

CABLES FOR A MOVING WORLD

# TRATO EV-RF<sup>®</sup> *HighVision* REFLECTIVE + FLUORESCENT



THE QUEEN'S AWARDS  
FOR ENTERPRISE:  
INNOVATION

April 2022  
TBn09-Rev16



# TRATOS EV RF<sup>®</sup> HighVision

## INTRO

### TRATOS<sup>®</sup> EV RF

#### ELECTRIC VEHICLES REFLECTIVE - FLUORESCENT CABLES BASED ON IEC 62893

Tratos has developed an **innovative solution** for electric vehicle charging cable. Tratos EV-RF – **Reflective + Fluorescent** is a High Visibility cable used to connect electric vehicles to a charging point.

It ensures the highest level of **safety** by removing trip hazards associated with trailing cables.

At nights, the cable is trailing over the pavement or the ground and in the dark people can hardly see a dull black sheathed cable, there is a real risk of people tripping or cars running over the cables and the consequences can be serious.

**Tratos EV-RF** – Reflective + Fluorescent has been specifically designed to **reduce this risk and maintain safety**.

It has a construction based on the **heavy duty** combined power and control cables of **IEC 62893** but with **Tratos patent technology** applied to the compound formulation itself, it will maintain its **high visibility** during the hours of darkness.

#### How it works

Tratos has developed two separate yet complementary solutions:

- **R for Reflective.** The Reflective stripe will reflect even a small source of light, like the car headlights or even the light of your smartphone, using a similar principle to that of High Visibility Jackets.
- **F for Fluorescent.** The Fluorescent compound maintains its emission of fluorescent light for **up to 8 hours**, without the need for any external source of light or power ... just the compound itself. Because the technology is **in the compound formulation** this ensures the **durability** of these properties **without maintenance** throughout the life of the cable

This compound has been **patented by Tratos** and used in several other applications where safety is paramount.

