

Non-Conforming and Counterfeit Cables

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Agenda

- Introduction
- Non-conforming and counterfeit cable defined
- Risks to end users, electrical contractors and traders
- Case studies
- Technical problems seen
- Preventive measures
- Campaigns for better checks on cable

BASEC

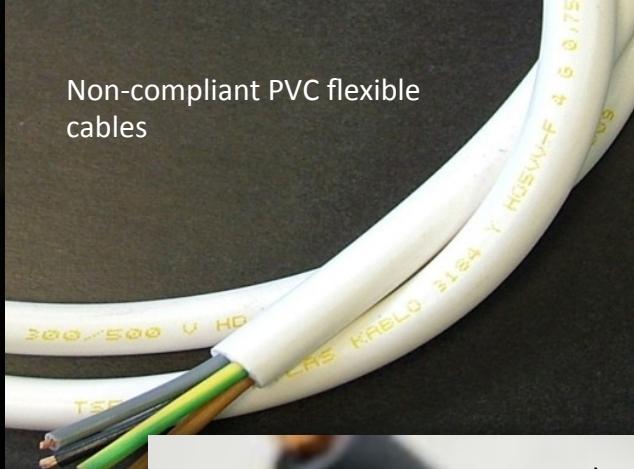
- British Approvals Service for Cables
- Independent non-profit organisation
- Testing and certification body specialising in cables
- 40 years operation
- UK based, operating globally
- Links with regulators, manufacturer associations, installation contractors, inspectorates, etc.

Definitions

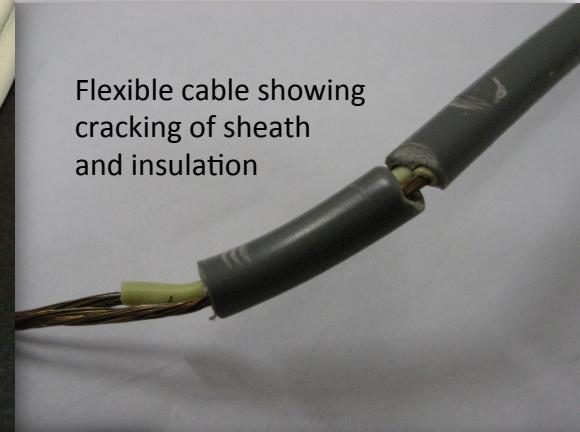
- Non-conforming
 - Cable does not conform to technical standards claimed
- Non-compliant
 - Cable does not conform to legal / regulatory requirements
- Counterfeit
 - Does not conform to the descriptions or claims made
 - Problems may include suitability, design, construction, technical requirements, regulatory requirements, place of origin, etc.
 - Could be deliberate misrepresentation or through omission.



