

WIRE AND CABLE

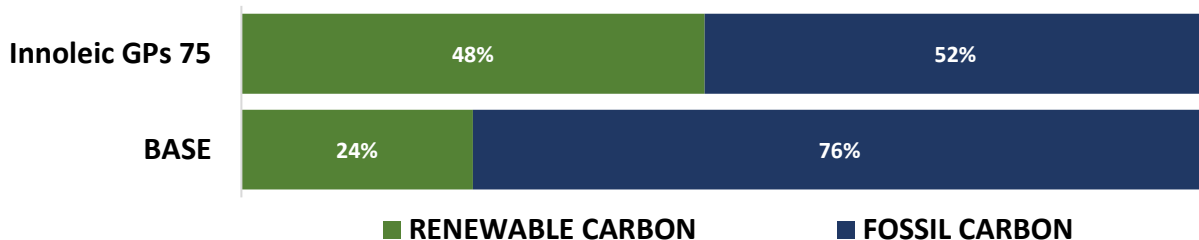
Effective Date: 05/05/2023

PLASTICIZER:	Innoleic™ GPs 75
END USE:	Wire and Cable
OBJECTIVE:	To develop a renewable carbon content PVC insulation and jacketing for a 70 °C cable complying with the IEC 60227 standard.
LOCATION:	São Paulo - Brazil
RESULTS:	Using the Innoleic™ GPs 75 which contains 97% of renewable carbon, the formulation indicated in (A), complied with the specifications for a 70 °C cable, as indicated in (C), with an estimated renewable carbon of 48%

(A) FORMULATION

	Base	Renewable
PVC	100	100
CaCO3	50	50
DINP	25	
ESBO	25	
Innoleic GPs 75		50
CaZn Stabilizer	0.8	0.8

(B) RENEWABLE INDEX



(C) TESTS	TEST METHOD/LAB	Units	Min	BASE	Innoleic™ GPs 75
1- Resistivity @ 20°C	IEC 60227-2 / (1)	MΩ.Km	35.3	50	40
2- Resistivity @ 70°C	IEC 60227-2 / (1)	MΩ.Km	0.0353	0.13	0.18
3- Elongation / Rupture (original)	IEC 60811-1-1 / (2)	%/Mpa	150 / 12,5	196 / 14,3	217 / 14,7
4- Elongation / Rupture (after ageing)	IEC 60811-1-2 / (2)	%/Mpa	150 / 12,5	177 / 14,9	169 / 16,1
5- Elongation/Rupture retention	IEC 60811-1-1 / (2)	%	75	90% / 104%	78% / 109%
6- Cold test @ -15°C	IEC 60811-1-4 / (1)		No tearing	No tearing	No tearing
7- Mass loss (100°C / 168 hs)	IEC 60811-3-2 (2)	mg/cm2	2.0	0.84	0.80

IEC 60227-2

NBR NM 247-2: 2000/ Err.1: 2006 - PVC insulated cables for nominal tensions up to 450/750 V - Part 2 - Test methods (IEC 60227-2, MOD).

IEC 60811-1-1

NBR NM-IEC 60811-1-1/ 2001 Common test methods for isolation and jacketing materials for electric cables - Part 1: General application methods - Chapter 1: Measurement of thickness and external dimensions - Tests for the determination of mechanical properties.

IEC 60811-1-2

NBR NM-IEC 60811-1-2:2001 - Common test methods for isolation and jacketing materials for electric cables - Part 1: General application methods - Chapter 2 - Thermal aging methods

IEC 60811-1-3

NBR NM IEC 60811-3-2:2005 - Common test methods for isolation and jacketing materials for electric and optic cables - Part 3: Specific methods for PVC compounds - Chapter 2: Mass loss test - Thermal stability test

IEC 60811-1-4

NBR NM-IEC 60811-1-4: 2003 - Common test methods for isolation and jacketing materials for electric and optic cables - Part 1: General application methods - Chapter 4: Low temperature tests

LABORATORIES:

(1) ITEN - Instituto Tecnológico De Ensaios Ltda / (2) In-house