

RoHS AdCo Joint Project 2016
USB cables and contacts

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Executive Summary

The purpose of RoHS AdCo is to share enforcement experience on RoHS (2011/65/EU) with colleagues on market surveillance authorities in the EU. The group has carried out several coordinated projects over the last years. The joint project of 2016 was focused on USB cables and contacts.

The aim of the project was to assess compliance levels and to work together in order to ensure harmonisation of enforcement of RoHS across Europe.

38 of 157 tested products (24 per cent) contained to high levels of a RoHS restricted substance, mainly lead in solders. Documentation were controlled for 18 products and 8 of these were non-compliant (44 per cent). Labels were controlled on 109 of the 157 products. 67 of these (61 per cent) were non-compliant.

Economic operators need to be informed of these results and where they can find information on how to work preventively to comply with the requirements in RoHS.

1 Introduction

The RoHS AdCo group is a network of RoHS enforcement authorities in the EU. The objective of the group is to ensure the harmonisation of the enforcement of the RoHS Directive by sharing best practise amongst market surveillance authorities (MSAs) in EU member states. In addition, the network has joint projects where MSAs share data and information to provide an overview of compliance in a particular product category. This report presents the results of a joint project carried out during 2015-2016 on USB cables and contacts. The participating states in this project were Finland, Belgium, Slovenia, Norway, United Kingdom, Austria and Sweden. Sweden has been the project leader.

1.1 The RoHS directive

The RoHS Directive¹ entered into force the 1 July 2006 and restricts the use of cadmium, lead, mercury, hexavalent chromium and the groups of brominated flame retardants polybrominated diphenyl ethers (PBDE) and polybrominated biphenyls (PBB) in electric and electronic equipment (EEE). The maximum concentration is 0.1 per cent by weight in homogenous materials for lead, mercury, hexavalent chromium, PBDE and PBB and 0.01 per cent by weight in homogenous materials for cadmium.

On the 2 January 2013, a recast of the RoHS Directive² entered into force. The main differences are a larger scope of products that are covered by the directive, CE marking of products, demand on technical documentation and the ability to restrict other substances than those in the first RoHS Directive. Four phthalates (DEHP, BBP, DBP and DIBP) will be covered by the directive from 22 July 2019.

The aim of the RoHS Directive is to prevent hazardous substances in electric and electronic products from causing harm to health and environment during production, use and when the products become waste.

1.2 USB cables and contacts

At the RoHS AdCo meeting in Lisbon in September 2015 it was decided that the focus of the upcoming joint project would be USB cables and contacts. Some USB cables had been tested before and the results had shown that some of the solders inside the contact contained lead. USB cables are also widely spread and can be found in many households and offices. For those reasons USB cables were a strategic choice for a joint project.

2 Aim

The aim of the project was to assess the levels of compliance of USB cables and contacts placed on the EU market with regard to the RoHS directive. Any discovered non-compliance was addressed with the responsible economic operator. Products containing restricted substances in too high concentrations were removed from the market. Another objective with the enforcement is to encourage economic operators to work preventively in order to comply with the legislation.

¹ Directive 2002/95/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

² Directive 2011/65/EC of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast).

A joint project can contribute to enhanced cooperation between MSAs and thereby provide a more consistent and harmonised enforcement of RoHS in the EU.

3 Method

The focus of the joint project was the collation of data from different member states. The methodology for enforcement activities relating to USB cables and contacts was not specified within the project. Some MSAs did analyses with their own XRF³ instruments, sometimes in combination with analyses at external laboratories and some carried out document and label control checks. The results were then reported to Sweden.

All products were tested for substances restricted in RoHS. In addition some products were tested for phthalates and short-chain chlorinated paraffins. The phthalates will be restricted in RoHS from 2019 and are today on the candidate list of substances of very high concern regulated in Reach⁴. Phthalates are used as softeners in plastic material and can be found in e.g. the plastic parts of cables. Short-chain chlorinated paraffins (SCCP) are restricted in articles by the POPs Regulation.⁵ SCCP is a persistent organic pollutant which amongst other things can be used as a flame retardant and a softener in plastic material.

