

a new light on

PLASTIC OPTICAL FIBERS

Perfluorinated Graded Index  
Plastic Optical Fiber  
GigaPOF<sup>®</sup>

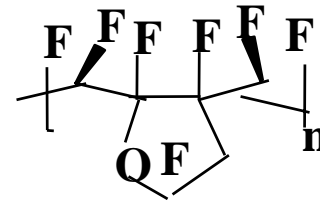
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# PRODUCTS overview

Chromis Fiberoptics: The Practical Solution

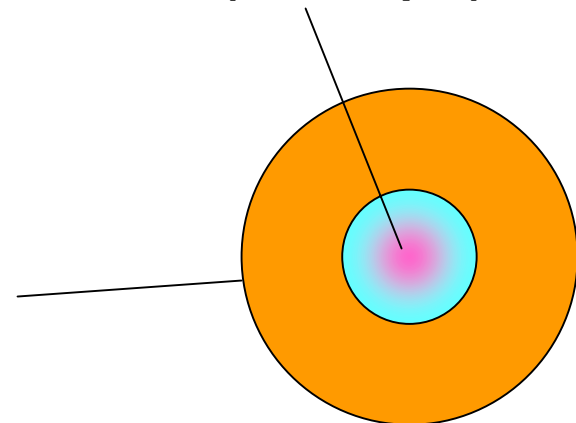
## New POF Material, New POF Design

- Extruded Perfluorinated polymers
- Outstanding geometries
- Wide useful spectral range
- High Bandwidth Graded Index
- Safe and easy to use



Amorphous  
fluoropolymers

Graded Index core  
(50-120  $\mu\text{m}$ )



Reference and Reinforcement (Overclad)  
(750  $\mu\text{m}$   $\pm$  5  $\mu\text{m}$ )  
Core/Overclad Concentricity = 5  $\mu\text{m}$

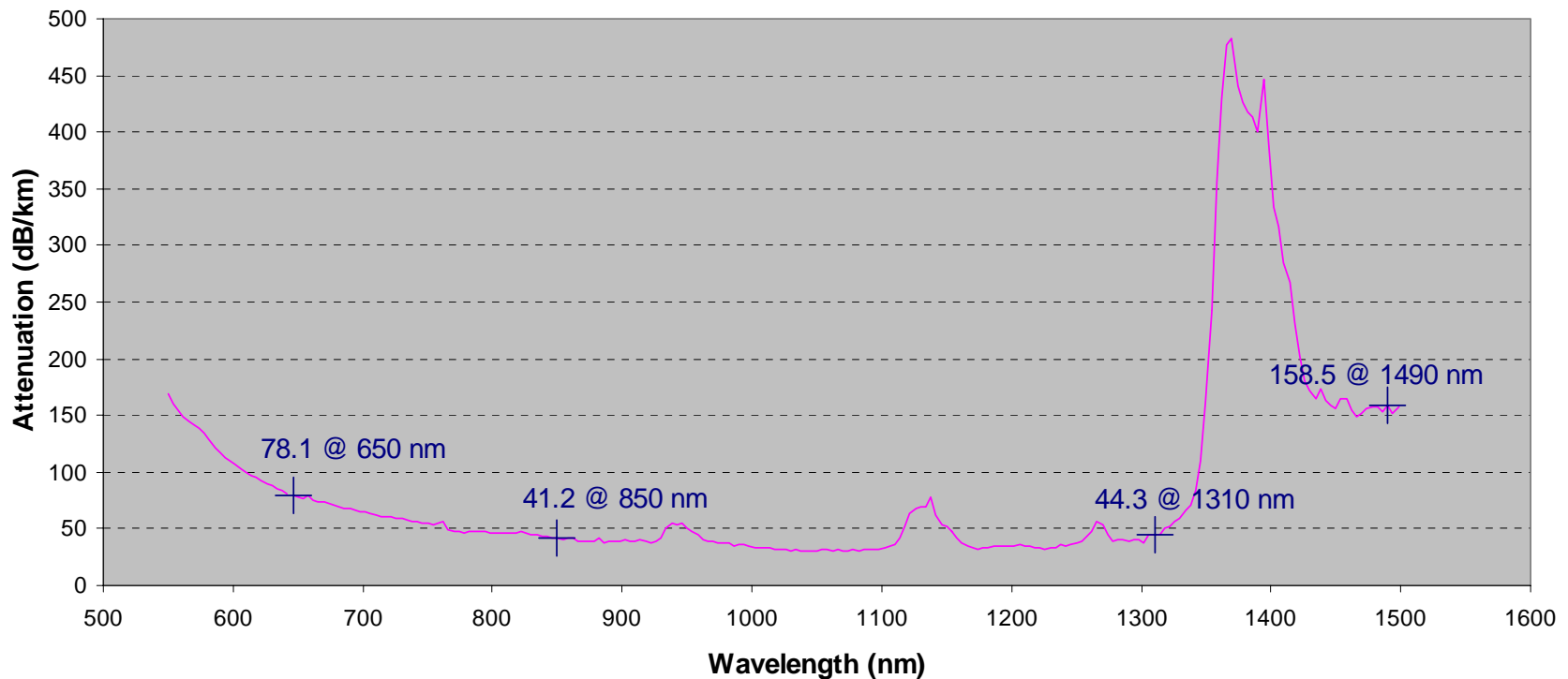
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Chromis Fiberoptics: The Practical Solution