## RF = Reflective + Fluorescent

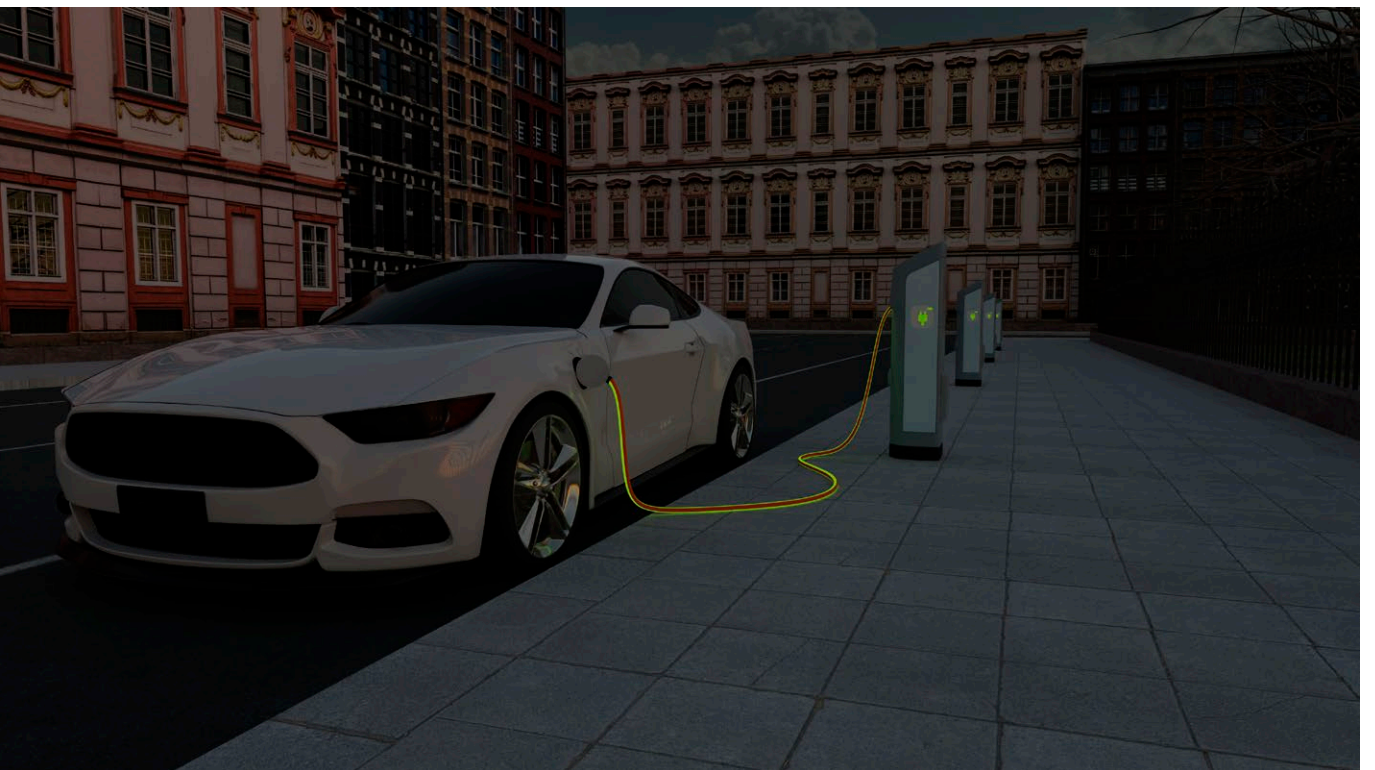
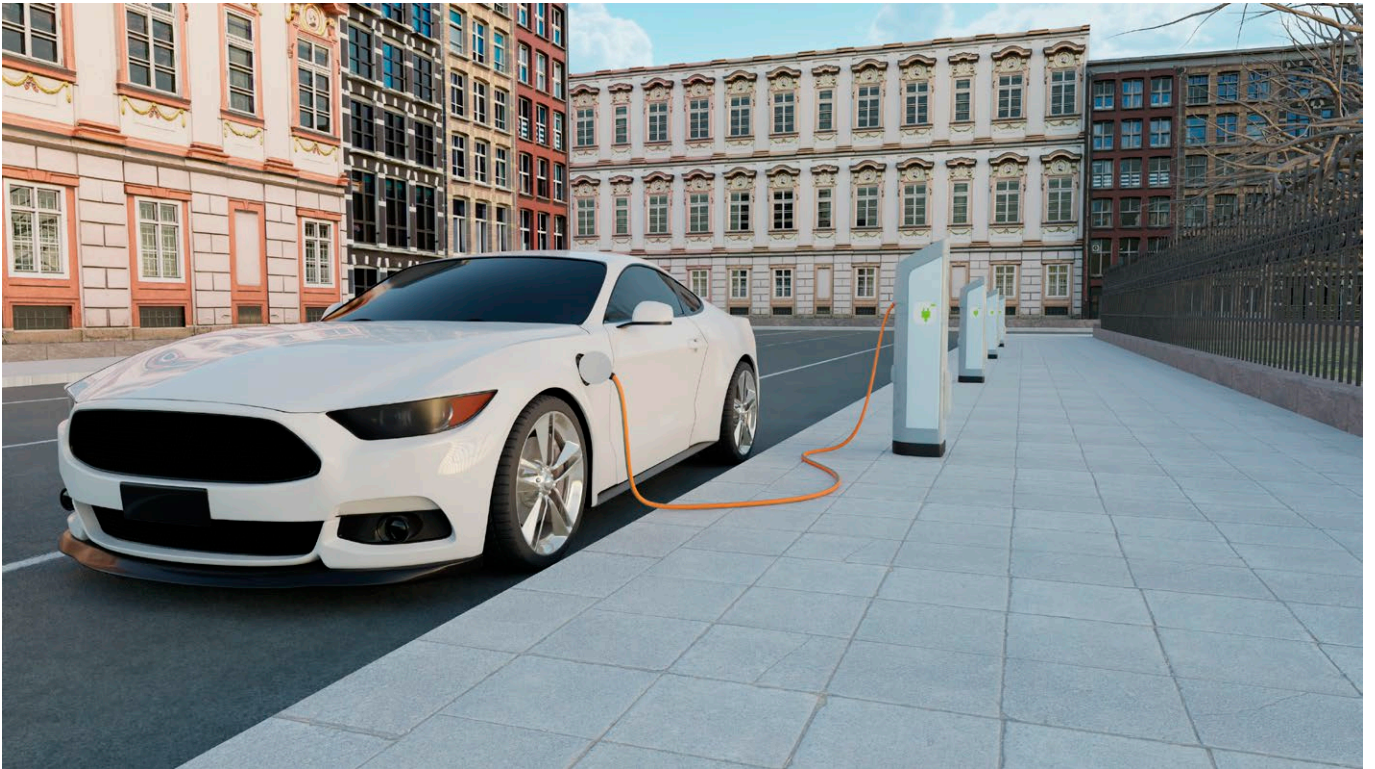
## STANDARDS AND QUALITY SYSTEM

