



# The use of “Arctic” cable by Mark Coles

In *Wiring Matters* Summer 2009, Issue 31, an article was published entitled Cables for temporary installations and included a sub-section headed *The use of “Arctic” cable*. The IET’s technical helpline took a number of calls with a common theme - i.e. can blue-sheathed cable, made to BS 6500, be used for 230 V a.c. single-phase supplies to equipment in temporary use? The answer is yes but not at temperatures lower than +5°C. The following is intended to clarify.

### Introduction

It is common to see blue-sheathed flexible cables, sometimes referred to as “Arctic” cable, used on temporary low-voltage installations, such as construction sites, fairgrounds and musical events. In addition to blue, this type of cable is available in many different colours, such as yellow and orange and some cables even have the word *ARCTIC* embossed throughout the length. Not all cables are suitable for all applications. It

is, therefore, important to establish the suitability of the cable in question prior to selection by referencing the standard to which the cable is manufactured. Two standards for flexible cable will be considered here - BS 7919 and BS 6500.

### Cables to BS 7919

*Electric cables — Flexible cables rated up to 450/750 V, for use with appliances and equipment intended for industrial and similar environments*

Ordinary duty low temperature PVC insulated and sheath 300/500 V flexible cable, manufactured to BS 7919 Table 44 (not harmonised), commonly referred to as 3183A (Arctic Grade Flex), was specifically designed and, hence, included in the British Standard, for use at 110 V a.c. from centre tapped transformers (55 V - 0 - 55 V). The cable is suitable for installation and handling down to a temperature of -25°C, e.g. suitable for construction site installations and is often seen in

Cable Type	Standard reference BS 7919:2000	Recommendations for use	Comments
Ordinary duty low temperature PVC sheathed cord circular	Table 44	<p>The cables are <b>suitable</b> for</p> <ul style="list-style-type: none"> <li>– use on ELV systems (110V centre tapped) on building sites in the UK;</li> <li>– use with temporary traffic light systems when suitably protected.</li> </ul> <p>The cables are <b>not suitable</b> for:</p> <ul style="list-style-type: none"> <li>– outdoor use at standard voltages</li> <li>– in industrial* or agricultural buildings</li> </ul>	Usage on UK building sites, with ELV (110 V centre tapped) may include hand-held tools.

Table 7B: Cables conforming to BS 7919 – Guide to use

use on temporary road works for supplies to traffic lights; Table 7B from BS 7450, refers.

Note that cables to BS 7919 Table 44 have not been harmonised to European HDs. This is because the use of 110 V a.c. supplies from centre tapped transformers (55 V - 0 - 55 V) is a UK only practice and is not recognised or practised elsewhere.

### BS 6500

*Electric cables - Flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments*  
Ordinary duty PVC insulated and sheath 300/500 V flexible cable to BS 6500, commonly referred to as 3183Y (harmonised number H05VV-F), is suitable for use at 230 V a.c. The cable is suitable for installation and handling down to a temperature of +5°C.

Cable standard	Suitable voltage	Lowest temperature for installation and handling
BS 7919 Table 44	110 V a.c. (55 V - 0 - 55 V)	-25°C
BS 6500	up to 300 V a.c. 1Ø or 500 V a.c. 3Ø	+5°C

Neither BS 6500 nor BS 7919 requires the cable to be marked with the word *Arctic*. Should any cable be marked as *Arctic*, it is solely the responsibility of the manufacture to justify any such claim. The only PVC flexible cable that could be classified as being suitable for low temperature use is a cable to BS 7919 Table 44 as it can be installed and handled down to a temperature of -25°C; it would seem logical that only this cable would/should have the term 'ARCTIC' marked on it.

### Summary

The table shown above summarises this article.

### Further reading

- BS 6500:2000 - Electric cables - Flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments
- BS 7540-3:2005 Electric cables - Guide to use for cables with a rated voltage not exceeding 450/750 V - Part 3: National standard cables not included in HD 21 and HD 22
- BS 7919:2001 Electric cables - Flexible cables rated up to 450/750 V, for use with appliances and equipment intended for industrial and similar environments ■