## Vastly Improved Attenuation



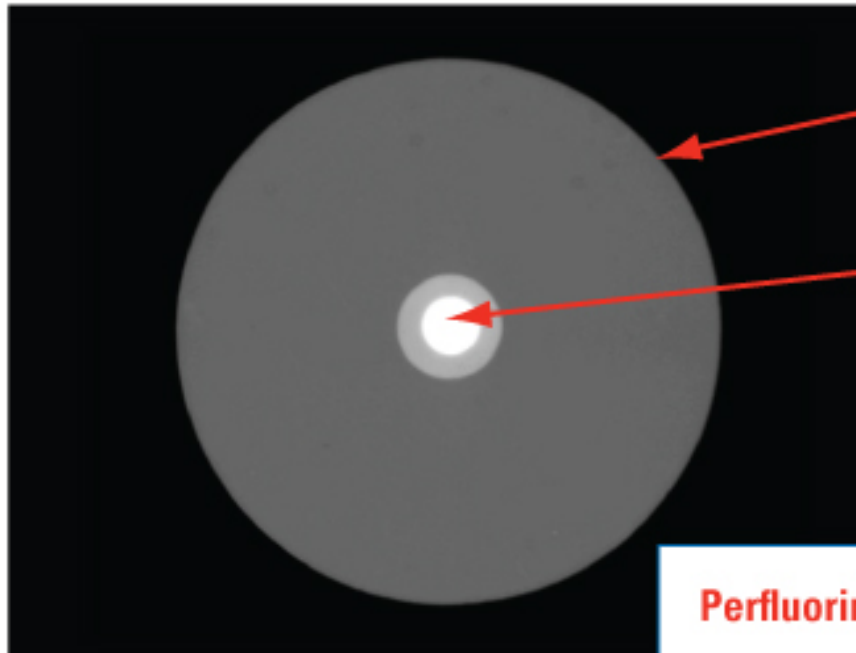
Spectral Attenuation - GigaPOF (SR grade)



# PRODUCTS overview

Chromis Fiberoptics: The Practical Solution

## New levels of geometric control



Over cladding:  
250 to 1000  $\pm$  3  $\mu$ m

Graded index core:  
50  $\pm$  3  $\mu$ m

Concentricity of Core/Over clad:  
< 3.5  $\mu$ m

### Perfluorinated Plastic Fiber Features

- 1) Simple end face preparation
- 2) Over cladding provides strength and the alignment feature

