

VIPER™



# High Performance Micro Cable

12-432 fibers G657A1 TIA598 ft

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## Features

- Up to 432 fibers
- Super slim design
- Excellent installation performance
- Unique design with robust inner tubes that do not kink
- Temperature range from -45 to +70°C (-49 to +158°F)
- Excellent bend performance,  $\geq 70$  mm (2.75")
- Easy to prepare and identify fibers
- Ultra low attenuation in cable

## Application

The Hexatronic Viper series of micro cables are characterized by state of the art installation performance when installed by blowing into microducts. Particularly, installations in access networks with difficult routes, which are facilitated by the enhanced performance of the Viper cables.

All parameters such as cable diameter, sheath friction, cable stiffness etc are optimized for best installation performance without compromising mechanical or environmental properties.

The micro cables are based on a slim loose tube design with up to 36 tubes per cable. The design facilitates fiber preparation and mid-span access. The cables are suitable for long-distance, air blown installation in microducts, with an inner diameter of as little as 8 to 12 mm. The cables have excellent bend performance and an extremely wide operational temperature range.

## Design

The Micro Cables are designed with one, two or three layers of inner protective tubes made of a unique Polyamide compound. The Polyamide gives a special strength to the product, while increasing the bending properties as well as other benefits such as extreme temperature resistance. Each tube contains 12 or 24 fibers. As a result, The Viper Micro Cables are more durable during the installation process as they are able to withstand rough handling. The unique cable design with an extended operational temperature range of -45 to +70°C (-49 to +158°F) can be used in many environments, on all continents where heat and cold are often a major concern.

## Product Information



- 1 Primary coated fiber: Silica, acrylate
- 2 Loose tube: PA
- 3 Central strength member: Glass fiber reinforced plastic, PE
- 4 Slit up yarn: Aramide yarn
- 5 Wrapping: Water blocking yarns
- 6 Sheath: Polyethylene, halogen-free

Black fillers can replace empty white tubes.

## Technical Information

<b>Product Color</b>	Black Sheath
<b>Color Code</b>	TIA598
<b>Temperature, Operation [°F]</b>	-49 to +158
<b>Temperature, Storage [°F]</b>	-49 to +158
<b>Temperature, Installation [°F]</b>	+5 to +122
<b>Water Blocking</b>	Longitudinal water blocking according to IEC 60794-1-2-F5C

<b>Fiber Type</b>	G657A1
<b>Attenuation @Wavelength [nm]</b>	1310/1383/1550
<b>Typical Attenuation [dB/km]</b>	0.32/0.32/0.18
<b>Average Attenuation [dB/km]</b>	0.33/0.33/0.21
<b>Maximum Attenuation [dB/km]</b>	0.36/0.36/0.23
<b>Conformance</b>	<p>Fiber parameters and tests according to the IEC series 60793-2 and 60793-1. Mechanical and environmental tests in accordance with Family Specification IEC 60794-5-10.</p> <p>Test standards, conditions and requirements:</p> <ul style="list-style-type: none"> <li>▪ Operational temperature: IEC 60794-1-22 Method F1; max attenuation 0.05dB/km*</li> <li>▪ Storage temperature: IEC 60794-1-22 Method F1; max attenuation 0.15dB/km* reversible</li> <li>▪ Ageing: IEC 60794-1-22, Method F9; 168h@85°C,+2 cycles, no attenuation after test</li> <li>▪ Water blocking: IEC 60794-1-2, Method F5C, 3m sample, 1m head of water, no leakage after 24 hours</li> <li>▪ Bend radius: IEC 60794-1-21, Method E11B; 4 turns, 3 cycles, max attenuation 0.05dB*</li> <li>▪ Installation tensile load: IEC 60794-1-21, Method E1; max fiber tension 0.6%, reversible attenuation</li> <li>▪ Crush: IEC 60794-1-21, Method E3; 1 minute load, 100mm plate, no attenuation after test</li> <li>▪ Impact: IEC 60794-1-21, Method E4; 3 different places, max attenuation 0.1dB* after test</li> </ul> <p>* All attenuation measurements performed @ 1550nm</p>
<b>Marking</b>	The cables are length marked in feet, and the tubes and fibers are color coded according to TIA598 (Bellcore).

**Installation Notes**

Typical installation performance:

- Ducts ID 8-10 mm, cable OD ≤6.7 mm: 2000 m (6560ft)
- Ducts ID 12 mm, cable OD ≤8.0 mm: 2000 m (6560ft)
- Ducts ID 15-16 mm, cable OD <11 mm: 2000 m (6560ft),  
cable OD 11-12 mm: 1500 m (4920ft)

Installation performance verified on Hexatronic test track, according to IEC 60794. Installation performance is affected by the installed path, environmental conditions, installation equipment etc and actual performance may therefore deviate from the above specified values.

If the cable is installed by blowing the temperature shall be -15 to +40°C (5 to 104°F). The cable shall not be stored in direct sunlight. The sun may heat up the cable over the permitted temperature limit.

**Ordering Information**

Supplied lengths: 2, 4, 8 km

**Technical Details**

TIA-598 Fibers and Tubes	1	2	3	4	5	6	7	8	9	10	11	12
	Blue	Orange	Green	Brown	Slate	White	Red	Black	Yellow	Violet	Rose	Aqua
13	14	15	16	17	18	19	20	21	22	23	24	
Blue	Orange	Green	Brown	Slate	White	Red	Clear	Yellow	Violet	Rose	Aqua	

## Articles 8

Article name	Color	No. of Fibers	Layout	Bend Radius [in]	Tensile Force [lbs]	Crush [lbs/4"]	Diameter Ø [mm]	Weight [lbs/100ft]	Length [ft]	Form of Delivery
<b>GNHL 12 G657A1 (1x12f) TIA598 ft</b> TOL4019022/12CF	Black	12	1x12	3.0	270	450	5.7	19	8000/K10, 4000/K8	—
<b>GNHL 24 G657A1 (2x12f) TIA598 ft</b> TOL4019022/24CF	Black	24	2x12	3.0	270	450	5.7	19	8000/K10, 4000/K8	—
<b>GNHL 48 G657A1 (4x12f) TIA-598 ft</b> TOL4019022/48CF	Black	48	4x12	3.0	270	450	5.7	19	—	8000/K10, 4000/K8
<b>GNHL 72 G657A1 (6x12f) TIA-598 ft</b> TOL4019022/72CF	Black	72	6x12	3.0	270	450	5.7	19	—	8000/K10, 4000/K8
<b>GNHL 96 G657A1 (8x12f) TIA598 ft</b> TOL4019032/96CF	Black	96	8x12	3.2	270	225	6.1	19	8000/K10, 4000/K8	—
<b>GNHL 144 G657A1 (12x12f) TIA-598 ft</b> TOL4019022/144CF	Black	144	12x12	2.8	360	450	8.4	24	8000/K12, 4000/K10	—
<b>GNHL 144 G657A1 (12x12f) TIA598 ft</b> TOL4019053/144CF	Black	144	12x12	3.2	449	450	7.9	24	—	8000/K12, 4000/K10
<b>GNHL 288 G657A1 (24x12f) TIA598</b> TOL4019039/288CF	Black	288	24x12	3.2	675	450	10.3	56	—	—