



**THE
OKONITE
COMPANY**



THE OKONITE COMPANY

802 Century Plaza Dr
Houston, Texas 77073
281-821-5500
www.okonite.com

Okonite Support for Asia Market

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Celebrating 146 Years

The Okonite Company 1878-2024...And Beyond

The Okonite Company

- Founded 1878 – one of the oldest Independent Wire and Cable Companies the world
- 100% Employee Owned (ESOT)
- (6) Six Manufacturing Facilities
- (5) Five Customer Service Centers
- (24) Twenty Four District Offices
- Direct Customer Support- Technical assistance is the best in the wire and cable industry

Okonite Manufacturing – 2 M ft²



CUMBERLAND, RI



RICHMOND, KY



ORANGEBURG, SC
(COMPOUNDING PLANT)

SANTA MARIA, CA



ORANGEBURG, SC
(CABLE PLANT)

PATERSON, NJ



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Okonite Service Centers – 350k ft²



Pittsburgh



Kansas City



Houston



New Orleans



Portland



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Okonite Locations



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For over 50 years Okoguard has brought electric power to Customers With the reliability you'd expect. Its applications include:

- **Transmission**
 - Fossil, Nuclear & Hydro Generating Facilities
 - Distribution
 - Transmission
 - Submarine Cables
- **Industries**
 - Water & Sewerage Plans
 - Oil Refineries
 - Pulp & Paper Mills
 - Steel Mills
 - Pharmaceutical Plants
 - Petrochemical Plants
 - Shipyards
 - Electronic Manuf. Plants
 - Auto Assembly Plants
 - Foundries
 - Aircraft Plants
 - Mining Equipment
 - Glass Factories
 - Food & beverage
 - Processing Plants
 - X-Ray Manufacturers
- **Institutions**
 - Universities
 - Federal & State Agencies
 - Research Centers
- **Commercial**
 - High-Rise Buildings
 - Shopping Centers
- **Transportation**
 - Railroad & Rapid Transit
 - Airports

Cable Constructions

THE OKONITE COMPANY

Providing Quality Cable Products for over 132 years

300-600V Instrumentation SP-OS, (UL) Types TC, ITC, PLTC (with or without CLX)	600V (UL) Type RHH, RHW-2 USE-2, VW-1, RW-90 EP-TS/CPE	(UL) MV-90 2.4 kV Non shielded EP-TS/CPE 5 kV Airport Ltg. Cable
600V Power & Control (UL) Type TC-ER	2000V (UL) Type RHH, RHW-2 EP-TS/CPE	5.8 kV (UL) Shielded MV-105 Type CT, EP-PVC
600V Control Cable (UL) Type TC (XHHW-2), XLPE-PVC	15 kV Aerial Jumper Cable	15-35 kV Shielded (UL) MV-105, EP-PVC
600V CLX Control Cable (UL) Type MC-HL, CT, (XHHW-2) XLPE-PVC	15-35 kV URD Cable EP-PE	15 kV Shielded (UL) MV-105 EP-PVC Type CT
600V CLX Power Cable (UL) Type MC-HL, XHHW-2, CT XLPE-PVC	15-35 kV URD Cable in Conduit	15 kV Shielded (UL) MV-105 EP-TS/CPE, Type CT
2.4 kV CLX Non-Shielded (UL) MV-90 Type CT, MC-HL, EP-PVC	15 kV Self Supporting Aerial Cable (Jacketed & Non-Jacketed)	89 kV Shielded 105 C EP-PVC
5.8 kV thru 35 kV Shielded (UL) MV-105 Type CT, MC-HL, EP-PVC	15 kV Paper Insulated Lead Covered (PILC)	115 - 345 kV Pipe Type Cable System

www.okonite.com
Employee Owned Since 1976

- Low Voltage Power & Control 600/1000V
- Medium Voltage (EPR) 2.4KV – 35KV (UL & IEC) and 45KV - 69KV (AEIC & ICEA)
- Instrumentation 150V/ITC, 300V/PLTC , 600V
- High Voltage Transmission 69KV-345KV (LPP and Kraft HPFF and HPGF)
- Specialty Cables
 - Fire Resistant (IEC 60331)
 - RR Track and Signal Cable
 - X Ray Cable

Quality

- Limited long term material providers
- Strict internal acceptance standards
- Triple Tandem Extrusion
 - Laser micrometer verification of each layer
- Every foot of cable is tested to internal and industry standards
- Hand screening as cable is prepped for final packaging.
- Over 50 years of performance history without a single insulation related failure to date

**CERTIFIED TEST REPORT
CERTIFICATE OF COMPLIANCE**

The Okonite Company
1740 Berea Road
Richmond, Kentucky 40475

Report No. 48842
Date 1/17/2022
Reg. No. 54-3308
Page 1 of 15
ARAMCO MN No 1000416859
Product Code 571-22-3957
ARAMCO PO No. 4506600422