*750-micron overcladding  
is the norm*

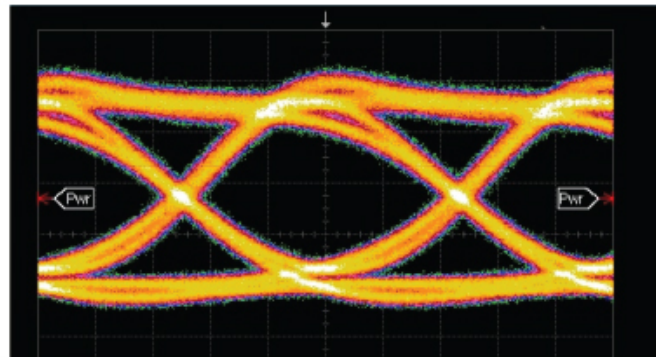
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## Gigabit Performance

- Typical overfilled BW  $>1000$  MHz-km
- Latest transmission experiments  
10 Gb/s x 220 m transmission, 40 Gb/s x 100 m transmission

### 100 Meter GigaPOF: 10Gbps Eye-Pattern

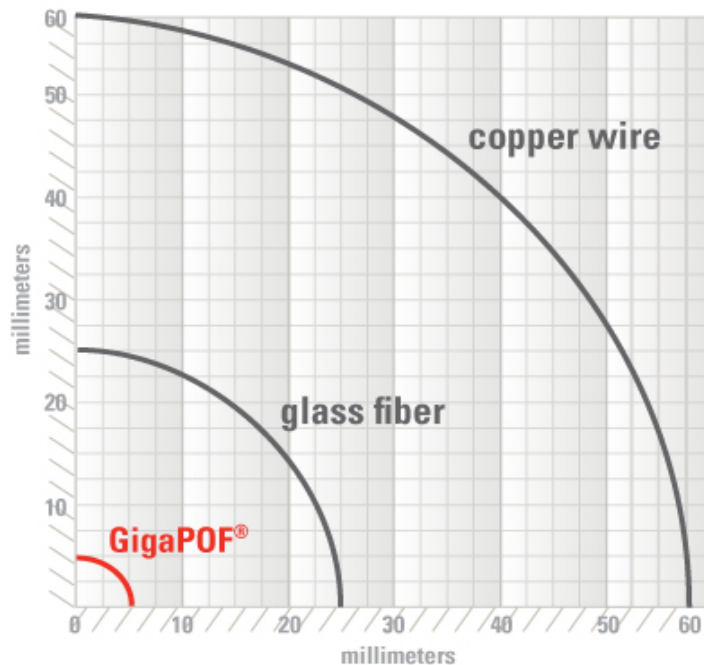


- Mode Coupling simplifies launch conditions and improves skew  
“Just get the light in the fiber”

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## Bend radii: 10Gbps, long term

