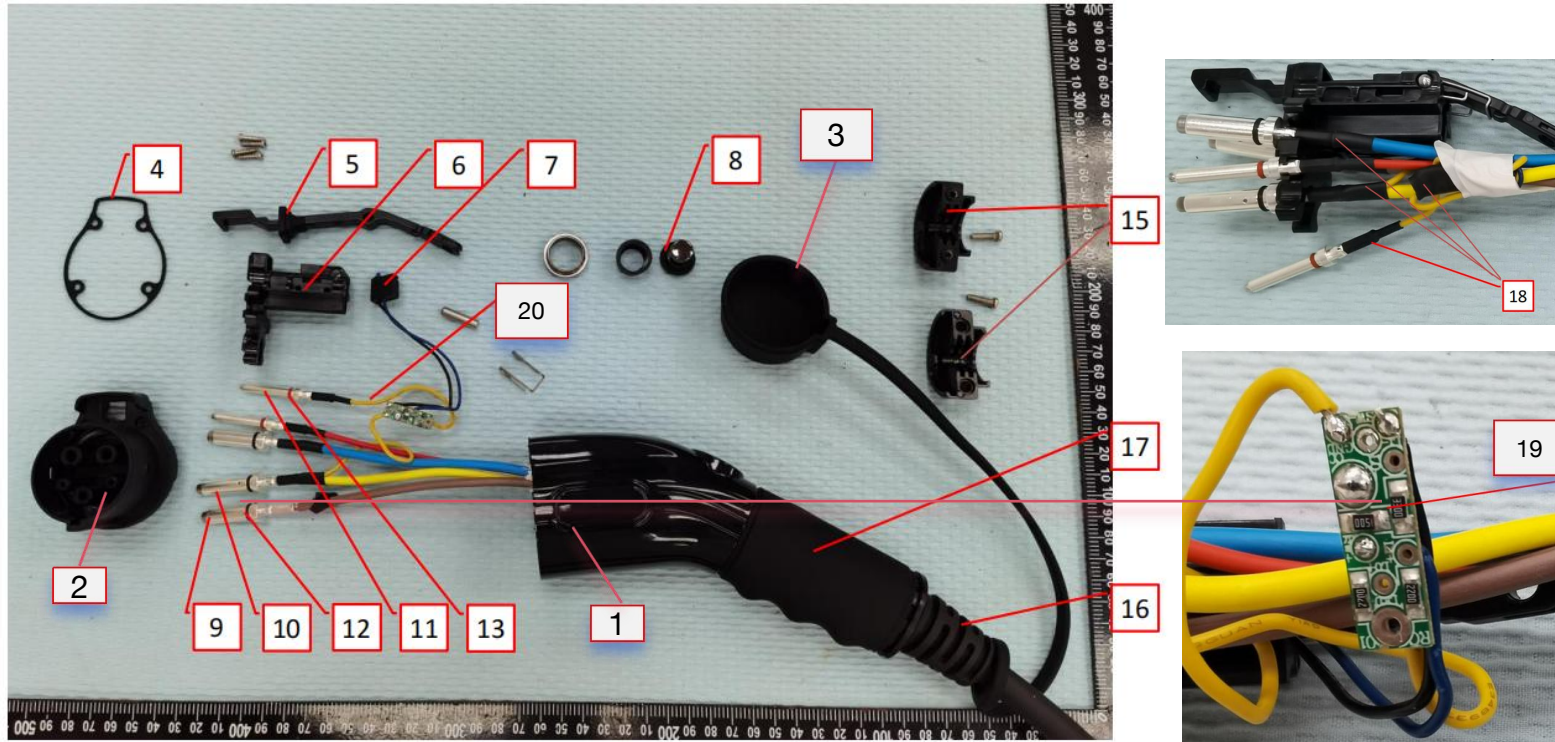


Exploring the Key Components of EV Charging Connectors: Structure, Materials, and Cost Impact

Understanding the materials and components behind our EV connectors is crucial to ensuring safe and efficient charging solutions. This document breaks down each component to give you insight into the technical details that affect performance, reliability, and durability.