Customer: FRONT END LIMITED COMPANY for SAUDI ARAMCO
Customer Order Number: PO-000081 Item: N/A
Manufacturing Order No. 07-3655-1
Manufacturing Specification: SAUDI ARAMCO SPEC 15-SAMSS-502 5/20/20
Cable Description: 3/C #4 CLASS B COPPER C-RD -SS- 115 OKOGUARD EPR - 024 SC EPR - COLORED MYLAR STRIPS 005 COPPER TAPE (10% MIN LAP) - CABLED W/3 #10 7X COPPER GRD WIRE - FILL - TAPE ALUMINUM CLX - 060 FR OKOSEAL PVC - SEQ PRINT - 5KV 133% OR 8KV 100% FOR CT USE

CERTIFICATE OF COMPLIANCE: Issued in conjunction with and subject to OKONITE'S standard Warranty and Limitation Liability.
THE OKONITE COMPANY hereby certifies to the customer named above that the above described materials were duly tested during manufacture and that the materials meet or exceed the applicable requirements.

CERTIFIED TEST REPORT
The insulated conductor(s) withstood the following tests: 23 KV AC for 5 Minutes
The insulated cable conductor(s) has an INSULATION RESISTANCE of not less than that corresponding to a constant of 50000 megohms-1000ft. at 15.6°C.
The DC RESISTANCE of the conductor(s) at 25°C does not exceed ICEA values in Ohms per 1,000 ft of 0.268000
Conductor Continuity: Passed Shield Continuity: Passed
Corona Level (cables over 3kV ONLY) PASSED after degassing in accordance with AEIC CS8

This report covers material shipped from Richmond to FRONT END LIMITED COMPANY for SAUDI ARAMCO
We hereby certify this to be true and accurate copy of the results of tests conducted in accordance with orders and specifications listed.
Special Statements for this CTR/COC:
Manufacture Date : 01/2022
" Cable made in USA for Saudi Aramco "
" Cable made in accordance with Okonite QS Manual Rev 12 "
" Manufactured, Marked and Shipped Per Saudi Aramco Spec 15-SAMSS-502 and Saudi Aramco PO 4506600422 "

MARKS : MADE IN USA ECCN EAR99
HTS 8544.60.4000
ARAMCO PO 4506600422

The Okonite Company
M. Marriner
M. Marriner
Engineer/Manager of Test
Q-123-C-el REV 13

Quantity Ordered	304.8 m / 1000 ft	Quantity Accepted for Shipment	315.77 m / 1036 ft	Number of Reels	1
QC Length Number	Meters / Feet	Sequential Top	Sequential Bottom		
7T0807A	315.77 / 1036	70001132	70000098		