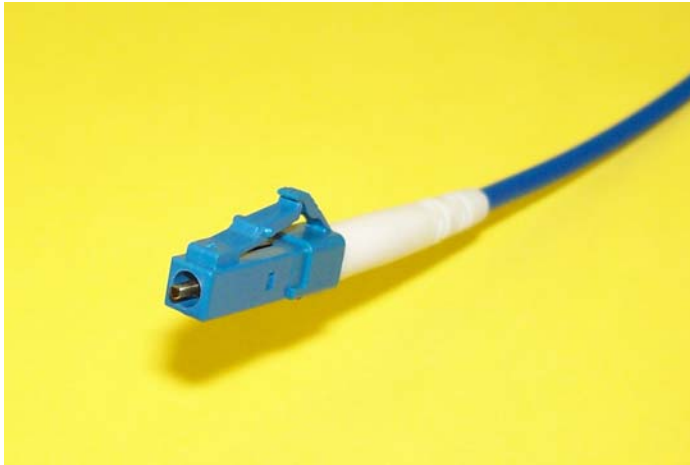


*Ductile GigaPOF® does not exhibit fatigue like silica fibers.*

*Optical fibers do not have bend induced cross-talk at high speeds like copper*

*GigaPOF® to 5mm long term*

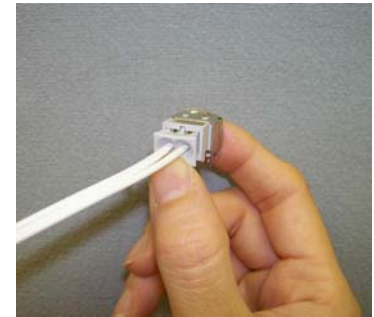
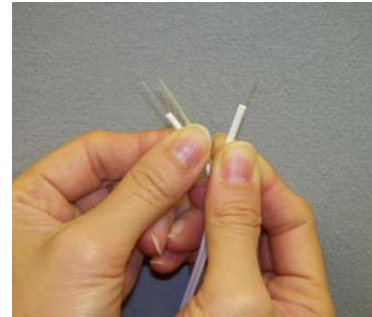
## Crimp-on Connectors for Field Termination



Included in draft IEC update  
of LC connector standard

- Instant crimp-on connectors, no adhesives
- 30 second polishing >>>> 1 second cutting of the end face
- 1 minute start to finish
- Safe.....No Glass Shards!

## The Future: Connectorless Field Termination



- Cable cut with ~\$2 disposable hand tool
- Strip 5-6 mm at cable end
- Insert and clamp in transceiver
- uses 75-micron core (~\$0.60/m) instead of 200-micron (~\$2.00/m)