4 Results

In total 159 products were analysed, whereof 60 were sent to laboratory for wet chemistry testing while 99 were screened with XRF-instrument only. Two of these products contained lead but were placed on the market before RoHS entered into force. Of the 157 remaining products screened for restricted substances, 38 failures were recorded (24 per cent). 32 products (20 per cent) failed due to lead content in solders, mainly inside the USB contact. 8 products (5 per cent) failed due to cadmium content, although in some cases the content was very close to the maximum concentration permitted. Two products had both lead and cadmium content over the maximum concentration value.

10 products had a content of bromine, chromium or mercury according to the XRF-screening. Six of these were not sent to laboratory for further testing and the once that were had no content of PBB, PBDE, hexavalent chromium or mercury according to the test results. Another three products were tested for hexavalent chromium since the lab had found chromium in them. None of these contained hexavalent chromium when the products were reanalysed.

Document control checks were carried out for 18 of the 157 products. Eight of these (44 per cent) were non-compliant. The reasons for non-compliance were e.g. that the Declaration of Conformity (DoC) were not issued by the manufacturer, the DoC contained no address to the manufacturer or there was no DoC sent in to the market surveillance authority.

Labels were controlled on 109 of the 157 products. 67 of these (61 per cent) were non-compliant. The reasons for non-compliance were usually that the CE-mark was missing or

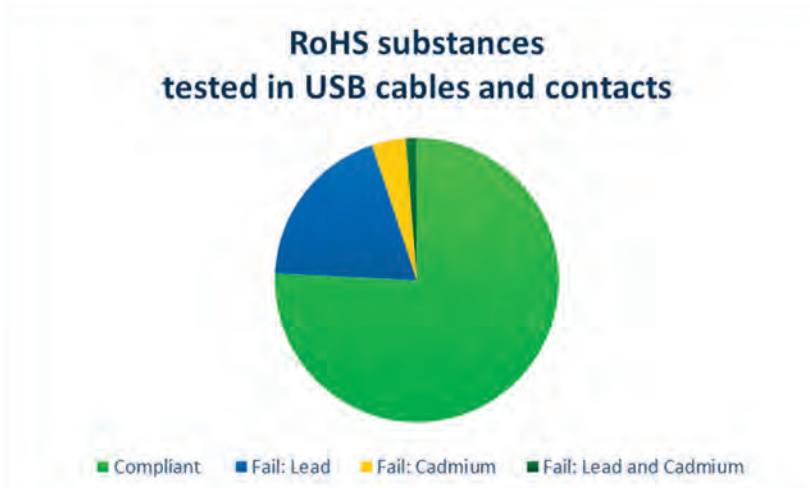
³ XRF = X-Ray Fluorescence is a technique used for screening for elements in the surface of plastic and metal

⁴ Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

⁵ Regulation (EC) No 850/2004 of the European Parliament and of the Council concerning Persistent Organic Pollutants (POPs)

that the product had no address to the economic operators (the importer and/or the manufacturer).

The plastic part of cables were analysed for phthalates and SCCP in 35 products. 13 products (37 per cent) had a content of more than 0,1 per cent of one or more of the four phthalates that will be restricted in 2019. 6 products (17 per cent) had a content of SCCP above the maximum concentration value.



5 Conclusion

Results show that USB cables and contacts have a high rate of non-compliance, both regarding the content of restricted substances and regarding labels and documentation. Similar to results from previous joint projects the most common reason for non-compliance regarding restricted substances is content of lead in solders. This may be partly explained by the fact that RoHS-checked components are put together with soldering tin that has not been checked for lead. Another reason may be that lead in solders are quite easy for market surveillance authorities to test and find.

Cadmium were also found in several products in the XRF-screening. However, few of the samples sent to lab were confirmed to contain cadmium. A discussion with laboratories are ongoing to find out the reason for this.

The control of documentation and labels shows that many economic operators are still unaware of the requirements in the RoHS directive. Especially CE-marks and name and addresses of economic operators were missing on the products. One reason for the lack of correct labelling may be that some economic operators do not consider USB cables to be in scope of RoHS until 2019 (as part of category 11). The RoHS FAQ states however that cables in general should be in scope, the category depending on the intended use. For USB cables that category is usually 3 or 4. Economic operators need to be informed that cables sold separately and not as part of another electrical product must meet both material restrictions and the labelling requirements. Perhaps an information campaign regarding the traceability requirements and CE-marking are needed to improve the situation.