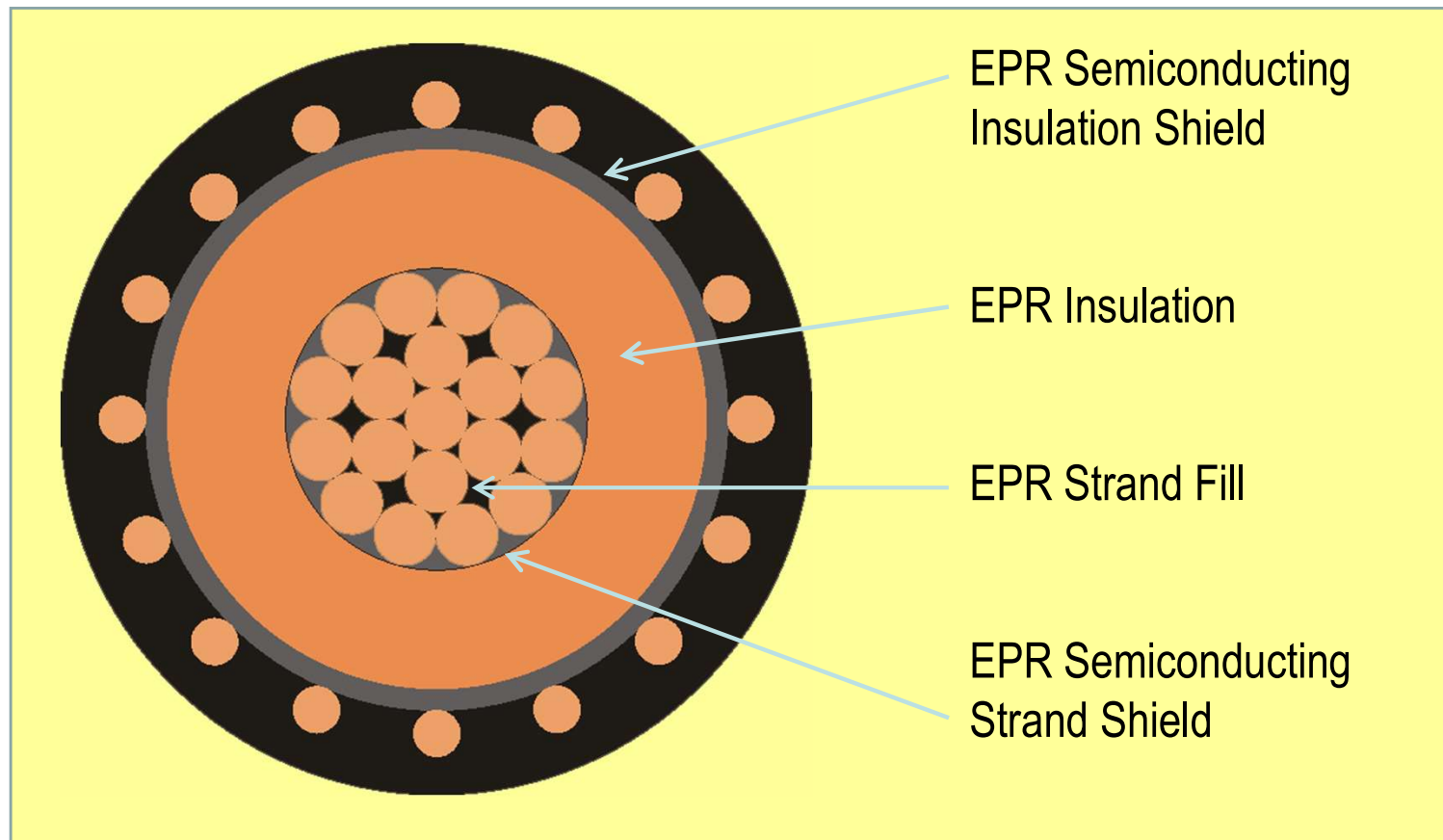
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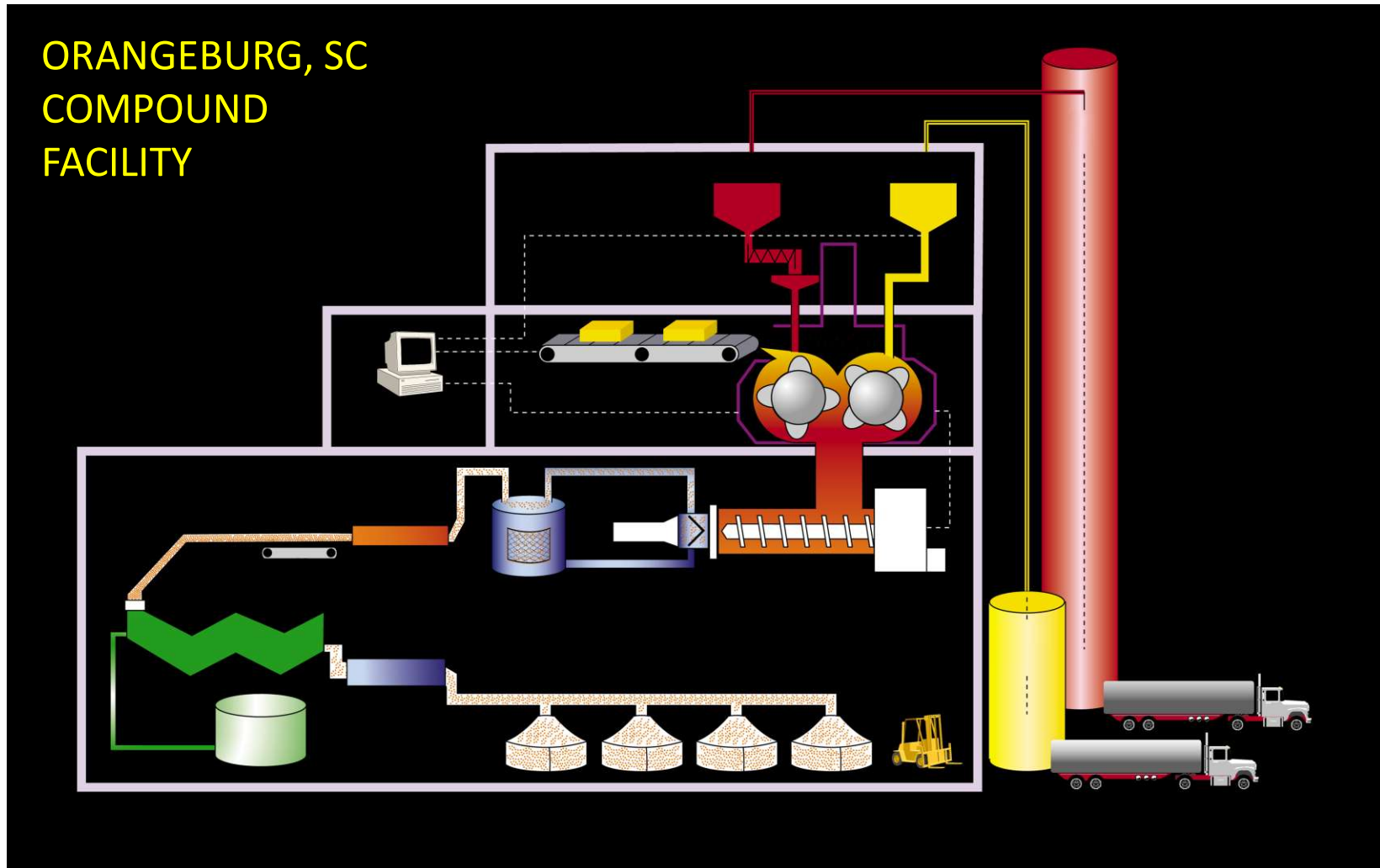
All EPR Construction