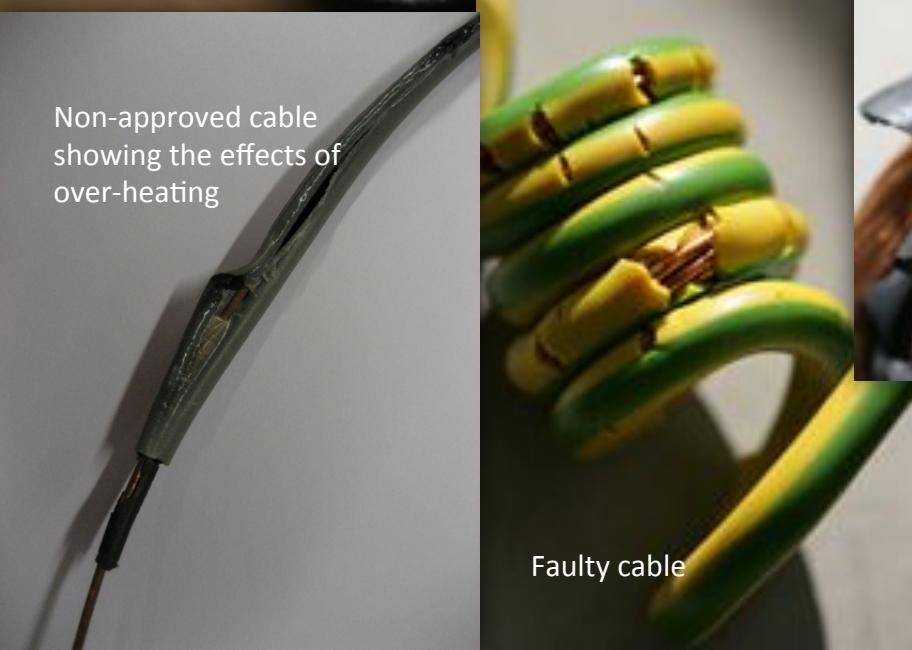
Non-compliant armoured cables



Non-compliant PVC flexible cables



Flexible cable showing cracking of sheath and insulation



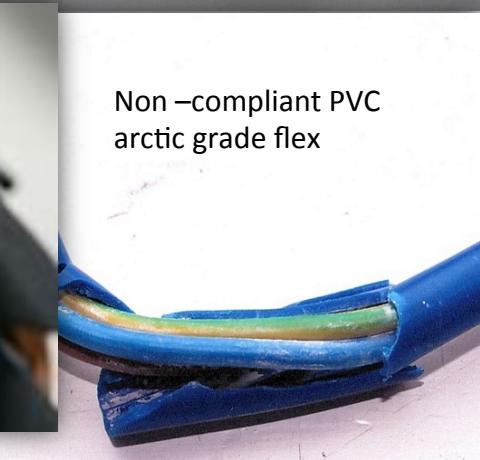
Non-approved cable showing the effects of over-heating



Faulty cable



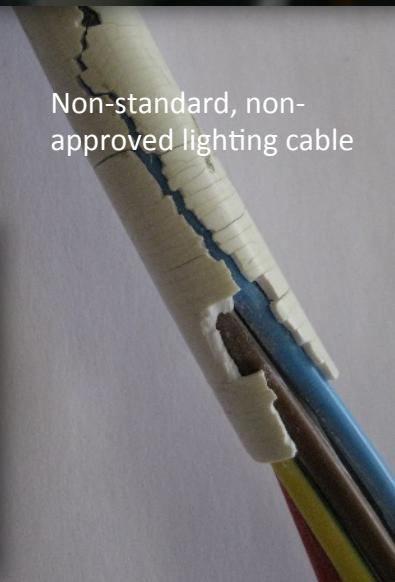
Faulty welding cable



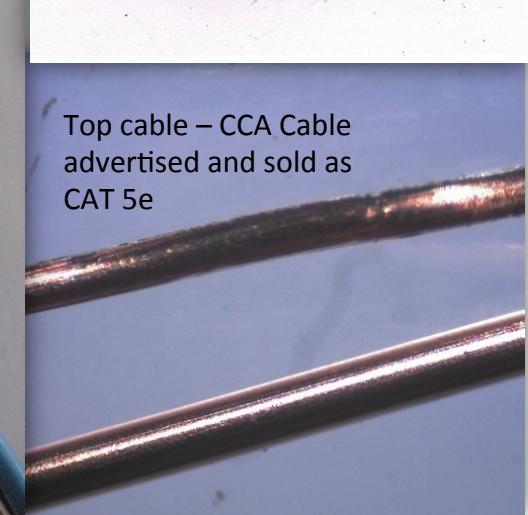
Non-compliant PVC arctic grade flex



Non-compliant PVC arctic grade flex



Non-standard, non-approved lighting cable



Top cable – CCA Cable advertised and sold as CAT 5e

Risks to Users and Professionals

- Risk of fire arising from poor materials / construction
- Risk of electric shock due to poor insulation properties
- Risk of poor performance
 - Unreliable power circuits
 - Poor data transmission
- Cost of investigation and rectification of problems
- Regulatory action – fines, license removal, imprisonment
- Risks to reputation and loss of business



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Case Study – Power Cables - UK

- Armoured power distribution cables
- Indian origin, non-approved, imported into UK
- Copper content two sizes lower than claimed
- Identified by competitor when querying price
- Public warning issued
- Importer forced to recall cable and settle costs
- Regulator prosecuted importer
- Importer no longer in business