By sharing this information, we aim to help you better understand the product's construction and how thoughtful material choices—like dual-layer plating—contribute to both performance and cost-effectiveness.



No	Name	No	Name	No	Name	No	Name
1	Housing	6	Contact holder	11	Grounding Contact(Pin)	16	Cable anchorage
2	Engagement face	7	Switch	12	O-ring for Power	17	Hand grip
3	Cover	8	Seal for Switch	13	O-ring for Pilot Contact	18	Heat Shrinkable Tube
4	Gasket	9	Power Contact (Pin)	14	Seal for EV Cable (not shown)	19	PCB(optional)
5	Latch Module	10	Pilot Contact (Pin)	15	Cable Clip	20	Internal Cable

Table: EV Connector Components – Materials, Functions, and Cost Impact . 1/5

NO	Name	Normal Material	Function description	Selection Reason & Cost Impact
1	Housing	PC+Siloxane	Provides structural support and protection, enhancing flame resistance.	High flame resistance and impact strength: PC+Siloxane ensures safety for indoor and outdoor use, with increased durability but higher material costs.
2	Engagement face	PC+Siloxane / PA66-GF 25 or 30 / PBT-GF15	Ensures a precise connection with the charging port, minimizing electrical loss.	Durable with high precision: PA66 and PBT offer dimensional stability for long-term performance, though glass fiber reinforcement increases cost.
3	Cover	Silicone Rubber	Protects against dust and moisture, extending the product' s lifespan.	Excellent weather resistance: Silicone rubber performs well in harsh environments, but it is more expensive than standard rubber.
4	Gasket	Silicone Rubber	Provides sealing to prevent the ingress of contaminants.	Sealing and durability: Silicone gaskets ensure superior dust and water resistance but come at a higher cost compared to other materials.

Table: EV Connector Components – Materials, Functions, and Cost Impact . 2/5

NO	Name	Normal Material	Function description	Selection Reason & Cost Impact
5	Latch Module	PC + Siloxane	Provides secure mechanical locking to prevent accidental disconnection.	Impact resistance with precision fit: PC + Siloxane offers high durability and flame resistance, ensuring reliable operation in both indoor and outdoor conditions. Its precise molding ensures secure locking while maintaining lightweight properties, though the improved material increases costs slightly.
6	Contact holder	PC + Siloxane	Holds contacts firmly in place, ensuring secure electrical connections.	Impact resistance and flame retardance: PC-Siloxane offers high mechanical strength and UV stability, suitable for both indoor and outdoor environments, though it increases material costs.
7	Switch	PC + Siloxane + Electronic Components	Controls the charging state with high reliability.	Durability and safety: This combination ensures long-term reliability, with flame-resistant PC enhancing safety but slightly increasing production cost.
8	Seal for Switch	Silicone Rubber	Provides insulation and protection for the switch from environmental exposure.	Weather resistance: Silicone rubber ensures excellent sealing performance, extending the switch's lifespan but with a higher material cost compared to standard alternatives.

Table: EV Connector Components – Materials, Functions, and Cost Impact . 3/5

NO	Name	Normal Material	Function description	Selection Reason & Cost Impact
9	Power Contact (Pin)	Copper alloy (H62) Two provided. Nickel 2µm+Silver plating >3-5 µm min.With a drum spring inside.	Provides efficient power transmission with minimal resistance.	High electrical conductivity and corrosion resistance: Silver plating ensures low contact resistance, ideal for high-current transmission. Nickel underlayer prevents copper diffusion, extending lifespan.
10	Pilot Contact	Copper alloy (H62)+ Nickel 2µm+Silver plating >3-5 µm min.With a drum spring inside.	Sends control signals between the vehicle and charging station.	Precision signal handling with durability: Silver plating ensures reliable low-voltage signal transmission. Nickel protects the copper substrate from oxidation.
11	Grounding Contact(Pin)	Copper alloy (H62)+ Nickel 2µm+Silver plating >3-5 µm min.With a drum spring inside.	Provides a safe ground connection to prevent electrical hazards.	High electrical conductivity and corrosion resistance: Silver plating ensures low contact resistance, ideal for high-current transmission. Nickel underlayer prevents copper diffusion, extending lifespan.
12	O-ring for Power	Silicone Rubber	Seals the power connection to protect against moisture and dust.	Weather-resistant and durable: Silicone rubber ensures excellent sealing performance, maintaining flexibility across a wide temperature range, suitable for outdoor use.