Okoguard Cables Utilize An All EPR Insulation System

All components – including filled strand – assure chemical & thermal compatibility



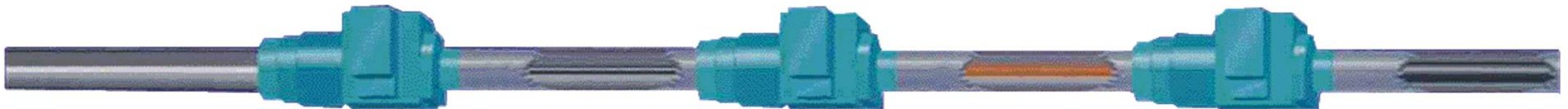
MANUFACTURING PROCESS



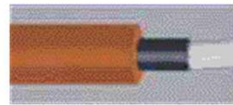
Closed Loop System Assures Cleanliness

TRIPLE TANDEM EXTRUSION

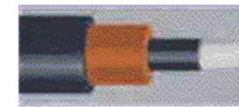
- *Okoguard Cables are manufactured on a continuous vulcanization machine (CV) with three tandem extruders*
- *A closed system that applies all three EPR components in one process*
- *Damage of critical interfaces and contamination are eliminated*
- *Employs laser micrometers to measure and control dimensions*
- *Triple Tandem is superior to the common head process which is limited to the measurement of the combined insulation and insulation shields*



1st extruder applies the conductor shield, a black semiconducting, EPR thermosetting compound



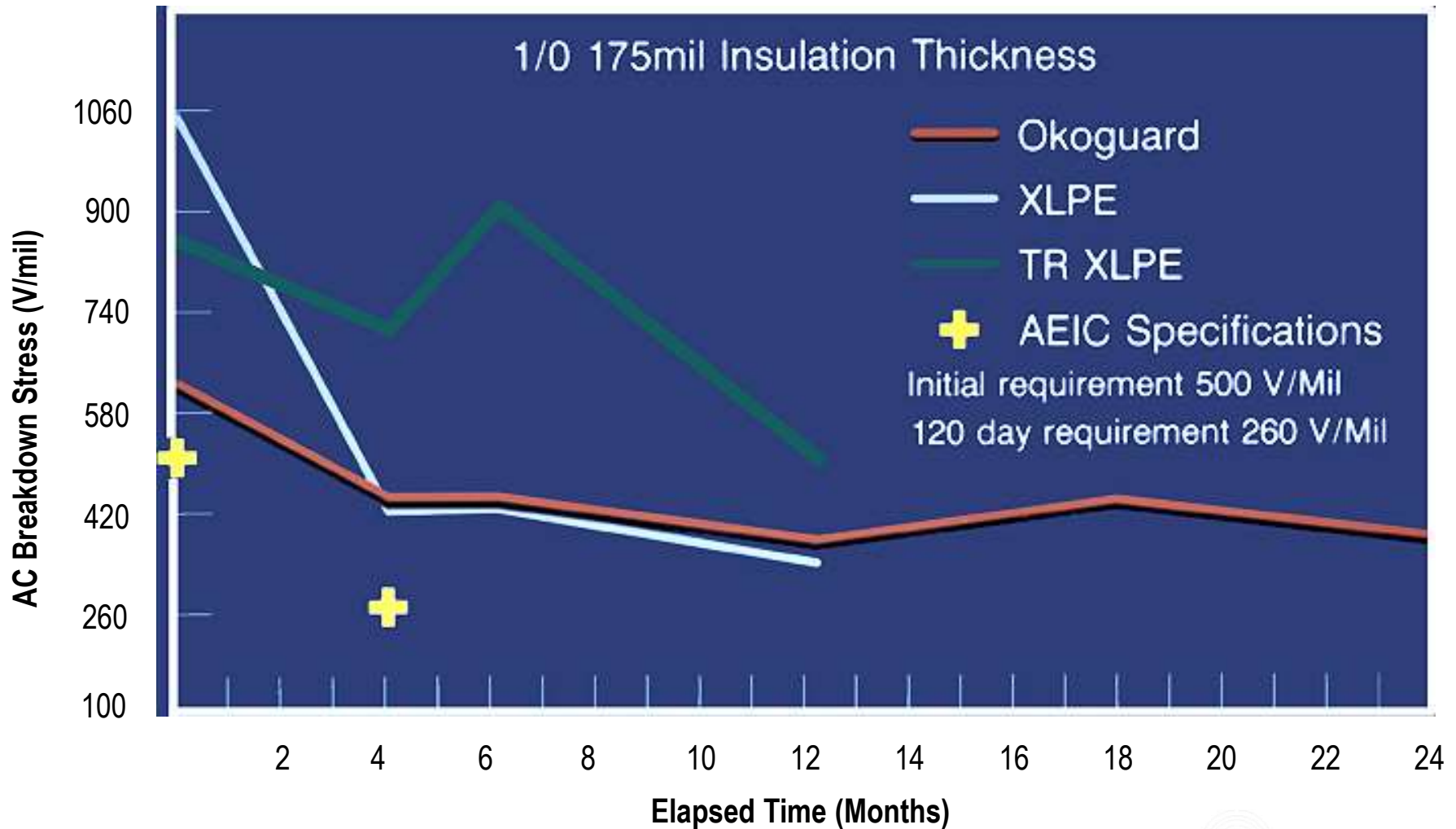
2nd extruder immediately applies red Okoguard EPR insulation