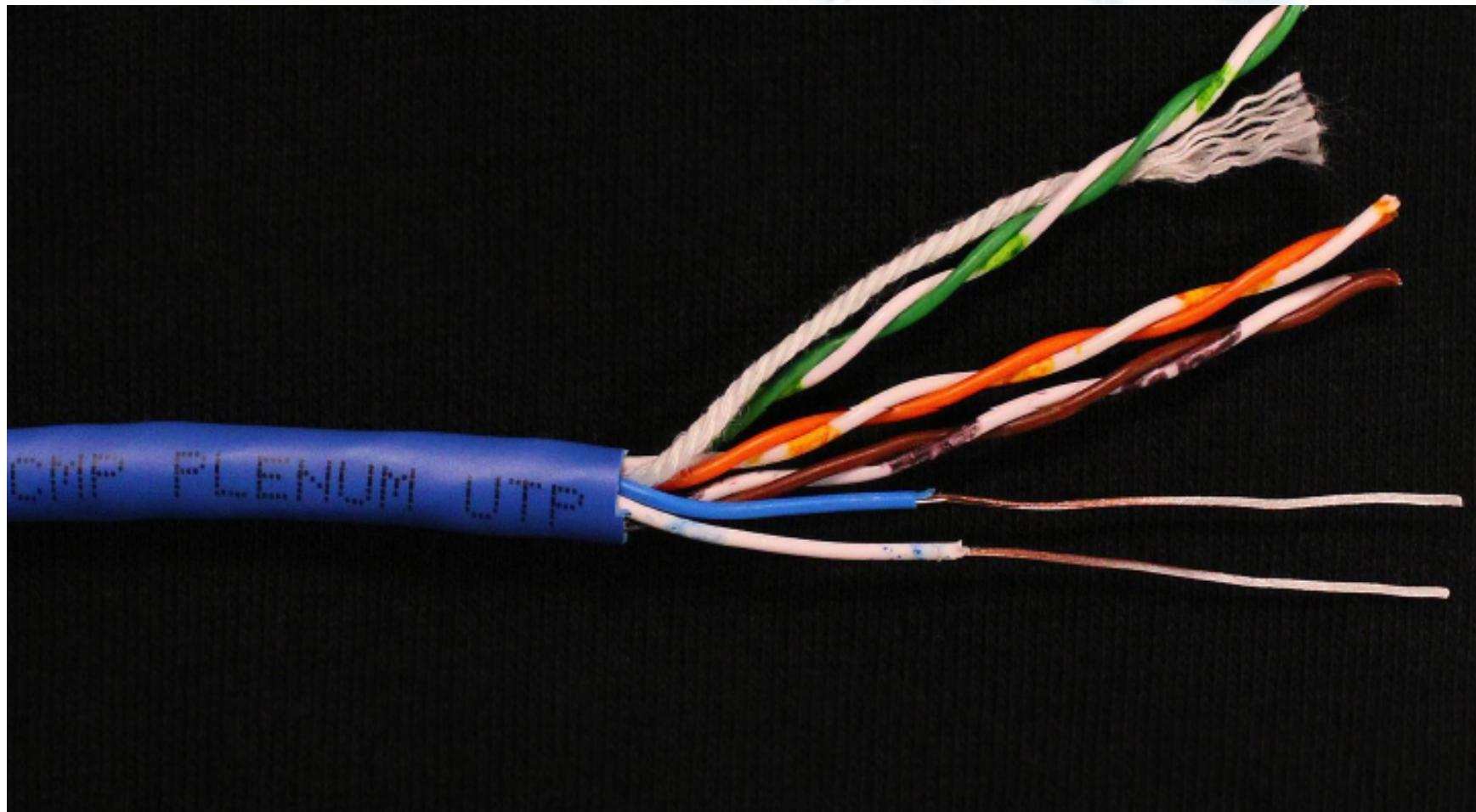
Fédération Internationale pour la Sécurité des Usagers de l'Électricité
International Federation for the Safety of Electricity Users
Federacion Internacional para la Seguridad de los Usuarios de la Electricidad

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Case Study – Building Wire - Australia

- Imported from China through Australian distributor
- Distributed widely through wholesalers and retailers
- Cable insulation ages quickly and cracks
- Electrical safety and fire risk
- Mass recall by state regulators
- A\$80 million estimate of rectification costs
- Many small installers and householders affected
- Importer out of business



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Case Study – Data Cable - USA

- Cat 5e data cable to TIA/EIA 568
- Copper coated aluminium conductors
- Specification requires pure copper
- Data integrity problems
- Reduced run length (<80m)
- Power over Ethernet problems
- Fake approval marks



Cable markings:

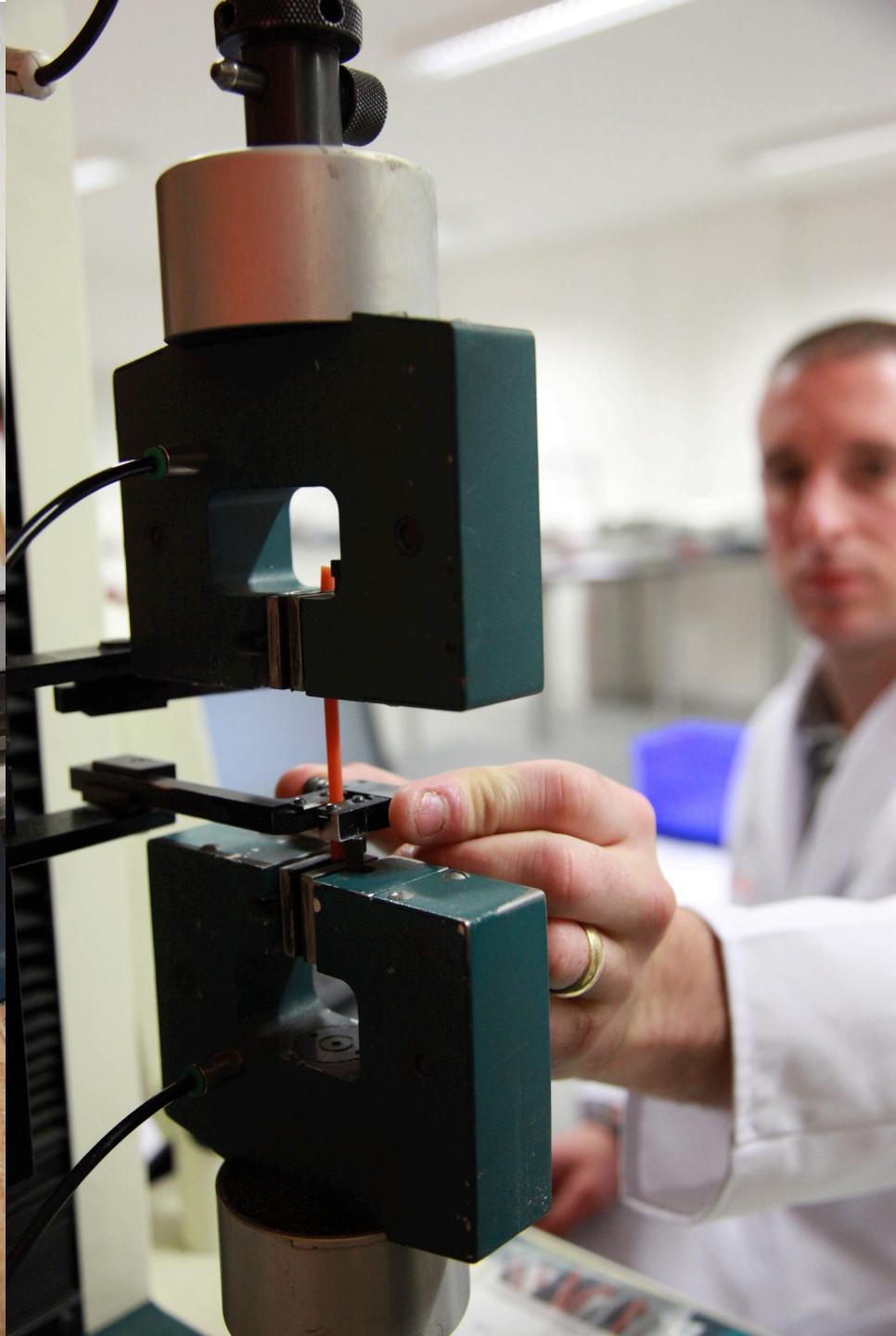
**2 x1.5mm² SQ FIRE FLEX
FIRE RESISTANT CABLE
LPCB 682a/01 BS5839-1:2002 26.2d
BS 6360/BS6387 CWZ BS EN 50200
PH30 300/500V
BRITISH MADE CABLE**

Key points

1. Not fire resistant – PVC insulation & polyethylene sheath.
2. Not compliant with any standards marked on sheath.
3. Copper coated aluminium conductors – low conductivity – not to spec.
4. Undersize circuit protective conductor – also Cu coated Al.
5. Fraudulent - not LPCB approved – uses another manufacturer's approval number.
6. No identification of manufacturer - probably not British made.

