ASSOCIATION OF ELECTRIC CABLE MANUFACTURERS OF SOUTH AFRICA
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TSC TB22: 09/2021

Mark Scheme Permits – Specific Permit Conditions (A Guide to Members)

BACKGROUND

The decision behind developing new SPC's was part of the SABS drive to be able to provide a better service in a shorter time frame as part of their continual improvement strategy. The new SPC will inevitably have a shared responsibility between the Type 5 Scheme Certification Body (CB) and each of the manufacturers or Mark holders for the upkeep of the Permits.

The SPC relies on the manufacturer accepting more responsibility for in-house material and product testing and allowing the CB to make use of these test results during the three year cycle to evaluate the manufacturers' capability. The CB will then recommend Product Permit renewal based on the manufacturer's and CB test results on products covered by their Permit.

The frequency of performing the ROUTINE and SAMPLE tests on the material and product by the Manufacturer must be such that the CB can verify the Manufacturer is in control of their product quality. Without this understanding the proposed system is due to fail.

GUIDELINES

To assist CB in administering the SPCs successfully, the Manufacturer tabulate by some appropriate means their respective product range, showing where similar materials and or components are used in their manufacture. (Refer to the sample test matrix provided)

It is envisaged that where the manufacturer has gathered sufficient data to show compliance with the specific property or test condition, that these test results may be used to prove compliance on similar materials that fall within other product categories.

> *By example: A 4mm²copper conductor, which is used in manufacture of Housewire, Surfix, Twin and Earth as well as armoured Cables. Then the manufacturer who manufactures, say, Housewire, Surfix and Twin and Earth products could perform the mechanical elongation test on the 4mm² copper strand after the stranding process and populate Housewire, Surfix and Twin and Earth in-house test report files with the same result.*

All product specific routine and sample tests should then also be performed on other material types used in the manufacture of the respective products, for instance stranded Aluminium conductors, PVC insulation type D2, XLPE Type A, SWA, PVC sheathing Type S2, etc.

It should be noted that product specific test results cannot be recorded against other specific products.

For this system to have a chance of success the Manufacturer must show commitment to the system and ensure there is sufficient sampling and testing, with accurate records kept, to show compliance to product quality.

Where the materials used in the manufacture of SANS 1507 products are also used in the manufacture of other SANS specifications products, the above guidelines also apply.

Taking the above example a stage further:

Regarding mechanical testing of the PVC insulation on a stranded Housewire conductor, the aged and unaged tensile and elongation results can also be inserted into the data base/file of the same size Surfix and Twin and Earth conductor test files. There must be documented reference to batch or delivery that the material used in the above three products is the same grade and hence would exhibit the same/similar mechanical properties. The Manufacturer must ensure sufficient sampling of all three products, on a random basis, to ensure component compliance with the requirements of the specification. Recording of the PVC Grade and batch used will assist with the above.

The above reasoning on copper conductor up to 16mm² and PVC insulation could also be extended to SWA armouring, XLPE insulation and other components common across the range of products within SANS 1507.

The Mechanical test results of PVC sheath for SANS 97/SANS 1339 cables can be populated from SANS 1507 product test results provided there is correct cross referencing the grade of material used.

Where more than one cable standard requires sample testing, for example, of the same grade of PVC to SANS 1411-2, then the results of a successful test should apply to all the cable standards requiring this test, rather than the test being repeated for each cable standard.

General areas where different cable standards require overlapping material tests are conductors to SANS 1411-1, PVCs, XLPEs, polyethylenes, EVAs, and low halogen and halogen free materials.

Examples of product specific areas that would unique tests are smoke performance, flame propagation performance, and many tests on high voltage cables

Manufacturers could employ these guidelines in discussions with the CB in agreeing on the details of Specific Permit Conditions applicable to the product range and Permit held by that manufacturer.

		Conductor						Insulation			Bedding			Metallic	Armour			Sheath				Cable							
		Copper				Aluminium		PVC 70°C	XLPE lv	PE lv?	PVC	LH PVC	EVA	Lead	SWA	DSTA	SWA/ECC	PVC 70°C	LH PVC	EVA	PE?	Conductor resistance	Marking	Voltage withstand	Dielectric resistance	Fire Propagatio	Smoke	Compatibility	Additional features
		Solid	Stranded	Comp		Stranded	Solid																						
SANS 1507 - 2																								V1= Single core V2= Multicore					
1 - 16mm²	H/wire		B					F														T	x	V	W				
1 - 2.5mm²	T + E	A						F										Q				x	x	x	x				
4-16mm²	T + E		B					F																					
1 - 2.5mm²	Surfix	A						F																					
4-16mm²	Surfix		B					F										Q=S1				x	x	x	x				
		A= Solid wire						F=Mech,										Q=S1											
SANS 1507 - 3		B= 7 wire uncompacted									H= Radial																		
1,0 - 4mm² 2,3,4 to 37C			B					F		x	H	J		L	M	N	P	Q	R			x	x	x	x	x	x		
6 - 16mm² 2,3,4C			B					F		x	H	J		L	M	N	P	Q	R			x	x	x	x	x	x		
16 - 400mm² 2,3,4C				C		D	E	F		x	H	J		L	M	N	P	Q	R			x	x	x	x	x	x		
				C= compacted								J=rad, HCL																	
SANS 1507 - 4																													
1,0 - 4mm² 2,3,4 to 37C			B						G	x	H	J		L	M	N	P	Q	R		x	x	x	x	x	x	x	x	
6 - 16mm² 2,3,4C			B						G	x	H	J		L	M	N	P	Q	R		x	x	x	x	x	x	x	x	
16 - 400mm² 2,3,4C				C		D	E		G	x	H	J		L	M	N	P	Q	R		x	x	x	x	x	x	x	x	
									G = Mech																				
SANS 1507 - 5																													
1,0 - 4mm² 2,3,4 to 37C			B						G	x			K	L	M	N	P			S	x	x	x	x	x	x	x	x	
6 - 16mm² 2,3,4C			B						G	x			K	L	M	N	P			S	x	x	x	x	x	x	x	x	
25 - 400mm² 2,3,4C				C		D	E		G	x			K	L	M	N	P			S	x	x	x	x	x	x	x	x	
													K=Rad, HCL																