3rd extruder applies the insulation shield, a black semiconducting, EPR thermosetting compound

LONG TERM AGING

AEIC Water Tree Test Unjacketed URD Cable



ACCELERATED CABLE LIFT TESTS

Per IEEE Paper #81WM115-5

Sample: 1/0 A/175 Wall - Unjacketed

- AC Tested Voltage - 4X Voltage to Ground
- Water Temperature – 60-70°C
- Conductor Temperature – 90°C
- Water in Strand
- Days to Fail 50% of the Samples*

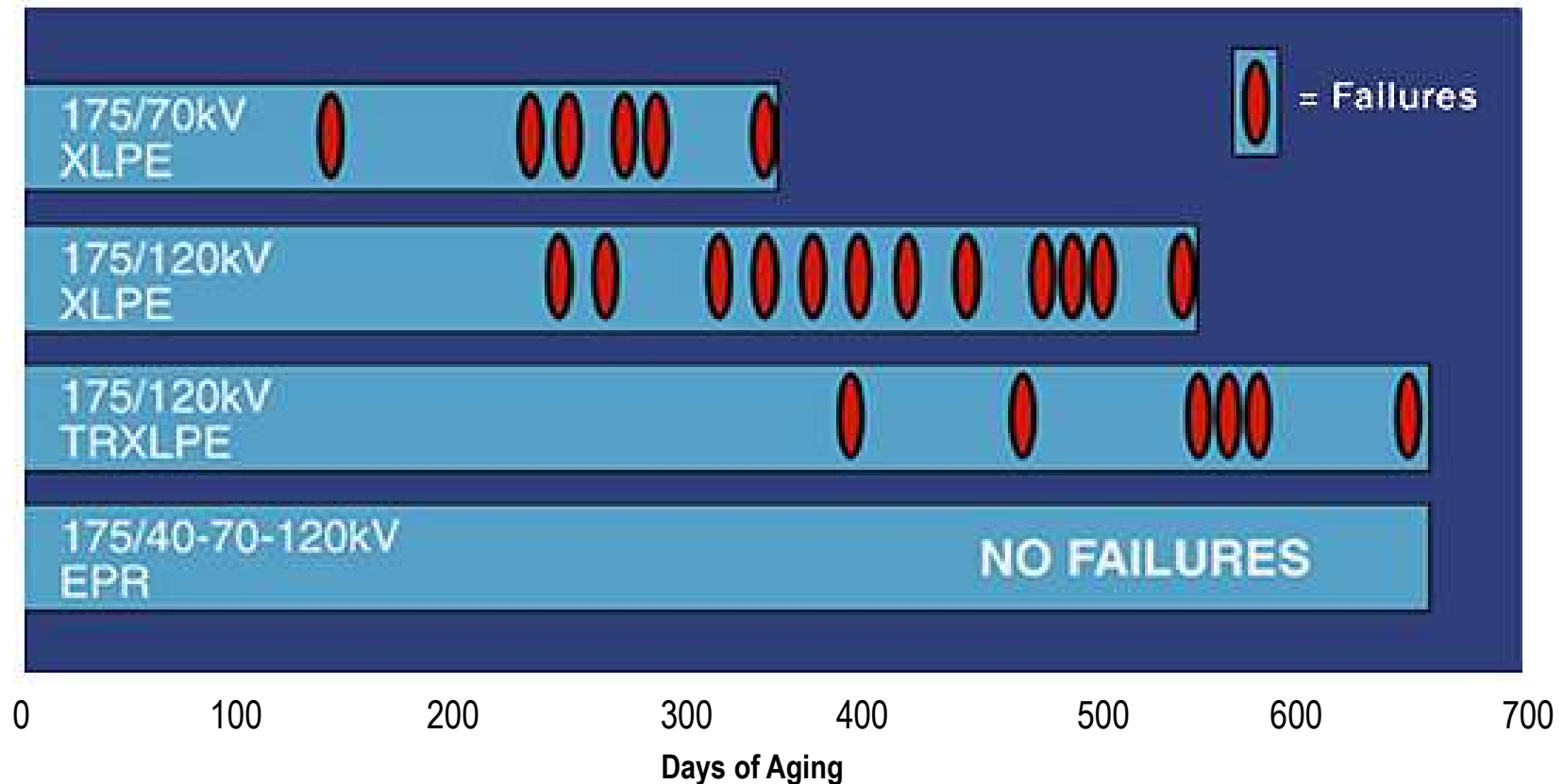
XLPE	46
TR XLPE	186
TR XLPE w/Super Smooth Semi-Con	360
XLPE w/Super Smooth Semi-Con	375
OKOGUARD	

