

# WESTERN CABLE CORPORATION

## Western Cable Corporation Compliance

### RoHS European Union Directives

## STATUS AND COMPLIANCE PER RoHS AND OTHER REGULATED MATERIALS SPECIFICATIONS

**1. PRODUCTS COVERED** - This document covers all the products distributed by Western Cable Corporation.

**2. BACKGROUND** – The issuance by the European Union of various directives relating to the Restriction of Certain Hazardous Substances (RoHS) have heightened the sensitivity of all manufacturers as to the use of materials that they purchase and use in their products. This document has been prepared to confirm Western Cable’s compliance with these documents and to identify any exceptions.

In accordance with these directives, Western Cable embarked on a program starting January 2004 to remove heavy metals and other regulated materials from our products. As our program has evolved, we have continually revised this document in order to keep it current with our progress. Although EU Directive 2002/95/EC states that these requirements are effective as of 7/1/06, most companies are working to meet these requirements much earlier. Western Cable’s compliance to these requirements applies to new production only as our finished inventories may contain products purchased prior to some of the heavy metal free pigment changes.

**3. WESTERN CABLE IS RoHS COMPLIANT**- Except for the lead in standard PVC and the cadmium in cadmium high strength alloys, Western Cable is RoHS compliant. This includes all the RoHS documents, California Proposition 65 and all equivalent documents. There are over 1500 substances regulated by international, federal, state/provincial or local government units. However, most attention has been focused on the six materials identified in the original EU Directive 2002/95/EC. Western Cable’s RoHS compliance is demonstrated by the following discussing of the six key materials:

**3.1 Mercury (Hg)** - Not present in Western Cable products (RoHS max is 1000 ppm).

**3.2 Cadmium (Cd)** - All Western Cable Distributed insulations are cadmium RoHS compliant per the following dates, with the exception of products that utilize cadmium high strength copper alloys and purchased red, yellow and orange PTFE tape, typically used for cable jackets (RoHS max is 100 ppm): 12/08/04 All melt extrudable plastics including FEP, ETFE, PFA, Hytrel, Santoprene, Estane, special-request lead-free PVC and all printing and striping inks for all products. Also, all extruded normal and filled PTFE and purchased PTFE tapes (except for red, yellow and orange which range up to 800 ppm). Also, all Western Cable Distributed seamless PTFE tapes.

03/01/05 Orange and yellow pigmented extruded PTFE.

06/06/05 Red pigmented extruded PTFE

08/01/05 All abrasion resistant filled extruded PTFE insulations.

**3.3 Lead (Pb)** - Present in standard PVC formulations (14,000 ppm per product weight) but not in Western Cable’s lead-free formulations (RoHS max is 1000 ppm).

**3.4 Chromium VI (Hexavalent Cr)** - Not present in Western Cable products. Some conductors, such as stainless steel, contain Chromium III which is not a restricted material. RoHS max for chromium VI is 1000 ppm.

**3.5 PBB** - Not present in Western Cable products (RoHS max is 1000 ppm)

**3.6 PBDE** –Not present in Western Cable products. This include pentabromodiphenylether, octabromodiphenyl ether and decabromodiphenyl ether. RoHS max is 1000 ppm.

**4. ALLOY 135/CAD COPPER ALLOYS ARE NOT RoHS COMPLIANT** - Due to their high cadmium content, Alloy 135 and other cad-copper alloys such as Alloy 162 are not RoHS compliant either as bare or insulated conductors. While these conductors exhibit an optimum combination of tensile and conductivity properties, their inability to conform to RoHS cadmium levels has resulted in the development of Alloy 135 cad-free alternatives such as Percon 24 and CC78. Despite the high cadmium levels of Alloy 135 and Alloy 162 (Percon 17), they continue to be used in a wide variety of customer applications. Many customers feel that the outstanding properties justify a RoHS exception. For those that require the alternatives, Percon 24 and CC78 can be provided with modified specification values. The maximum cadmium level per RoHS documents is 100 ppm. Alloy 135 contains 4000 ppm of cadmium and Alloy 162 contains 10,000 ppm. The cadmium level content in a finished insulated product is typically 2500 ppm for Alloy 135 and 6200 ppm for Alloy 162 - still well beyond the RoHS cadmium limits.

**5. PIGMENTED PURCHASED PTFE TAPE** - Western Cable purchases unsintered PTFE tape for use in tape wrapped jackets, typically used on high temperature multiconductor cables. Despite extensive efforts on our part, we have not yet been able to find a suitable tape vendor who has been able to meet the max cadmium limits on their red, yellow and orange tapes. Although we follow-up with these vendors at frequent intervals, we do not anticipate their development of cad-free tapes in these colors in the foreseeable future. If a product does come available in these colors, we will revise this document at that time.

