

## Environmental management system

Several years ago, Finder S.p.A. established its Environmental Management System in accordance with UNI EN ISO 14001 to ensure compliance with the environmental legislation in force, then and today. This calls for an initial analysis of the environmental impact of business activities on the environment, and the subsequent development of specific and effective projects to better manage this impact.

Real benefits from environmental certification derive from the continual search to improve the production process, implementing forms of technology that are more efficient in the fight against pollution, adopting technologies that optimise the use of raw materials, reduce energy consumption and improve waste recovery.



## The RoHS & WEEE directives

Recent directives approved by the European Union aim to reduce potentially hazardous substances contained in electrical and electronic equipment - minimising risks to health and the environment, and guaranteeing the safe reuse, recycling or ultimate disposal of equipment.

### RoHS directive

As of 1<sup>st</sup> July 2006, European directive 2002/95/CE dated 27 January 2003 (known as the RoHS directive - "Restriction of Hazardous Substances") and its amendments 2005/618/EC, 2005/717/EC, 2005/747/EC limits the use of substances, considered potentially damaging to human health if contained in electrical and electronic equipment.

The European Directive 2011/65/EU dated 8<sup>th</sup> June 2011 (known as the "recast RoHS Directive" or "RoHS II") maintains these restrictions and extends them to medical devices and monitoring and control instruments.

Restricted materials:

- **Lead**
- **Mercury**
- **Hexavalent chromium**
- **PBB** (Polybromide biphenyl)
- **PBDE** (Polybromide diphenyl ether, including DecaBDE, OctaBDE, PentaBDE, etc.)
- **Cadmium** (With certain exceptions, including contact materials)

### WEEE directive

European directive 2002/96/CE dated 27<sup>th</sup> January 2003 (known as the WEEE directive - "Waste Electrical and Electronic Equipment") contains measures and strategies for the safe and environmentally sound disposal of waste derived from electrical equipment. (This directive is not directly applicable to Finder products as it applies to equipment, rather than components).

## Scope of applications subject to the RoHS & WEEE directives

### Categories of electrical and electronic equipment covered by the directives

- Large household appliances
- Small household appliances
- IT and telecommunications equipment
- Consumer equipment
- Lighting equipment
- Electrical and electronic tools (with the exception of large-scale stationary industrial tools)
- Toys, leisure and sports equipment
- Automatic dispensers
- Medical devices (with the exception of all implanted and infected products)
- Monitoring and control instruments (for example control panels)

## Conformance of Finder products with the RoHS directive

Following a transitional period from December 2004 to June 2006, all Finder products manufactured since the latter date are fully RoHS compliant. This compliance includes what concerns the RoHS Directive II, in force from January 2013.

### CADMIUM

Following the European Commission decision 2005/747/EC dated 21<sup>st</sup> October 2005, cadmium and its compounds are permitted in electrical contacts.

Consequently, relays with AgCdO contacts are acceptable in all applications.

This exemption has been confirmed by the above mentioned "RoHS II".

However, if required, the majority of Finder relays are currently available in "Cadmium-free" versions (for example, AgNi or AgSnO<sub>2</sub>). But, it should be noted that AgCdO achieves a particularly good balance between the electrical life and the switching capacity of, for example, solenoids and inductive loads in general (particularly DC loads), motor loads and higher power resistive loads.

Alternative materials such as AgNi and AgSnO<sub>2</sub>, do not always offer the same performance for electrical life as AgCdO, although this depends on both the type of load and application (see table below).

Characteristics of Cd-Free contact materials:

Material	Properties	Typical application
<b>AgNi</b> (Silver-nickel alloy)	<ul style="list-style-type: none"> <li>- Standard material for most relay applications</li> <li>- High wear resistance</li> <li>- Medium resistance to welding</li> </ul>	<ul style="list-style-type: none"> <li>- Resistive and slightly inductive loads</li> <li>- Rated current up to 12 A*</li> <li>- Inrush current up to 25 A*</li> </ul>
<b>AgSnO<sub>2</sub></b> (Silver tin-oxide)	<ul style="list-style-type: none"> <li>- Excellent resistance to welding</li> </ul>	<ul style="list-style-type: none"> <li>- Lamps and capacitive loads</li> <li>- Very high inrush current loads (up to 120 A*)</li> </ul>
<b>AgNi + Au</b> (Gold-plated silver-nickel alloy)	<ul style="list-style-type: none"> <li>- Silver-nickel base with gold plating of 5µm thickness</li> <li>- Gold plating is not affected by atmospheric contamination</li> <li>- Contact resistance is lower and more consistent than other materials, where small loads are involved</li> </ul>	<ul style="list-style-type: none"> <li>- Small loads (little erosion of the gold plating) from 50 mW (5V 2mA) up to 1.5W/24V (resistive load)</li> <li>- Medium load range during which the gold plating eventually erodes after a number of operations and the AgNi properties become dominant</li> </ul>

\*Depending on relay type

## Identification of RoHS compliant product and "Cadmium free" product

Finder identify products with one of two types of labels placed on the packaging.

### Example of fully RoHS compliant product

Product containing no Lead, Mercury, Hexavalent chromium, PBB, PBDE and Cadmium (other than electrical contacts).



 RoHS compliant

### Example of fully RoHS compliant product (and totally Cadmium Free)

Product containing no Lead, Cadmium, Mercury, Hexavalent chromium, PBB and PBDE.



 Cadmium free

 RoHS compliant