The results regarding phthalates show that many economic operators have to take measures to ensure that their products comply with the upcoming restriction.

5.1 Recommendations

1. MSAs need to continue their enforcement of cables and USB contacts to follow up the result. Future projects may include both cables sold separately as well as together with other electric equipment. Projects focused on cables are especially interesting after 2019 when phthalates are restricted in RoHS.
2. The results of this enforcement project need to be spread to economic operators. Economic operators need to be informed of the fact that cables generally are in scope of RoHS and that their products must meet both material restrictions and the requirements on labelling and documentation. A short summary of the results together with recommendations on where to find more information on how to work preventively with RoHS should be published. Perhaps an article on the subject can be published on the commission website, in branch magazines and on the web pages of market surveillance authorities.
3. Collaboration with customs can help MSAs in finding non-compliant products. Especially the labelling can be controlled by customs. Some member states already have elaborated collaboration with customs. Others are still starting up and can perhaps be advised by more experienced colleagues on how a collaboration can be done.
4. If possible Chinese authorities should be contacted and informed of the results. Most of the analysed products in this project were made in China.

Appendix Compiled Data

Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
UK	1	XRF	Pass			×	Fail	No CE mark or Importer information on unit or packaging
UK	2	XRF	Pass			×	Fail	No CE mark or Importer information on unit or packaging
UK	3	XRF	Pass			×	Fail	No CE mark on unit or packaging. No Manufacturer information on unit.
UK	4	XRF	Pass			×	Fail	No CE mark, Manufacturer address or importer information on unit or packaging.
UK	5	XRF	Fail			×	Fail	Lead. No CE marking present on either unit or packaging. No Manufacturer information on the unit.
UK	6	XRF	Pass			×	Fail	No economic operator information on unit or packaging (only on invoice).
UK	7	XRF	Pass			×	Pass	
UK	8	XRF	Pass			×	Pass	
UK	9	XRF	Pass			×	Fail	No CE mark, No economic operator information
UK	10	XRF	Pass			×	Pass	
UK	11	XRF	Pass			×	Pass	

Appendix Compiled Data

Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
UK	12	XRF	Pass			×	Fail	No CE mark on unit or packaging.
UK	13	XRF	Pass			×	Pass	
UK	14	XRF	Pass			×	Fail	No CE mark on unit, CE mark too small on packaging.
UK	15	XRF	Pass	×	Pass	×	Pass	
Sweden	16	XRF, lab analysis	Fail	×	Fail	×	Pass	Lead in solders. No DoC.
Sweden	17	XRF, lab analysis	Pass	×	Fail	×	Fail	DEHP. No DoC. Only web address.
Sweden	18	XRF, lab analysis	Fail	×	Fail	×	Fail	Lead in solders, DEHP, SCCP. DoC not issued by manufacturer. No CE and no economic operator information.
Sweden	19	XRF, lab analysis	Pass	×	Fail	×	Pass	DoC not issued by manufacturer.
Sweden	20	XRF, lab analysis	Fail	×	Fail	×	Pass	Lead in solders, DEHP. DoC not issued by manufacturer.
Sweden	21	XRF, lab analysis	Pass	×	Pass	×	Fail	Only web address
Sweden	22	XRF	Pass	×	Pass	×	Pass	
Sweden	23	XRF	Pass			×	Fail	Only web address
Sweden	24	XRF, lab analysis	Pass			×	Fail	No economic operator information and no ID.

Appendix Compiled Data

Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Sweden	25	XRF, lab analysis	Pass	×	Fail	×	Fail	DoC referring to old RoHS, no address to manufacturer. Only web address.
Sweden	26	XRF, lab analysis	Pass	×	Pass	×	Pass	
Sweden	27	XRF, lab analysis	Pass			×	Fail	SCCP. No CE and no economic operator information.
Sweden	28	XRF, lab analysis	Pass			×	Fail	DEHP. Only web address.
Sweden	29	XRF, lab analysis	Fail	×	Pass	×	Fail	Lead and cadmium in solders. No address to economic operator.
Sweden	30	XRF, lab analysis	Pass			×	Fail	Only web address.
Sweden	31	XRF, lab analysis	Fail			×	Pass	Lead in solders. DEHP.
Sweden	32	XRF, lab analysis	Fail			×	Pass	Lead in solder.
Sweden	33	XRF, lab analysis	Fail			×	Pass	Lead in solder. DEHP, DIBP, DBP. SCCP.
Sweden	34	XRF, lab analysis	Fail			×	Fail	Lead in solder. No CE and no economic operator information.
Sweden	35	XRF, lab analysis	Pass			×	Fail	DIBP. No CE and no economic operator information.