### STANDARDS

#### Cables manufactured based on:

IEC 60228 . . . . .	Conductors of insulated cables
IEC 62893-1 . . . . .	Charging cables for electric vehicles for rated voltages up to and including 0,6/1 kV – Part 1: General requirements
IEC 62893-3 . . . . .	Charging cables for electric vehicles of rated voltages up to and including 0,6/1 kV – Part 3: Cables for AC charging . . . . . according to modes 1, 2 and 3 of IEC 61851-1 of rated voltages up to and including 450/750 V
IEC 61851-1 . . . . .	Electric vehicle conductive charging system - Part 1: General requirements
IEC 60245-2 . . . . .	Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 2: Test methods
IEC 60332-1-2 . . . . .	Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a . . . . . single insulated wire or cable – Procedure for 1 kW pre-mixed flame
IEC 60811 . . . . .	Electric and optical fibre cables – Test methods for non-metallic materials
IEC 62821-1 . . . . .	Electric cables – Halogen-free, low smoke, thermoplastic insulated and sheathed cables of rated voltages up to and . . . . . including 450/750 V – Part 1: General requirements





# TRATOS EV RF® HighVision

## STANDARDS AND QUALITY SYSTEM

### QUALITY SYSTEM

Tratos aim to work closely with customers to find better, more environmentally friendly solutions to their challenges.

We are committed to our vision and strategy to serve all our internal and external customers by providing high quality services and products. Tratos is an established industry leader in the design, manufacture and supply of cables and products and to maintain this leading position we are committed at every level to providing our customers with quality services and products at a competitive price. As a commercial enterprise we are aware of the importance of satisfying our customers and of the financial impact of which nonconformities may have on our profitability. For these reasons we are committed to complying with all customer requirements and specifications both legal and statutory requirements. Our Quality Management System has been audited and approved by two independent, Internationally recognized and accepted authorities: BSI and AENOR-IQNET (E), in accordance to BS EN ISO 9001:2015 covering the production, purchasing of raw materials design and final test including various document types. The Tratos Quality Management system is under frequent regular surveillance by inspectors working for the Certification Authorities.



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### ENVIRONMENTAL SYSTEM

Our Environmental Management System has been audited and approved by two independent, Internationally recognized and accepted authorities:

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### ENERGY MANAGEMENT SYSTEMS

By complying with the BS EN ISO 50001:2018 Tratos follows a systematic approach in achieving continual improvement of energy performance and the Energy Management Systems (EnMS).

The BS EN ISO 50001:2018 is a standard issued by the International Standard Organization (ISO) which outlines the requirements for establishing, implementing, maintaining and improving an energy management system (EnMS).



### CIRCULAR ECONOMY

The EU Eco-Management and Audit Scheme (EMAS) is a premium management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance. EMAS is open to every type of organisation eager to improve its environmental performance. It spans all economic and service sectors and is applicable worldwide.