TEST TERMINATED AFTER
1415
 DAYS
 (3.87 YEARS)

* Published Data

LONG TERM AGING

Georgia Power/EPRI
Impulse Test on 175 MIL Samples
12 Samples Per Test



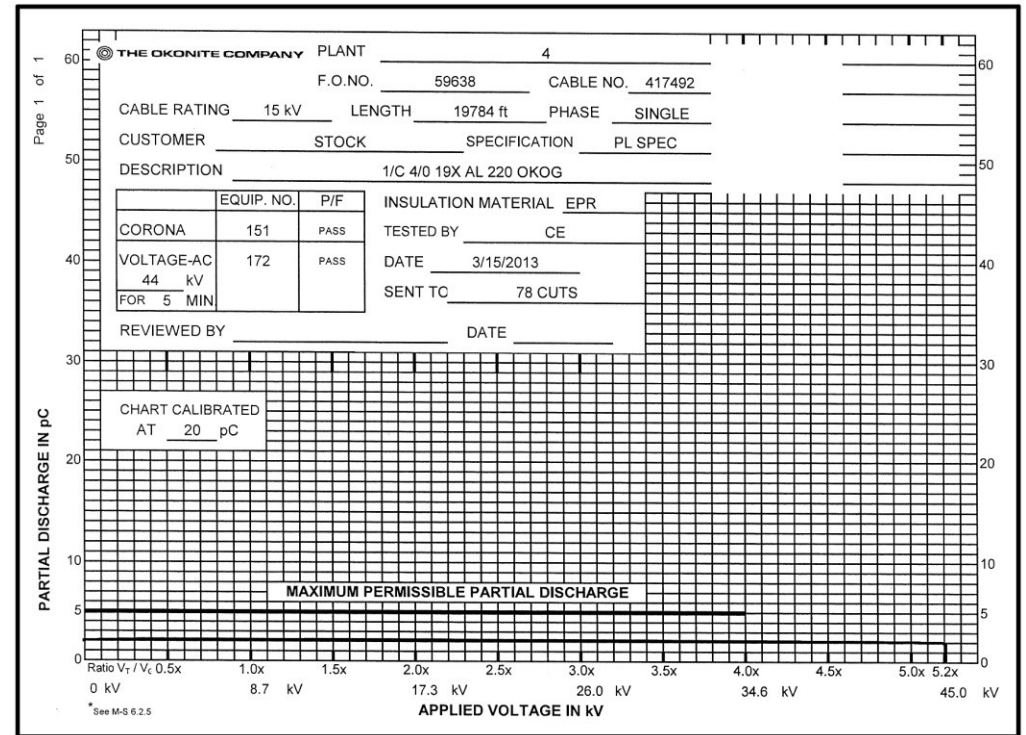
- 1 Samples prepared for aging per AEIC CS6-87 Par. L1.4, 12 samples each category
- 2 No failures on EPR Samples – Test were conducted at the end of 640 days

CORONA TESTING

Prior to Shipping, Okoguard Cables Are Corona Tested at 4 Times Specified Voltage to Ground



The Corona Test Results are Recorded and Comply with, or Exceed AEIC Standards



FLEXIBILITY – OKOGUARD vs XLPE

Each Sample 1/0 Aluminum (19X) 345 Mil Insulation Wall



Bending at room temperature

Okoguard – natural sag – 0 lb.