Table: EV Connector Components – Materials, Functions, and Cost Impact .4/5

NO	Name	Normal Material	Function description	Selection Reason & Cost Impact
13	O-ring for Pilot Contact	Silicone Rubber	Ensures a tight seal around the pilot contact, preventing moisture and dust ingress.	Weather resistance and flexibility: Silicone rubber offers excellent sealing properties across extreme temperatures and resists UV exposure, maintaining performance over time. This durability slightly increases material cost.
14	Seal for EV Cable(not shown)	Silicone Rubber	Protects the cable entry point from moisture and contaminants.	Exceptional weather and temperature resistance: Silicone rubber remains flexible across extreme temperatures and resists UV exposure, ensuring reliable sealing performance for outdoor use. This improves product durability but comes with higher material costs
15	Cable Clip	Zinc alloy	Secures cables to prevent movement and ensure neat installation.	High mechanical strength and wear resistance: Zinc alloy offers durability and corrosion resistance, critical for securing cables over time. However, its weight increases overall product weight and shipping costs.
16	Cable anchorage	Silicone Rubber	Anchors the cable to prevent strain at connection points.	Anti-vibration and weather-resistant: Silicone rubber's flexibility helps absorb shocks and vibrations, protecting the cable from wear and tear in challenging environments.

Table: EV Connector Components – Materials, Functions, and Cost Impact .5/5

NO	Name	Normal Material	Function description	Selection Reason & Cost Impact
17	Hand grip	PC+Siloxane	Provides a comfortable and durable grip for the user, molded as one piece with the connector head.	Lightweight and impact-resistant: PC + Siloxane offers a balance of mechanical strength, heat resistance, and low weight. This reduces manufacturing steps by integrating with the connector head, improving production efficiency while controlling costs.
18	Heat Shrinkable Tube	White EVA hot melt adhesive	Insulates and protects internal wiring by shrinking to fit tightly around cables.	Thermal resistance and secure bonding: EVA adhesive ensures strong adhesion under heat. It provides moisture protection but requires precise application to avoid inconsistencies.
19	PCB(optional)	FR-4 + Electronic Components	Controls the charging process by regulating voltage, monitoring safety, and ensuring stable communication between the charger and the vehicle.	Reliable operation with heat resistance: FR-4 provides structural strength and electrical insulation, while electronic components enable precise power management. Although essential for safety, it increases production complexity and cost.
20	Internal Cable	TPE/TPU	Transfers electrical power and signals within the connector safely and reliably.	Flexibility with durability: TPE/TPU cables offer high flexibility, resistance to wear, and excellent electrical insulation, ideal for repeated use in outdoor conditions.

Reliable Quality Meets Custom Flexibility

Choosing the right connector involves more than just materials—it's about ensuring reliability, efficiency, and long-term performance that align with your specific needs.

Our production approach reflects a commitment to quality through technical differentiation, such as dual-layer plating for enhanced conductivity and durability.





We hope this overview has given you insights into how each material and component contributes to the overall reliability of our solutions.

Your success is our goal, and we're here to support you with both technical expertise and customized solutions tailored to your specific needs.



We are committed to open communication and continuous support, working alongside you to ensure your operations run smoothly and efficiently.
Your success is our priority, and we look forward to building a strong, trustworthy partnership with you.