### AWARDS

Tratos cables are made with award winning Tratos-JBA® compound. Tratos UK Ltd has won a **Queen's Award for Enterprise - Innovation** for its technologically advanced Tratos-JBA® compound.



## STANDARDS AND QUALITY SYSTEM

### HEALTHY & SAFETY SYSTEM

Once its decision to create a board post dedicated to furthering best practice for Health and Safety, international cable manufacturer Tratos is celebrating receipt of ISO 45001.

ISO 45001 sets out the minimum requirements for occupational health and safety management best practice and helps companies achieve the maximum return for employees, operations and customers.



### REACH, WEEE & ROHS

#### REACH COMPLIANT

Tratos is fully compliant with the **REACH**. This is a European Union regulation concerning the **Registration, Evaluation, Authorisation and restriction of Chemicals**. It came into force on 1st June 2007 and replaced a number of European Directives and Regulations with a single system. REACH applies to substances manufactured or imported into the EU in quantities of 1 tonne or more per year. Generally, it applies to all individual chemical substances on their own, in preparations or in articles. To summarise, REACH makes the cable industry directly responsible for assessing and managing the risks posed by chemicals and providing safety information to their users.

#### REACH COMPLIANT

Tratos fully subscribes to The **Waste Electrical and Electronic Equipment Directive (WEEE Directive)**, introduced into UK law in January 2007 by the Waste Electrical and Electrical Equipment Regulations 2006. The WEEE Directive aims to reduce the amount of electrical and electronic equipment being produced and to encourage everyone to reuse, recycle and recover it. The WEEE Directive also aims to improve the environmental performance of businesses that manufacture, supply, use, recycle and recover electrical and electronic equipment. TRATOS has enlisted the services of the UK's leading producer compliance scheme, Valpak, whom manage our recycling obligations and also ensure our compliance to the WEEE Regulations and the Waste Batteries and Accumulators Regulations.

#### REACH COMPLIANT

Tratos is fully compliant with the **Restriction of Hazardous Substances (RoHS) Regulations**. These Regulations implement EU Directive 2011/65/EU which bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants. Tratos fully understands the requirements of the RoHS Directive and ensures that our products, and their components, comply.

### CORPORATE SOCIAL RESPONSABILITY

Tratos adopts a Code of Ethics which adheres to the United Nations Global Compact on human rights, labour standards, protection of the environment and anti corruption measures.

Under this self regulatory code, Tratos will carry out initiatives in the environmental and social fields with special reference to environmental policies and social policies regarding child labour, compulsory labour, health and security, freedom of association and the right to collective bargaining, discrimination, disciplinary procedures, working hours and wages.

### PATENTS

Patent Rif.: A28864 ER.ac



# TRATOS EV RF<sup>®</sup> HighVision

ELECTRIC VEHICLES REFLECTIVE FLUORESCENT CABLES BASED ON IEC 62893

## TRATOS<sup>®</sup> EV RF REFLECTIVE + FLUORESCENT

### FEATURES AND PERFORMANCES

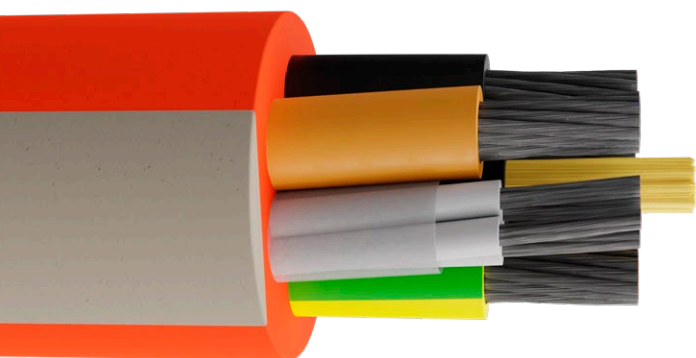


#### CONSTRUCTION

- **Conductor:** Material Annealed flexible plain copper (Cl. 5)
- **Insulation:** EV1-2 type or EV1-1 type
- **Insulation colours:**
  - 3G: Brown – Blue – Yellow/Green
  - 5G: Brown – Black – Grey - Blue – yellow/Green
  - 4X: White numbered
- **Outer sheath:** TPU
- **Outer Sheath colour:** Reflective orange with 2 Phosphorescent green strips
- **Marking:** TRATOS EV RF 450/750V 3G 6+1x0,5 lot/year metre marking