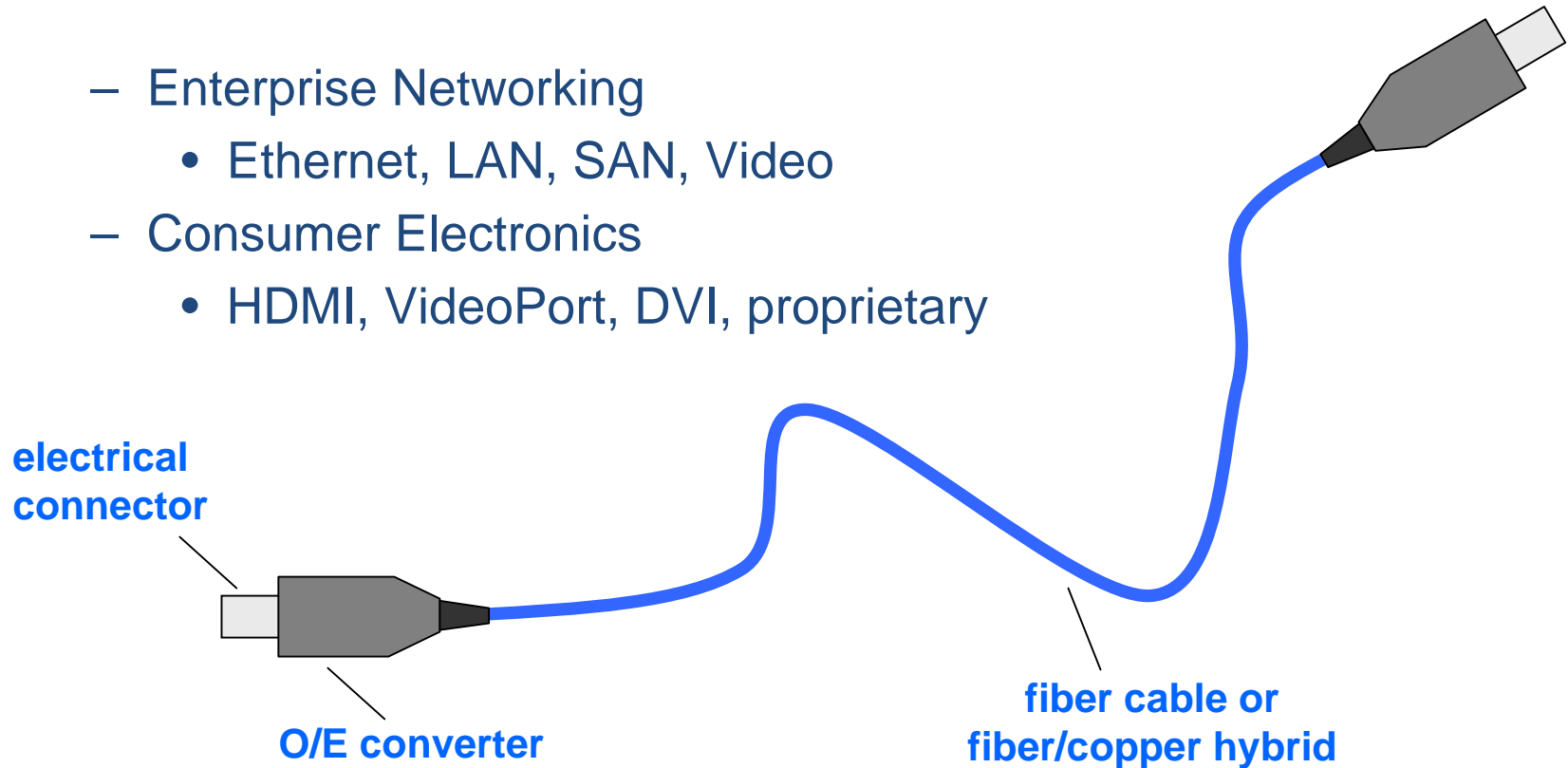


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Chromis Fiberoptics: The Practical Solution

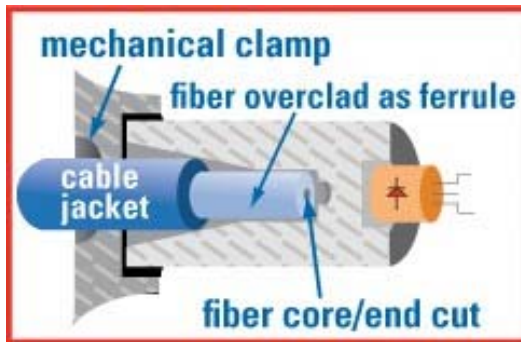
## Active Cable Solutions

- Enterprise Networking
  - Ethernet, LAN, SAN, Video
- Consumer Electronics
  - HDMI, VideoPort, DVI, proprietary