**6. DISCUSSION OF TRACE AMOUNTS** - When we specify that a material is lead-free or cad-free in the context of a RoHS discussion, it means that the substance being discussed is within the RoHS limits. Thus, in a RoHS context, products that contain less than 100 ppm of cadmium are referred to as “cad-free” and products that contain less than 1000 ppm of lead are referred to as “lead-free”. For example, uninsulated silver plated copper conductors may contain 7 ppm of lead due to trace amounts in the silver plating. For RoHS purposes, they are still referred to as “lead-free”. There are some regulated materials which are not purposely in any of our formulations or vendor formulations, but which may exist in the air or water supply as contaminants and which could conceivably be present in minute quantities. As we do not specify these materials, we do not test for their presence. The quantities of regulated materials that we list for our products are based on the documented formulation.

**7. NO WARRANTY EXPRESSED OR IMPLIED** - The Product Disclosure information provided in this document is based upon information obtained from sources which Western Cable believes are reliable; however, the information is provided without any representation of warranty, expressed or implied, regarding accuracy or correctness. The information provided herein and the identification of materials listed as reportable or restricted is correct to the best of Western Cable’s knowledge, information and belief at the date of each revision. The information is provided as a general guide for the safe handling, storage and any other operation of the product itself or the one that it becomes a part of. This document is not to be considered a warranty or quality specification. Regulatory information is for guidance purposed only. Product users are responsible for determining the applicability of legislation and regulations based on their individual usage of the product.

**8. DISCUSSION OF KEY EU DOCUMENTS** - Each of the key EU documents deals with a different aspect of the RoHS issue. The documents are pertinent to certain product types that do not include Western Cable wire and cable products. Thus technically, all of Western Cable's products are RoHS compliant by exemption, even if they contain cadmium or other heavy metals. However, it does apply to Western Cable indirectly as our affected customers require our conformance so that their products can comply. The following summary will classify the significance of each document:

**8.1. DIRECTIVE 2002/96/EC (WEEE)** - This document deals with waste electrical and electronic equipment (WEEE). It basically requires that the manufacturers of a specified range of products bear the financial cost of disposal when the products reach their end of life. The products affected fall into 10 broad groups as listed in Annex IA (Large household appliances, small household appliances, IT and telecommunications, consumer equipment, lighting, electrical tools, toys and leisure products, medical devices, monitoring and control instruments and automatic dispensers).

**8.2 DIRECTIVE 2000/53/EC (ELV)** - This document is somewhat similar to the WEEE directive, except that it is restricted to vehicles. This "End-of-Life Vehicles" directive makes the vehicle manufacturer financially responsible for the final disposal of a vehicle at its end-of-life

**8.3. DIRECTIVE 2002/95/EC (ROHS)** - This document bans heavy metals, brominated flame retardants and many other chemicals, by updates and revisions, for use in certain equipment. The affected equipment is eight of the ten categories of the WEEE directive. The two missing categories are medical devices and monitoring and control instruments.

**8.4. EU COUNCIL DIRECTIVE 76/769/EEC** - This directive lists a wide range of substances with applicable limits that can be referenced by other documents and customer specifications. Additional substances and limits are being continually added, such as 2003/11/EC, 2003/36/EE and others. This directive lists the usage limit for the various regulated substances in regard to specific plastics and insulations. For example, cadmium is limited to 100 ppm (.01%) for use in polyvinyl chloride, polyurethane, low density polyethylene, cellulose acetate, cellulose acetate butyrate, epoxy resins, melamine, urea formaldehyde, unsaturated polyesters, polyethylene terephthalate, polybutylene terephthalate, polystyrene, acrylonitrile methacrylate, crosslinked polyethylene and polypropylene. There is no mention of fluorocarbons in this list (neither PTFE, FEP, ETFE, PFA, Halar, Kynar, etc.). Despite the fact that fluorocarbons are not specifically mentioned, Western Cable has modified its products to meet these requirements anyway.

**8.5 EU COUNCIL DIRECTIVE 2003/11/EC (BFR)** - This directive specifically bans the penta and octa forms of PBDE, which are a family of brominated flame retardants.

**8.6 JOINT INDUSTRY GUIDE (JIG)** - Document JIG-101 entitled Material Composition Declaration for Electronic Products was issued April 2005. It has been worked on for more than three years by member companies of EICTA (Europe), JGPSSI (Japan), EIA (USA) and JEDEC (USA). This coordinated worldwide industry document attempts to standardize the reporting procedure for RoHS compliance and also refers to specific substance limits. In the case of cadmium this specification lists a maximum concentration of 75 ppm vs. the 100 ppm given in the EU documents. Western Cable's RoHS compliant products also fully conform to the JIG document.