#### STANDARDS

- Design and Tested: IEC 62893-1 as applicable  
IEC 62893-3 as applicable



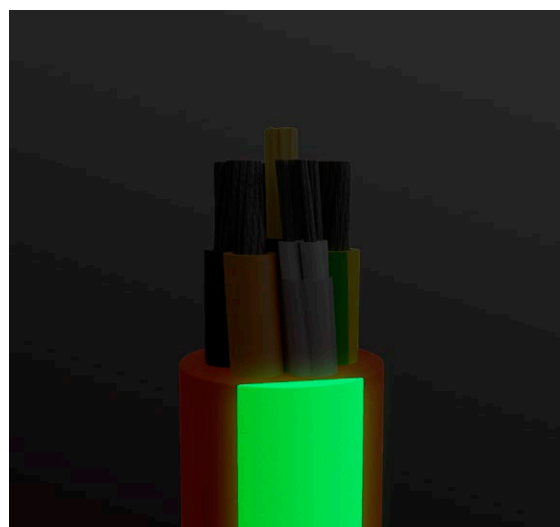
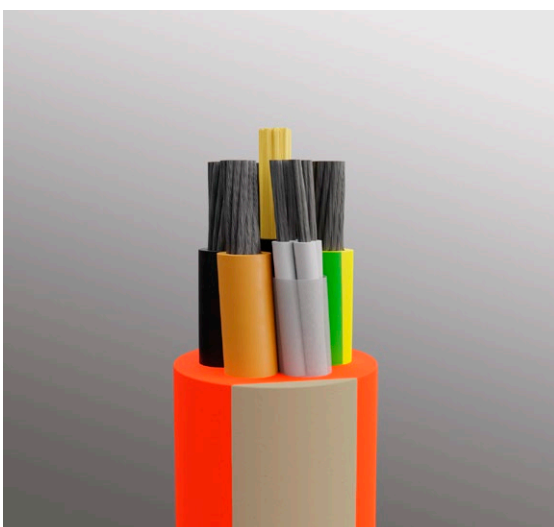
### TRATOS® EV RF - 3G 6+4x0,5 - Reflective + Fluorescent

CONDUCTOR			
Material	Annealed flexible plain copper (Cl. 5)		
Nominal cross section	mm <sup>2</sup>	3G 6	4 x 0,5
Tratos code	212998		
Nominal diameter	mm	3,2	0,9
INSULATION			
Material	EV1-2 type		EV1-1 type
Nominal thickness	mm	0,7	0,45
OUTER SHEATH			
Material	TPU		
Nominal thickness	mm	1,8	
Minimum outer diameter	mm	15,2	
Maximum outer diameter		17,2	
Nominal weight	Kg/km	360	

### TRATOS® EV RF - 5G 6+1x0,5 - Reflective + Fluorescent

CONDUCTOR			
Material	Annealed flexible plain copper (Cl. 5)		
Nominal cross section	mm <sup>2</sup>	5G 6	1 x 0,5
Tratos code	212999		
Nominal diameter	mm	3,2	0,9
INSULATION			
Material	EV1-2 type		EV1-1 type
Nominal thickness	mm	0,7	0,45
OUTER SHEATH			
Material	TPU		
Nominal thickness	mm	2,2	
Minimum outer diameter	mm	18,8	
Maximum outer diameter		21,0	
Nominal weight	Kg/km	570	

Tratos EV-RF cables are available with either a 1x0,5 or 4x0,5 pilot unit



Tratos Cavi S.p.A. reserves the right to make changes to the information contained in this publication without notice. Although every effort has been made in the preparation of this publication Tratos Cavi S.p.A. cannot accept responsibility arising out of any error or omission.



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