Technical Problems Often Seen

- Low copper content – high conductor resistance
 - Overloaded circuits and higher operating temperatures
- Poor polymer materials – degradation and ageing
 - Compromised insulation resistance, electric shock
- Poor fire performance – ignition and fire spread
 - Safety of users
- Marking and traceability – incomplete or incorrect
 - Difficult to trace manufacturer or batch information
 - No approval markings or fake approval markings



Warning Signs for Counterfeit Cables

- Very low price – below market limits
- Unfamiliar brands from offshore manufacturers
- No information on factory location our country of origin
- No approval marks or fake approval marks
- Reference to non-standard construction, e.g., ‘CCA’
- Supplied only through website or local distributors
- Completely unmarked cable and packaging

Preventive Measures

- Specification and procurement
 - Include standards and specifications in orders
 - If price is cheap, be very suspicious
- Visual checks on delivery
 - Is it what you ordered? Check marking and traceability.
 - Does it have the required approvals / regulatory paperwork?
- Visual checks before first fix installation
 - Trial strip the cable, does it appear as expected?

Campaigns for Better Checks on Cable

- Many regulatory systems do not guarantee conformity
- Cable sector and users are lobbying for improvements
- Third party approved cables are more likely to conform
- Education and promotion to installers and end users
- ‘Approved Cables Initiative’ in UK, Australia, elsewhere



EXAMPLES OF CABLE MARKING



Star twist armoured



Fibrelite lead earth



Single core conduit wire

These are example markings only. Each cable type has its own requirements for marking.
 For assistance contact ACI on 01908 267300 or report@aci.org.uk with the information you need.

HOW YOU CAN HELP. WHAT TO DO IF YOU FIND FAULTY CABLE.

If you have concerns or suspicions about any cable supplied to you, contact ACI on: 01908 267300 or report@aci.org.uk for advice and assistance. Please keep a short (<5m) sample with markings and packaging for examination and testing.



FAULTY CABLE LET'S STAMP IT OUT

The Approved Cables Initiative seeks to:

- Eliminate non-approved, unsafe or counterfeit products from the UK supply chain
- Expose manufacturers and distributors of non-approved, unsafe or counterfeit cable products
- Stop importers deliberately under-specifying cable for their own profit
- Lobby Government to make the sale and use of compliant, approved cable obligatory in the UK
- Proactively investigate non-approved, unsafe or counterfeit cable products in the supply chain

CABLE SAFETY CHECKLIST — SEE OVER FOR EXAMPLES

Cable is UNMARKED	<input checked="" type="checkbox"/>
Cable is marked with MANUFACTURER'S NAME	<input checked="" type="checkbox"/>
Cable has NO MANUFACTURER'S NAME marked	<input type="checkbox"/>
Cable has CORRECT BRITISH OR EUROPEAN STANDARD NUMBER	<input checked="" type="checkbox"/>
Cable has NO BRITISH OR EUROPEAN STANDARD NUMBER	<input type="checkbox"/>
Cable has THIRD PARTY APPROVAL (e.g. BASEC, HAR) for independent assurance	<input checked="" type="checkbox"/>
Cable has NO THIRD PARTY APPROVAL	<input type="checkbox"/>
Cable marking has CORRECT NUMBER OF CORES & CROSS SECTIONAL AREA	<input checked="" type="checkbox"/>
Cable marking has INCORRECT NUMBER OF CORES & CROSS SECTIONAL AREA	<input type="checkbox"/>
Cable has CORRECT VOLTAGE RATING marked	<input checked="" type="checkbox"/>
Cable has INCORRECT VOLTAGE RATING marked	<input type="checkbox"/>
Cable is CORRECTLY PACKAGED WITH MANUFACTURER'S TRACEABILITY INFORMATION	<input checked="" type="checkbox"/>
Cable is INCORRECTLY PACKAGED WITHOUT ANY MANUFACTURER'S TRACEABILITY INFORMATION	<input type="checkbox"/>
Cable CONFORMS TO THE DELIVERY NOTE AND TO THE ORDER PLACED	<input checked="" type="checkbox"/>
Cable does not CONFORM TO THE DELIVERY NOTE AND TO THE ORDER PLACED	<input type="checkbox"/>

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Summary

- Counterfeit cable is a broad description
 - Covers fake, non-conforming, non-compliant cable
- Seen across power distribution, building wiring, data
- Expensive and wide-spread claims and costs
- Simple preventive measures – a little time to check
- Campaigns to stamp out the counterfeiters

Further Information

- <http://www.recalls.gov.au/content/index.phtml/itemId/1062576> - Australian recall
- <http://www.cccassoc.org> - data cable campaign - USA
- <http://anticounterfeitingforum.org.uk>
- <http://www.thisdaylive.com/articles/schneider-electric-intensifies-efforts-against-electrical-counterfeiting/191221/>

THANK YOU

MERCI



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