

# HIGH PERFORMANCE WIRE & CABLE HISTORY

## *The Companies, The Products and The Applications/Markets*



### Overview

- People, products & applications contributed to amazing growth of high performance wire & cable business. From less than \$10 million/year sales in the 40' s - to more than \$1 billion/year in the 90's.
- Early pioneers were true entrepreneurs whose business grew until capital became limiting, then were sold to larger companies, and conglomerates.

### References

This genealogy is primarily based on a presentation to NEMA in March 1998, by Dave Allen, Wire & Cable Consultant. It was revised and updated through early 2004 with additional input from the W&C Section of SPI's Fluoropolymers Division and by internet and Thomas Register searches. It was edited and coordinated by E. Robert Hill, Hill Business Writing.

### Updates, Revisions and Corrections are Welcome

If your company has inadvertently been omitted or if your company data needs updating or revision, **please send any corrections to SPI FPD staff via email at [fluoro@socplas.org](mailto:fluoro@socplas.org).**

We would be pleased to add the founders after your company name.

## ***The Late 40's***

### **Companies**

- Warren Wire (John Cook)
- Surprenant (Bert Surprenant & George Forsberg)
- Tensolite (Harry Minek)
- Rockbestos

### **Products**

- Asbestos/glass fibers
- Teflon® granular \_ skived tape & ram extruded coax core
- Teflon® dispersions \_ magnet wire & saturants for fibers

### **Applications**

- Magnet wire \_ high temperature motors
- Aircraft engine wire (M 7139)
- Coaxial cable (std. size)

***Prior to this only PVC, PE, rubber insulated cables with maximum temperature ca. 90° C for signal, power uses.***

## ***The 50's***

### **Companies**

- Warren Wire begat: Hitemp & American Super Temp
- Surprenant begat Rex Corp \_ Brand Rex
- Thru H. Lee begat: Thermax & Thermatics
- Tensolite begat PIW & Microtek
- DuPont begat W. L. Gore plus tubing & granular processors (Chemplast, Ethylene & Penn Tube)
- Paul Cook started Sequoia W&C

### **Products**

- Early 50's, Teflon® fine powder – for both paste extrusion & tapes
- KEL-F for jackets/saturants
- Late 50's, Teflon® FEP (T -100X) experimental melt extrusion

### **Applications**

- Hook-up wire for radar, other electronic equipment & computers (replacing PVC due to solder iron resistance)
- Mini-coax & jackets

***Very fast growth in total business.***

## ***The 60's***

### **Companies**

- Super Temp begat:
  1. Milo Carolina Wire \_ Labarge \_ Barcel
  2. Harbour \_ Milibride \_ Belden \_ Cable USA
  3. Super Temp became Hercules/Haveg \_ (later) Champlain
- PIW \_ Samuel Moore/Dekron \_ Furon
- Warren sold wire operations to General Cable, became Chemfab and begat:  
Dodge Fibers –Engineered Yarns
- Hitemp \_ Simplex \_ Ametek \_ back to Hitemp
- Tensolite & International Wire \_ Carlisle
- Raychem founded by Paul Cook (1958)
- Times Cable, Revere, & Prestolite enter business
- Carol Cable Company starts up in old textile mill in Warren, RI in 1968.

### **Products**

- Teflon® FEP commercialized in early 60's
- Kynar® PVDF introduced mid 60' s – also pyre ML
- Kapton® polyimide introduced late 60's
- KEL-F sold to 3M

### **Applications**

- Melt extruded jackets for cables – (FEP & PVDF)
- Tri-lead (FEP) & IBM back panel wire (PTFE)
- Mineral Filled PTFE for aircraft engine wire
- Appliance wire & plant (industrial) cable
- F-4 airframe wire (PTFE)
- Wiring for space vehicles (PTFE)
- Heater cable & thermocouple cable
- Poly X & Stilan® for aircraft wire
- Pyre ML replaced PTFE for magnet wire

***Big build-up in electronic gear for Vietnam war in latter half of 60's.***

## *The 70's*

### **Companies**

- Surprenant \_ ITT
- Thermatics \_ Teledyne
- Packard Electric, Phalo, Madison, Radix & Berk-Tek enter business
- Revere \_ Pirelli \_ Specialty Cable
- Wirecraft Products was closed in 1976. The plant in MA was purchased in 1978 by Harrison Quirk and became Quirk Wire Company, doing business as WireCraft Products.

### **Products**

- Tefzel® ETFE introduced 1970
- Teflon® PFA introduced 1973
- Halar® ECTFE developed in mid 70's
- Asbestos outlawed
- Poly X & Stilan® withdrawn

### **Applications**

- Kapton® adopted for L-1011, other commercial aircraft plus F-14, -15, -16, -17
- New York City Law No. 5 (1973), Fire alarm cable
- 1975 & '78 NEC – plenum cables/ UL 910 test
- Transit wire – Tefzel® ETFE
- Automotive engine compartment wire – Tefzel® ETFE
- Down hole cable – FEP
- IBM flat cable, FEP film & Tefzel® ETFE

***Major hotel fires lead to adoption of low smoke, fire resistant cables for plenum installation without conduit.***

## *The 80's*

### **Companies**

- Hitemp \_ Anaconda/Ericsson \_ NEK
- Thermax \_ Dearborn
- Brand Rex \_ BICC
- Belden \_ Cooper
- General Cable buys PIW
- ITT Surprenant becomes FL Surprenant \_ Delta Surprenant
- Comm-Scope, Siecor enter along with Montrose, Mohawk & West Penn
- Hudson buys International Wire

### **Products**

- PVC/Nylon prohibited for aircraft wire
- XL ETFE for aircraft wire

### **Applications**

- Much more plenum cable
- NEMA HP-100 plant cables, plus thermocouple, heater cables
- Major military build-up in aircraft/ electronics for Mid- East war

*Major growth due to plenum cable adoptions throughout US.*

## *The 90's*

### **Companies**

- Montrose, Mohawk, West Penn, Phalo, Barcel, plus Thermax/Dearborn become CDT
- Draka buys Hitemp /Helix, BIW
- Alcatel buys Berk-tek
- Comm Scope buys Thermatics from Teledyne
- Marmon buys Surprenant, Harbour, & Cable USA – combines with Rockbestos
- Phelps Dodge buys Hudson & Nesor
- Belden becomes independent again
- AT&T becomes Lucent Technologies
- General Cable acquires Carol Cable Company in 1990.
- The “New” Continental Wire and Cable, Inc. was organized in 1997, Robert E Delp- President.

### **Products**

- Compounded PVC's approved for plenum cable
- Category 5 plenum cables with FEP grow rapidly \_ Category 7
- M81381 Kapton® polyimide wires replaced by new PI/PTFE composites for aircraft wires

### **Applications**

- International specs on aircraft wires, premise cables & conductors become more important due to European unity (ISO/IEC/EN)
- Mil specs being replaced by non-government specs (Sec. Perry memo)

### *Rapid growth of EI/TI Standards*

### *Plenum and data cable markets continue to grow rapidly*

## *The Early 2000's*

### **Companies**

- Lucent become Avaya
- Commscope buys Avaya
- Belden and CDT merge becoming Belden-CDT Inc.
- Alcatel spins off Wire & Cable business, which is called Nexans

### **New Products**

- Category 6 plenum cables introduced and grow rapidly.
- Limited Combustible Cables (LCC) introduced

### **New Applications and Markets**

- Limited Combustible Cable (LCC) recognized and becomes increasingly important

### *Increasing Demand for Higher Data Transmission Speeds*

### *Wireless Growing Rapidly*