**8.7 CALIFORNIA PROPOSITION 65** - This document is a consent judgment for wire and cable manufacturers (San Francisco Superior Court Nos. 312962 and 320342) and lists

maximum concentration levels of a variety of substances, similar to the documents above. It applies a 300 ppm max concentration of lead as opposed to the RoHS 1000 ppm value.

**9. CHARGE FOR SPECIAL RoHS SURVEY REQUESTS** - Many of our customers have been submitting detailed and time consuming questionnaires requesting data on compliance to the RoHS directives. Thus far, there is no standard format for these requests, so that when one extensive form is completed, it cannot be used to respond to an almost identical request from another customer. In order to expedite getting this important information to our customers, we have prepared this comprehensive compliance document which includes all the data we have available. If any customers prefer to have the information in this document rewritten into a specific format of their choosing, Western Cable can quote a cost to accomplish this based on the hours and skill level required. Depending on complexity, costs for special RoHS questionnaires and spreadsheets may vary from \$500 to \$2000.

**10. CUSTOMER REQUESTS FOR RoHS LABELING** - When a customer request is received to document their shipments as RoHS compliant, we will apply a controlled distribution RoHS stamp to the certificate of compliance for each applicable shipment. Other forms of RoHS labeling including special part numbers, labels on reels and/or shipping boxes are not available.

**11. DEFINITION OF PPM** - The term “ppm” as used in this document refers to “parts per million by weight”. For comparison, 10% is 100,000 ppm; 1% = 10,000 ppm; 0.1% = 1,000 ppm and 0.01% = 100 ppm. Thus the RoHS max cadmium level of 100 ppm is the same as 0.01% max, etc. The wire and cable products distributed by Western Cable are considered homogenous products and the ppm values refer to the completed wire and/or cable.

**12. WESTERN CABLE COMPLIANCE SPECIFICS** - Some of the questionnaires we receive specify the particular product that is being purchased from us and ask if they are RoHS compliant. Other questionnaires include lengthy tables of chemicals and request that we check each chemical as to whether it is present or not. We have included a typical table of these materials and have indicated their RoHS status and ppm in our products.

**13. PACKAGING MATERIALS ARE RoHS COMPLIANT** - Western Cable has surveyed its packaging material vendors in order to assure that the products we purchase to ship our material are also free of the six basic RoHS ingredients. Our survey covered plastic and wooden reels, cardboard boxes, labels, tape and printing ink. Our survey results indicated that these packaging products are RoHS compliant.

**14. TEMPERATURE/OXYGEN INDEX RATINGS** - Some customer questionnaires have requested the LOI (limiting oxygen index) values and the maximum temperature ratings of our products. The table below provides the published values. The temperature rating of our products is set at the lowest temperature rating of its constituent materials:

TEMPERATURE/OXYGEN INDEX RATINGS

Material	Limiting Oxygen Index	Max Temp rating, Deg-C
Mica	99%	540
Quartz	99%	540
Fiberglass	99%	400
Nickel Plated Copper	99%	260
Stainless Steel	99%	260
Polymide	53%	260
PTFE	95%	260
PFA	95%	250
FEP	95%	200
Silver Plated Copper	99%	200
Aluminum/Mylar	27%	200
ETFE	31%	150
Tinned Plated Copper	99%	150
PVC	29%	105
Hytrel	22%	90
Santoprene	29%	90
Estane	30%	90

**15. WESTERN CABLE COMPLIANCE ACCOMPLISHMENTS** - Western Cable has conducted several major programs since late 2004 to identify and eliminate materials of concern from our products. The most difficult to replace heavy metal for high temperature products is cadmium which is one of the few materials that forms very heat stable compounds to handle the 1000°F processing conditions and 500°F temperature rating of PTFE. About 95% of our heavy metal free accomplishments were relatively easy, although time consuming. The greatest challenge was finding cad-free pigments for red, yellow and orange as used in PTFE. As you can see in our opening paragraphs, this has not been accomplished and is being introduced into current production. We have also worked with our vendors to Stock lead-free PVC Wire and Cable.

**17. SUMMARY** - Western Cable recognizes its responsibilities as a global partner in protecting our environment and confirms that we are in compliance to the RoHS documents as described herein. Western Cable is actively involved in a continuing programs to further reduce and eliminate specific materials in accordance with applicable regulations and customer requests while still maintaining required product performance, quality and value.