XLPE – 4 lb. pull required to equal Okoguard



Bending at 0 Centigrade

Okoguard – natural sag – 0 lb.

XLPE – 9 lb. – requires more than double room Temperature pull to equal Okoguard








Okoguard permits ease of handling during Installation, splicing and terminating

- Okoguard flexibility at 0° centigrade remained the same as at room temperature
- XLPE lost one half of its flexibility from room temperature to 0° centigrade

OKOGUARD®

METALLIC SHIELDING SYSTEMS

	Description	Features
	Helical Copper Tape Shield	Good Short Circuit Performance Provides Some Moisture Barrier Improves Fire Performance Good Flexibility
	Helical Copper Wire Shield 1/3 or Full Neutral	Better Short Circuit Quality Good Moisture Barrier Good Fire Performance Moderate to Good Flexibility
	Longitudinal Corrugated Tape Shield (LCS) 5 to 10 Mils Thick	Excellent Short Circuit Performance Relatively Easy to Terminate Excellent Flexibility Low Cost Shield
	Extruded Lead Sheath	Good Short Circuit Performance Excellent Moisture and Chemical Barrier
	Flat Strap Wire Shield 1/3 To Full Neutral	Excellent Short Circuit Qualities Provides Means for Reduced Diameter Easily Terminated

- 1 All construction offered with Thermoplastic, Thermoset or Low Smoke Jackets.
- 2 Low Smoke Jackets – combination of the above shields may be used.

SERVICE RECORD

For over 45 years Okoguard has brought electric power to America and International customers with the reliability you'd expect. Its applications include:

● **Electric Utilities**

Fossil, Nuclear, Hydro, Solar & Wind Generating Facilities
Distribution
Transmission
Submarine Cables

● **Industries**

Water & Sewerage Plans	Auto Assembly Plants
Oil Refineries	Foundries
Pulp & Paper Mills	Aircraft Plants
Steel Mills	Mining Equipment
Pharmaceutical Plants	Glass Factories
Petrochemical Plants	Food & beverage
Shipyards	Processing Plants
Electronic Manuf. Plants	X-Ray Manufacturers

● **Institutions**

Universities
Federal & State Agencies
Research Centers

● **Commercial**

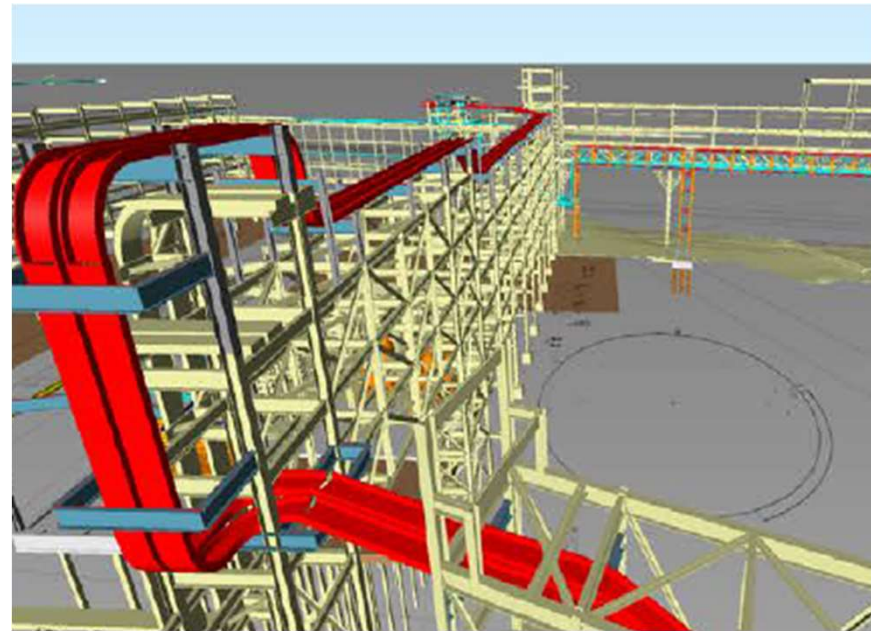
High-Rise Buildings
Shopping Centers

● **Transportation**

Railroad & Rapid Transit
Airports

Services

- Every Okonite product includes service and support
- From FEED through End of Life
- Project Support
 - Ampacity studies
 - Design review
 - Economic analysis
 - Routing considerations
 - Cable pulling calculations
 - Budgetary pricing
 - Cable management
 - Installation training
 - Condition assessments
 - Root Cause Analysis



