PEXIDAN® X/T-UV2

Low density moisture curable polyethylene for low voltage building wire and photovoltaic wire applications (UL styles XHHW-2, RHW-2, RHH, SIS, USE-2, and PV with SUNRES)

DESCRIPTION

PEXIDAN® X/T-UV2 is a low density flame-retardant XLPE system curable by moisture and consists of a silane pre-grafted base compound A-3001 and a flame-retardant catalyst masterbatch CAT-047FR-UV2. Mixed and extruded in the proper proportions, the two-component system results in a material curable by exposure to 70-95°C hot water or even ambient moisture. PEXIDAN® X/T-UV2 is halogenated but is RoHS-compliant. Insulation may be marked SUNRES or SR in all colors and in all sizes per UL44 and UL4703.

Physical and Mechanical Properties	Typical Value	Unit	Test Method
- Specific gravity at 23°C	1.02		ASTM D792
- MFR, 190°C/2.16 kg	0.8	g/10 min	ASTM D1238
- Mechanical properties: Tensile strength at break Tensile strength at yield Elongation at break	 2350 1800 425	 psi psi %	UL 1581 / UL 2556
- Mechanical Properties: after thermal ageing (7d @121°C): Tensile strength at break Elongation at break After 60 day oil @75°C Tensile strength at break Elongation at break After 30 day gasoline @23°C Tensile strength @ break Elongation @ break	 2300 375 1975 325 1825 375	 psi % psi % psi %	UL 1581 / UL 2556
- Weather-o-meter testing - 300 hr. exposure Original tensile strength / After exposure Original elongation / After exposure - 720 hr. exposure - SUNRES Original tensile strength / After exposure Original elongation / After exposure	 2500 / 2475 425 / 400 2435 / 2085 420 / 365	 psi % psi %	UL 1581 / UL 2556
- Deformation	1	%	UL 1581 / UL 2556
- Hot set test, 15 minutes @ 150°C, 0.2 N/mm^2 load: Elongation under load	 40	 %	SACO AEI DWI-QA-4007 based on ICEA T-28-562
- Crushing Test	1350	lb	UL 1581 / UL 2556
- Dielectric Breakdown After glancing impact	32 26	kV	UL 1581 / UL 2556
- Relative Permittivity (SIC) @ 90°C, 60 Hz	2.5		UL 1581 / UL 2556
- Dielectric Constant , 1 MHz – 100 MHz range - Dissipation Factor @ 1 MHz @ 100 MHz	2.34 0.0012 0.0008		ASTM D150
- Insulation Resistance @23°C Initial @90°C After 12 weeks @90°C	220,000 2,000 2,600	MΩ-1000 ft.	UL 1581 / UL 2556
- Degree of Crosslinking	67	%	ASTM D2765
- Low Temperature Brittleness Point (LTBP)	Below -75	°C	ASTM D746
- Acid Gas Emission	3.68	% HBr	CSA C22.2 No. 0.3 Method 2
- Oxygen Index	23.5	% Oxygen	ASTM D2863

Typical values reported above (except MFR) are obtained from 14 AWG samples with 30-mil wall thickness, cured in hot water (6 hours @ 95°C). Oxygen Index was performed on a 4mm thick compression-molded sample.

PROCESSING

SACO AEI strongly suggests that the pre-grafted base PEXIDAN® A-3001 and CAT-047FR-UV2 flame retardant catalyst masterbatch be dosed directly in the throat of the extruder using a gravimetric or loss-in-weight feeder. In order to prevent scorching the grafted compound and the catalyst masterbatch must be stored separately and mixed just prior to consumption.

For UL44 type cables requiring FT2 performance, a ratio of 80:20 should be used. For UL4703 type cables requiring FV1 performance, levels of CAT-047FR-UV2 up to 35% may be required depending upon wire size. Consult SACO for catalyst loading for UL4703 PV wire applications.

PEXIDAN® X/T-UV2 can be processed with PE single screw extruders having proper temperature control and a good mixing screw (2.5:1 ratio at least).

The following temperature profile is suggested:

barrel zones:	from 310 to 340°F
head:	365°F
die:	365°F
screw:	neutral

These conditions may depend on the equipment being used. It is recommended using conveyors and tools shaped in order to prevent stagnation in the head. In case of prolonged shutdown, purge the extruder with LDPE.

Curing can be done in the following ways:

- by immersion in hot water at 70-95°C
- by exposure to low pressure steam
- ambient atmospheric moisture

In all cases curing time depends on wall thickness, temperature, relative humidity and quantity of wire on the reel.

A wide range of commonly used color masterbatches based on LDPE are available. A use level of 1.5% by weight should give an acceptable color but this will be dependent upon the concentrate itself. Levels of concentrates should be kept to a minimum because they can detract from performance. It is strongly recommended that the catalyst and color masterbatches be dried prior to usage 4-6 hours at 60°C (150°F) using a desiccant dryer.

STORAGE

Due to the moisture sensitivity of PEXIDAN®, SACO AEI Polymers suggests that the following points should be considered when storing the materials:

- Ambient temperature generally not exceeding 30°C
- Avoid direct exposure to sunlight and weathering
- Once the package has been opened it is suggested that the entire contents be used.

PACKAGING

The physical form of both PEXIDAN® A-3001 and CAT-047FR-UV2 is free-flowing pellets, and are available in 1500-lb (680-kg) and 2000-lb (907-kg) gaylords respectively, or in 300-lb (136-kg) fibre drums.

Our technical team is at your disposal for further information and assistance.

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