Appendix Compiled Data

Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Sweden	36	XRF, lab analysis	Pass			×	Fail	No CE and no economic operator information.
Sweden	37	XRF, lab analysis	Pass			×	Fail	No CE and no economic operator information.
Sweden	38	XRF, lab analysis	Pass			×	Pass	DEHP.
Sweden	39	XRF, lab analysis	Pass			×	Fail	No economic operator information.
Sweden	40	XRF, lab analysis	Pass			×	Fail	No economic operator information.
Sweden	41	XRF, lab analysis	Pass			×	Fail	No economic operator information.
Sweden	42	XRF, lab analysis	Pass			×	Fail	No CE and only web address.
Sweden	43	XRF	Pass			×	Fail	No CE and only web address.
Sweden	44	XRF, lab analysis	Pass			×	Pass	
Sweden	45	XRF	Pass			×	Pass	
Sweden	46	XRF, lab analysis	Fail			×	Pass	Lead in solders. DEHP.
Sweden	47	XRF, lab analysis	Fail			×	Pass	Lead in solders. DEHP. SCCP.

Appendix Compiled Data

Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Sweden	48	XRF	Pass			×	Fail	No CE and no economic operator information.
Sweden	49	XRF, lab analysis	Pass			×	Fail	DEHP. Only web address.
Sweden	50	XRF, lab analysis	Pass			×	Fail	Only web address.
Sweden	51	XRF, lab analysis	Pass			×	Fail	Only web address.
Sweden	52	XRF	Pass			×	Fail	Only web address.
Sweden	53	XRF, lab analysis	Fail			×	Pass	Lead in solders.
Sweden	54	XRF, lab analysis	Pass			×	Pass	
Sweden	55	XRF, lab analysis	Pass			×	Fail	Only web address.
Sweden	56	XRF, lab analysis	Pass			×	Fail	No CE.
Sweden	57	XRF, lab analysis	Fail			×	Fail	Lead in solders. No CE and no economic operator information.
Sweden	58	XRF, lab analysis	Pass			×	Fail	Only web address.
Sweden	59	XRF, lab analysis	Pass			×	Fail	No economic operator information.

Appendix Compiled Data

Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Sweden	60	XRF, lab analysis	Fail			×	Fail	Lead in plastic and in solders. DEHP. SCCP. No economic operator information.
Sweden	61	XRF, lab analysis	Fail			×	Fail	Lead in plastic and in solders. DEHP. SCCP. No economic operator information.
Norway	62	XRF, lab analysis	Pass	×	Pass	×	Fail	
Norway	63	XRF, lab analysis	Pass	×	Pass	×	Fail	
Norway	64	XRF	Pass			×	Fail	
Norway	65	XRF, lab analysis	Pass			×	Fail	
Norway	66	XRF	Pass			×	Fail	
Norway	67	XRF	Pass			×	Pass	
Norway	68	XRF, lab analysis	Pass			×	Pass	
Norway	69	XRF	Pass			×	Fail	
Norway	70	XRF	Pass			×	Pass	
Norway	71	XRF	Pass	×	Pass	×	Fail	
Norway	72	XRF	Pass			×	Fail	
Norway	73	XRF	Pass			×	Fail	

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Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Norway	74	XRF	Pass			×	Fail	
Norway	75	XRF, lab analysis	Fail			×	Pass	Lead in solder.
Norway	76	XRF	Pass			×	Pass	
Norway	77	XRF	Pass			×	Pass	
Norway	78	XRF	Pass			×	Pass	
Norway	79	XRF	Pass			×	Pass	
Norway	80	XRF	Pass			×	Fail	
Norway	81	XRF	Pass			×	Fail	
Norway	82	XRF, lab analysis	Pass			×	Pass	Lead and label failure but old product.
Norway	83	XRF, lab analysis	Pass			×	Pass	Lead and label failure but old product.
Norway	84	XRF	Pass			×	Fail	
Norway	85	XRF	Pass			×	Fail	
Norway	86	XRF	Pass			×	Fail	
Norway	87	XRF, lab analysis	Pass			×	Fail	
Norway	88	XRF	Pass			×	Fail	
Norway	89	XRF	Pass			×	Pass	
Norway	90	XRF	Fail			×	Fail	Cadmium.

