



# POLIDAN EC/51

**Flexible low density polyethylene compound curable by exposure to moisture for power and signal cable insulation.**

## Description

Polidan EC/51 is a flexible low density XLPE curable by moisture and consists of a silane pregrafted base compound and a catalyst masterbatch (Sioplas method).

Polidan EC/51 is characterized by excellent electrical and mechanical properties together with a good flexibility that makes it competitive in some applications as an alternative to EPR based compounds.

Its high self-crosslinking rate by ambient moisture exposure makes it particularly suitable in all cases in which crosslinking in low pressure steam or in hot water cannot be achieved. Its high crosslinking level allows the use of Polidan EC/51 in 250°C short circuit temperature applications.

In order to prevent prescorching the pregrafted compound and the catalyst masterbatch must be stored separately and mixed only when used.

Physical and mechanical properties	typical value	unit	test method
- Specific gravity at 23°C	0.900	g/cm <sup>3</sup>	ASTM D 792
- Shore A/D hardness	88/30	-	ISO R 868
- MFI at 190°C/2.16 kg	0.35	g/10'	Padanaplast
- Unaged mechanical properties: tensile strength elongation at break modulus at 150% elongation	17 540 6.1	MPa % Mpa	IEC 60811
- Mechanical properties after ageing in air oven, 168 hours at 135°C: variation on tensile strength variation on elongation at break	+2 +5	% %	IEC 60811
- Mechanical properties after ageing in air oven, 168 hours at 150°C: variation on tensile strength variation on elongation at break	+9 -4	% %	IEC 60811
- Mechanical properties after ageing in air oven, 240 hours at 150°C: bending test	no cracks	-	IEC 60811
- Mechanical properties after ageing in air bomb, 40 hours at 127°C, 0.55 Mpa: variation on tensile strength variation on elongation at break	+7 +6	% %	IEC 60811
- Hot set test, 15' at 250°C, 0.2 N/mm <sup>2</sup> : elongation under load permanent elongation after cooling	50 0	% %	IEC 60811
- Water absorption, 24 hours at 100°C:	0.6	mg/cm <sup>2</sup>	IEC 60811

Electrical properties	typical value	unit	test method
- Volume resistivity at 20°C	4.1x10 <sup>15</sup>	Ω x cm	IEC 60502
- Volume resistivity at 90°C	2.7x10 <sup>15</sup>	Ω x cm	IEC 60502
- Insulation constant at 20°C	15000	MΩ x km	IEC 60502
- Insulation constant at 90°C	10000	MΩ x km	IEC 60502

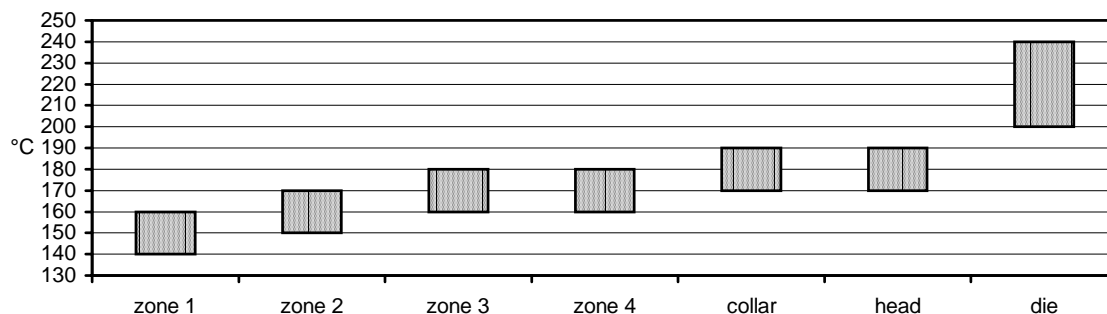
Typical values reported above are the averages obtained from cable or pressed plate crosslinked in hot water.

## Processing

Polidan EC/51 pregrafted base must be added with type CT/1 catalyst masterbatch in the proportion 97:3 by weight; this masterbatch is also indicated to avoid degradation due to untinned copper conductor. Mixing must be done just before consumption; we suggest to dose the two components directly in the hopper of the extruder using a proper device.

In order to prevent prescorching, that could degrade the surface and the characteristics of the cable, we suggest to pre-dry the colour masterbatch in air oven at 60°C for 4 hours at least under vacuum or 8 hours at least in 4-6 cm layers without vacuum.

Polidan EC/51 can be processed with extruders having a 18÷25 L/D ratio, an adequate thermoregulation of the barrel and a preferably thermoregulated low compression rubber screw or other type providing that a good mixing and plastification occur avoiding overheating. The following temperature profile is suggested:



It may also depend on the available equipment.

Curing can be done in the following ways:

- by immersion in hot water at 60-70°C
- by exposure to low pressure steam (about 0.15 bar)
- by exposure in ambient at 20-25°C, 50-70% R.H. for some days

In all cases curing time depends on insulation thickness; for 0.7-1.2 mm wall thickness 2-4 hours are generally necessary if forced curing is made; in case of self curing, time depends also on the specific ambient conditions.

A wide range of suitable colour masterbatches are available; it is suggested an addition of 1% (approx.) by weight. In the indicated conditions our masterbatches do not influence the general and crosslinking properties of the compound.

## Storage

The product should be stored under the following conditions:

- closed and unbroken bags
- ambient temperature not exceeding 30°C
- avoid direct exposure to sunlight and weathering
- use of the compound within 3-4 hours after bags are opened

The product could undergo alterations due to extended period of storage. Padanaplast suggests the product use within six months from the production date printed on the packaging.

Padanaplast accepts no liability of any kind in case the above mentioned conditions are not fulfilled.

## Packaging

Polidan EC/51 is available in 25 kg moisture resistant bags on 1375 kg pallet or 500 kg carton box on pallet containing a single moisture resistant bag.

Our Technical Service is at Your disposal for further information and advice upon the starting phase and also for any eventual necessity during the course of the product use.

Information given is indicative and does not involve any our engagement or warranty on results. It is necessary to verify the fitness of the product to the specific needs using the proper technologies and testing procedures.

Specifications reported on this bulletin can not be used as reference values in a technical or sales contract.



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