



COGEGUM[®] GFR/340

**Silane crosslinkable halogen-free fire retardant compound
for sheathing and insulation of power, signal and control cables**

description HFFR silane grafted compound for cable sheathing and insulation, moisture curable by addition of a catalyst masterbatch (Sioplas method). It consists of a polyolefin base containing a fire retardant system that contributes to give the cable self-extinguish properties without halogenidric acids evolution, toxic and corrosive gases and dark smoke emission. This material complies with RoHS requirements.

standard complying Cenelec HD 22.1 S2 E18 and EM10, IEC 60092-351 HF 85, Cenelec HD 624.6, CEI 20-11 G10, NF C 32.323, VDE 0207-20 4GI1, VDE 0207-23 HJ1 and 3GI3, VDE 0207-24 HM1, VDE 0250-503 HI3, VDE 0266 HX11 and HXM1

physical properties			typical value	test method
	density @23°C (g/cm ³):		1.34	ASTM D 792
	shore D hardness:		36	ISO R 868
	M.F.I. @190°C/21.6 kg (g/10')		7.0	Padanaplast
	Unaged mechanical properties - tensile strength (N/mm ²): - elongation at break (%):		13.0 285	IEC 60811
	Mechanical properties after ageing in air oven, 240 hours @150°C: - variation on tensile strength (%): - variation on elongation at break (%):		+20 -12	
	Mechanical properties after ageing in air bomb, 168 hours @150°C: - variation on tensile strength (%): - variation on elongation at break (%):		+20 -10	
	Hot set test @200°C, 20 N/cm ² - elongation under load (%): - permanent elongation after cooling (%):		40 0	
	Hot set test @250°C, 20 N/cm ² - elongation under load (%): - permanent elongation after cooling (%):		60 0	
	Hot pressure test at 125°C (K=0.6), max blade penetration:		< 50%	
	Cold bend test at -40°C:		pass	
	Impact test at -40°C:		pass	
	Water absorption, 24h at 100°C (mg/cm ²):		< 4	
	Shrinkage test, 1h at 100°C (%):		< 4	

electrical properties			typical value	test method
volume resistivity (Ω x cm):	@20°C:		8.2 x 10 ¹⁴	IEC 60502
	@90°C:		5.4 x 10 ¹⁴	
insulation constant (MΩ x km):	@20°C:		3000	
	@90°C:		2000	

burning properties			typical value	test method
	oxygen index (% O ₂):		31	ASTM D 2863
	temperature index (°C):		300	NES 715
	upper (gross) calorific potential (MJ/kg):		20.3	ISO 1716
	halogenidric acid emission (% HCl):		< 0.1	IEC 60754-1
corrosivity of gases evolved	pH:		> 4.3	IEC 60754-2
	conductivity (µS/mm):		< 10	

tests made on pressed or extruded specimens, added with 3% of Catalyst CT/2 and crosslinked in hot water

processing COGEGUM® GFR/340 pregrafted base must be added with Catalyst CT/2 masterbatch to promote curing. Catalyst dosage is 3% by weight and blending must be done just before using (2-3 hours max.), preferably in the extruder hopper. Catalyst doesn't need any predrying.

The pregrafted base compound is sensible to moisture; open bags must be used within few hours.

extrusion equipment Standard extruders for thermoplastics equipped with low compression screw (1:1.2-1.4 compression ratio and 20-25 L/D ratio are suggested), and an adequate barrel thermoregulation
Screw cooling not required.
Filter net: 40-80 mesh/cm² max.
Compression tools suggested.

temperature setting

	zone 1	zone 2	zone 3	zone 4	collar	head	die
max (°C)	150	160	160	170	180	180	220
min (°C)	130	140	140	150	160	160	170

curing

- by immersion in hot water at 60-70°C
- by exposure to low pressure steam (about 0.15 bar)
- by exposure in ambient at 10-30°C for some days

In all cases curing time depends on insulation thickness; for 0.7-1.2 mm wall thickness 3-6 hours are generally necessary in case of forced curing in hot water and 12-16 hours in case of curing in steam room; in case of self curing, time depends also on the specific ambient conditions.

coloring EVA based masterbatches added at 1.2-1.5% (approx.) by weight; predrying of colour masterbatch is suggested if moisture absorption occurred during storage (4-6 hours at 60-70°C).

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

Product alterations could occur due to extended period of storage. Its use within six months from the production date is suggested.
Solvay Padanaplast S.p.A. accepts no liability of any kind in case the above mentioned conditions are not fulfilled.

packaging 25 kg moisture-resistant bags on 1375 kg pallet.

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