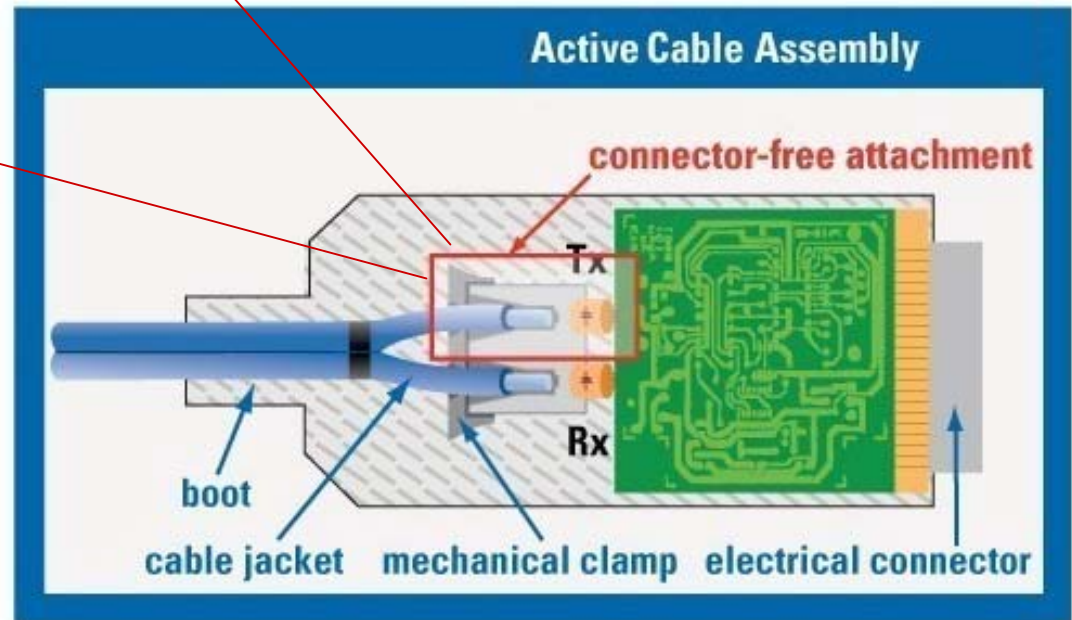
# PRODUCTS overview

Chromis Fiberoptics: The Practical Solution



**Key cost reducer:  
Connectorless termination**

- zero piece part cost
- secure with clamp or with adhesive
- large fiber OD enables standard lens designs



# PRODUCTS overview

Chromis Fiberoptics: The Practical Solution

## Key cost reducer: automatic termination

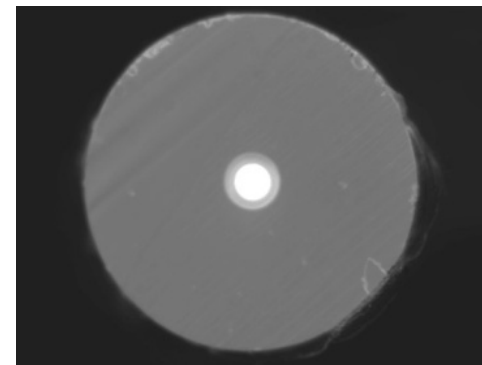
- Diamond blade cutting tool
- bare cable end or with connectors
- < 10 second cycle time
- Smooth, clean, endface, negligible loss
- Terminate multiple fibers simultaneously