WESTERN CABLE CORPORATION

ID	Material	RoHS Compliant	All Products PPM	Products with Higher Values	PPM
1	Acetone	YES	<1	NONE	N/A
2	Aliphatic/Aromatic Hydro-C Liquids	YES	<1	NONE	N/A
3	Anthracene	YES	<1	NONE	N/A
4	Antimony and its compounds	YES	<10	Standard PVC	<700
5	Antimony and its compounds	YES	<10	Lead Free PVC	<700
6	Aromatic Amines	YES	<10	NONE	N/A
7	Arsenic and its compounds	YES	<65	NONE	N/A
8	Asbestos	YES	<1	NONE	N/A
9	Azo+carcinogenic amino comp.	YES	<1	NONE	N/A
10	Barium and its compounds	YES	<20	Standard PVC	<200
11	Benzene	YES	<1	NONE	N/A
12	Benzidine	YES	<1	NONE	N/A
13	Beryllium and its compounds	YES	<1	NONE	N/A
14	Biocides	YES	<1	NONE	N/A
15	Bismut and its compounds	YES	<1	NONE	N/A
16	Bismuth	YES	<10	NONE	N/A
17	Brominated hydrocarbons	YES	<10	NONE	N/A
18	Bromium	YES	<35	Standard PVC	<250
19	Butane	YES	<1	NONE	N/A
20	Cadmium	Yes, Except →	<30	ALLOY 135	<3200
21	Chlorinated Hydrocarbons	YES	<10	NONE	N/A
22	Chlorofluorocarbons (CFC's)	YES	<1	NONE	N/A
23	Chromium (Element)	YES	<30	ALLOY 135	<2800
24	Chromium (Element)	YES	<30	Stainless Steel 302/CCS	<50,000
25	Chromium VI (hexavalent)	YES	<1	NONE	N/A
26	Coal tar pitch volatiles	YES	<10	NONE	N/A
27	Cobalt	YES	<10	NONE	N/A
28	Colophony (rosin)	YES	<1	NONE	N/A
29	Cyanides	YES	<1	NONE	N/A
30	DBBT flame retardant	YES	<1	NONE	N/A
31	DEHP	YES	<1	NONE	N/A
32	DHTDMAC	YES	<1	NONE	N/A
33	DSDMAC	YES	<1	NONE	N/A
34	DTDMAC	YES	<1	NONE	N/A
35	Ethylene Glycol Ethers	YES	<1	NONE	N/A
36	Flourinated Hydrocarbons- gaseous	YES	<1	NONE	N/A
37	Formaldehyde	YES	<1	NONE	N/A
38	Glycol Ethers	YES	<1	NONE	N/A
39	Halogenated Dioxins	YES	<1	NONE	N/A
40	Hydrazine	YES	<1	NONE	N/A
41	Hydrochlorofluorocarbons (HCFC)	YES	<1	NONE	N/A
42	Isocyanates	YES	<1	NONE	N/A
43	Lead and its compounds	Yes, Except →	<20	Standard PVC	<14,000
44	MDA	YES	<1	NONE	N/A
45	MEK	YES	<1	NONE	N/A
46	Mercury	YES	<1	NONE	N/A
47	Methanol	YES	<1	NONE	N/A
48	Molybdate Red Pigment	YES	<1	NONE	N/A

49	Napthalene	YES	<50	NONE	N/A
50	Nitrobenzene	YES	<1	NONE	N/A
51	Nitrosamines	YES	<1	NONE	N/A
52	Ozone depleting materials	YES	<1	NONE	N/A
53	PBB's PBDE's PBDO's	YES	<1	NONE	N/A
54	PCB or PCT	YES	<1	NONE	N/A
55	PCT's	YES	<1	NONE	N/A
56	Pentachloroethane	YES	<1	NONE	N/A
57	Phenol	YES	<1	NONE	N/A
58	Phthalates	YES	<1	NONE	N/A
59	Polychlorinated PCB's/PCT's	YES	<1	NONE	N/A
60	Polycyclic Aromatic Hydrocarbons	YES	<1	NONE	N/A
61	Potassium Bromate	YES	<1	NONE	N/A
62	Potassium cresylate	YES	<1	NONE	N/A
63	Propylene Oxide	YES	<1	NONE	N/A
64	Radioactive Materials	YES	<1	NONE	N/A
65	Selenium	YES	<50	Red/Yellow/Orange PTFE Products	<700
66	Sodium Nitrite	YES	<1	NONE	N/A
67	Surface Nickel/prolonged contact	YES	<10	NONE	N/A
68	TBB	YES	<1	NONE	N/A
69	TBBA	YES	<1	NONE	N/A
70	Thallium	YES	<1	NONE	N/A
71	Toulene	YES	<1	NONE	N/A
72	Tris Flame retardant	YES	<1	NONE	N/A
73	Vinyl Chloride Monomer	YES	<10	NONE	N/A
74	Zinc Chromate	YES	<1	NONE	N/A