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Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Norway	91	XRF	Pass			×	Fail	
Norway	92	XRF, lab analysis	Pass			×	Fail	
Norway	93	XRF	Pass			×	Fail	
Norway	94	XRF	Pass			×	Pass	
Norway	95	XRF	Pass			×	Fail	
Norway	96	XRF	Pass			×	Fail	
Norway	97	XRF	Pass			×	Fail	
Norway	98	XRF, lab analysis	Fail			×	Pass	Lead in solder.
Norway	99	XRF	Pass	×	Fail	×	Pass	
Slovenia	100	XRF	Pass			×	Pass	
Slovenia	101	XRF	Fail			×	Pass	Lead and Cadmium in solder.
Slovenia	102	XRF	Pass			×	Pass	
Finland	103	XRF	Pass	×	Fail	×	????	
Finland	104	XRF	Fail	×	Pass	×	Pass	Cadmium.
Finland	105	XRF	Pass			×	Pass	
Finland	106	XRF	Pass	×	Pass	×	Pass	
Finland	107	XRF	Pass			×	Pass	
Finland	108	XRF	Pass			×	Pass	

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Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Finland	109	XRF	Fail					Lead in solder.
Finland	110	XRF	Pass			×	Fail	
Finland	111	XRF	Fail					Lead in solder.
Finland	112	XRF	Fail					Cadmium.
Finland	113	XRF	Fail					Lead in solder.
Finland	114	XRF	Pass					
Finland	115	XRF	Fail					Lead in solder.
Finland	116	XRF	Fail					Cadmium in solder.
Finland	117	XRF	Pass					
Finland	118	XRF	Pass					
Finland	119	XRF	Pass					
Finland	120	XRF	Pass					
Finland	121	XRF	Pass					
Finland	122	XRF	Fail			×	Fail	Cadmium.
Finland	123	XRF	Fail					Cadmium.
Finland	124	XRF	Fail			×	Fail	Lead in solder.
Finland	125	XRF	Fail					Lead.
Finland	126	XRF	Fail					Lead in solder.
Belgium	127	XRF, lab analysis	Fail					Lead in solder.

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Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Belgium	128	XRF	Pass					
Belgium	129	XRF, lab analysis	Pass					
Belgium	130	XRF	Pass					
Belgium	131	XRF	Pass					
Belgium	132	XRF	Pass					
Belgium	133	XRF	Pass					
Belgium	134	XRF, lab analysis	Fail					Lead in solder
Belgium	135	XRF	Pass					
Belgium	136	XRF	Pass					
Belgium	137	XRF	Pass					
Belgium	138	XRF	Pass					
Belgium	139	XRF	Pass					
Belgium	140	XRF	Pass					
Belgium	141	XRF	Pass					
Belgium	142	XRF	Pass					
Belgium	143	XRF, lab analysis	Pass					
Belgium	144	XRF	Pass					
Belgium	145	XRF	Pass					

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Country	Product nr	Testing of RoHS restricted substances	Pass/Fail	Document check	Pass/Fail	Label check	Pass/Fail	Comment
Belgium	146	XRF	Pass					
Belgium	147	XRF	Pass					
Belgium	148	XRF	Pass					
Belgium	149	XRF	Pass					
Belgium	150	XRF, lab analysis	Fail					Lead in solder.
Belgium	151	XRF, lab analysis	Fail					Lead in solder.
Belgium	152	XRF	Pass					
Belgium	153	XRF, lab analysis	Pass					
Austria	154	XRF	Pass					
Austria	155	XRF, lab analysis	Fail					Lead in solder.
Austria	156	XRF, lab analysis	Fail					Lead in solder.
Austria	157	XRF, lab analysis	Fail					Lead in solder.
Austria	158	XRF	Pass					
Austria	159	XRF	Pass					

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