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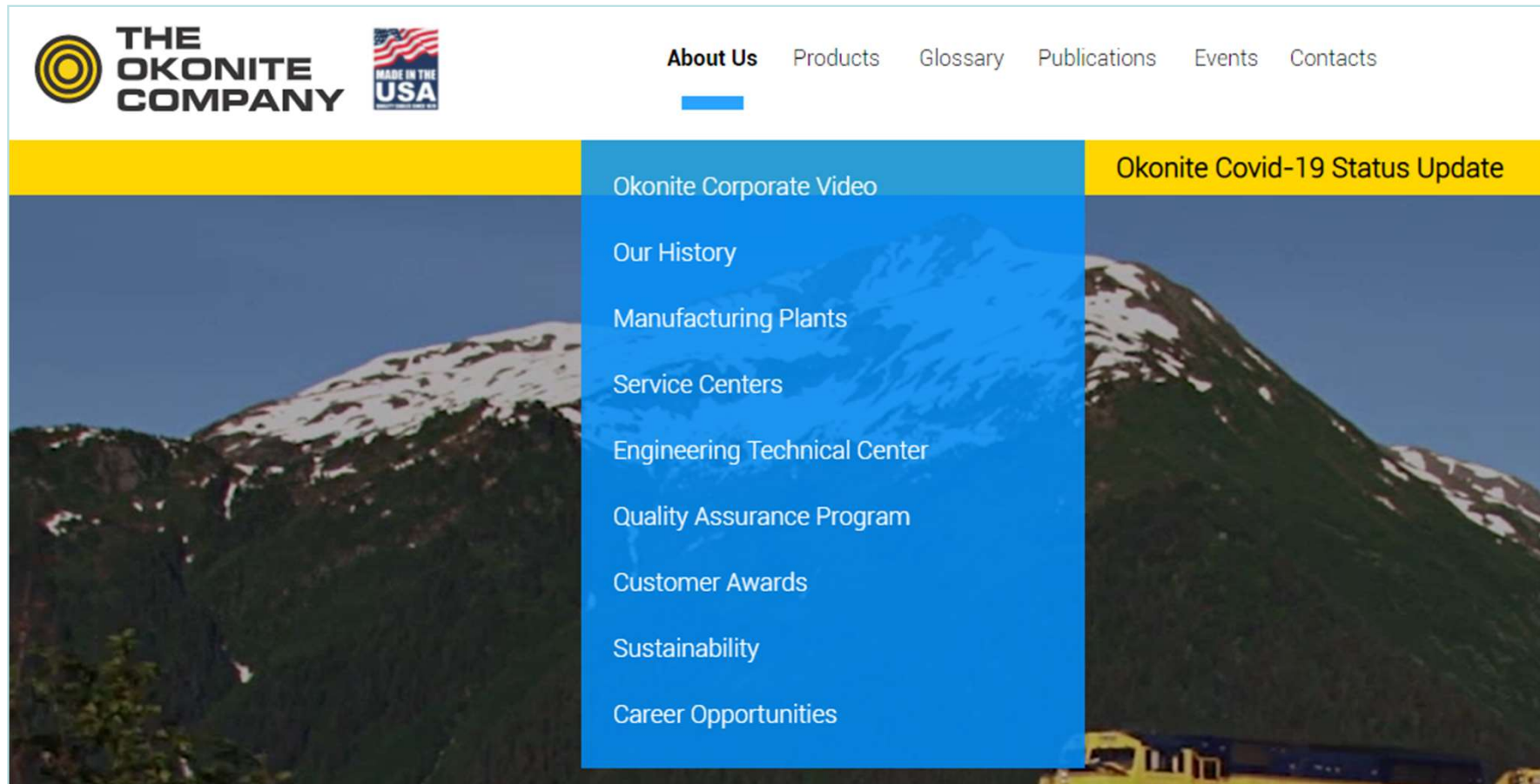
State of Manufacturing

- All manufacturing is in the US
- Plants running over 24/7 to meet demand
- Long term supply agreements in place
- Seeking alternate suppliers in addition to our long-term suppliers
 - Stringent Quality Control
- Creating new manufacturing processes to impact productivity
- Considering new plant locations



More Information?

- See our website for more information our history, products, technical data, and our corporate video at www.okonite.com.





THE OKONITE COMPANY

At Okonite, we remain committed to continuous improvement through modernization and expansion programs.

The employee owners at Okonite would like to thank you for your continued support and confidence. We stand ready to serve your cable needs with superior quality and service unparalleled in the industry.