### Fiber termination cost

Glass : \$1.50 per fiber end

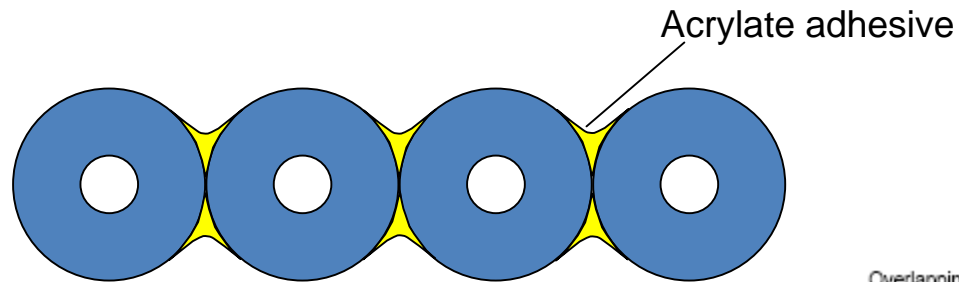
GigaPOF: ~zero



# PRODUCTS overview

Chromis Fiberoptics: The Practical Solution

## GigaPOF Ribbons for AOC



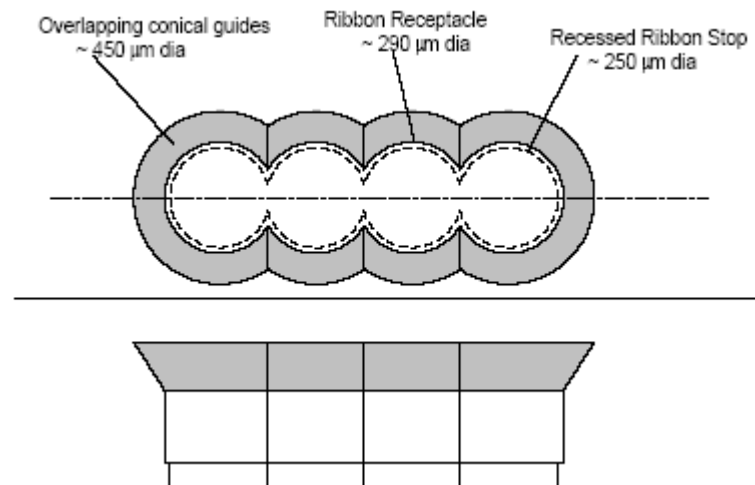
### Advantages

Terminates as a single unit

No stripping of individual fibers

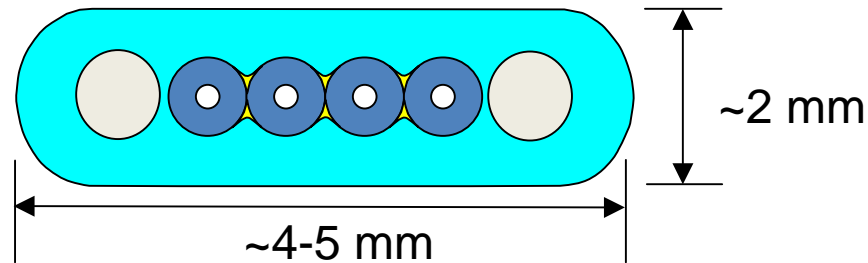
Machine end surface – no polishing

Connectorless optical assembly



# Ribbon Cable Structure and Termination

Ribbon + high-modulus polymer strength members  
No aramid yarn, tight cable sheath



## Termination Process

Mill entire cable end

Strip sheath at end

Insert entire ribbon, strength members receptacle

Cure UV adhesive

# DATA CENTER interconnects

Chromis Fiberoptics: The Practical Solution

## Example – Finisar Laserwire

Connector-free OSA with GigaPOF<sup>®</sup>



- 10 Gb/s active optical cable
- Connectorless OSA's
- Custom duplex cable w. GigaPOF-75LD

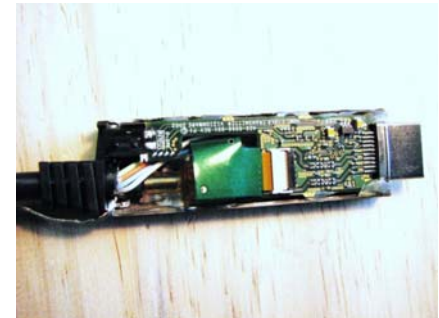
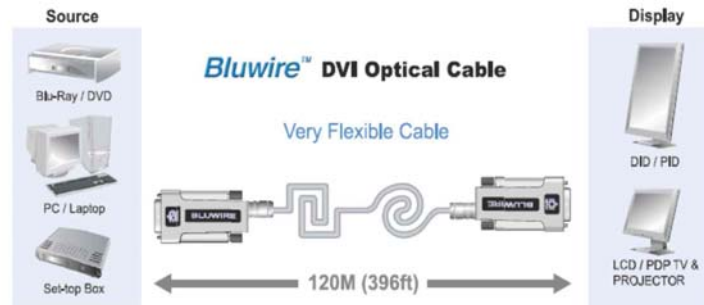
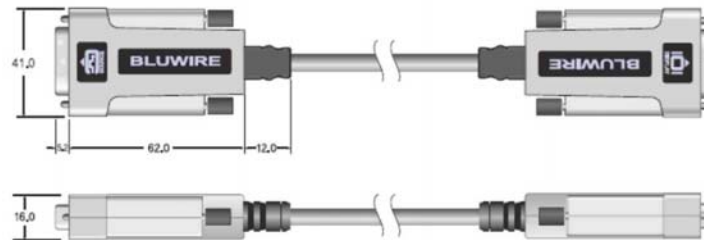
- 1/10 Gb Ethernet
- 1/2/48x Fibre Channel
- Serialized HDMI, DisplayPort
- Proprietary links



# CONSUMER electronics

Chromis Fiberoptics: The Practical Solution

## Example – HDMI and DVI active optical cables



- Low cost and small footprint

- Rugged and consumer-safe

a new light on  
**PLASTIC OPTICAL FIBERS**

perfluorinated  
**OPTICAL FIBER**

**FASTER**

than wire

**FARTHER**

than plastic

**SAFER**

than glass

**SIMPLER**

than all

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