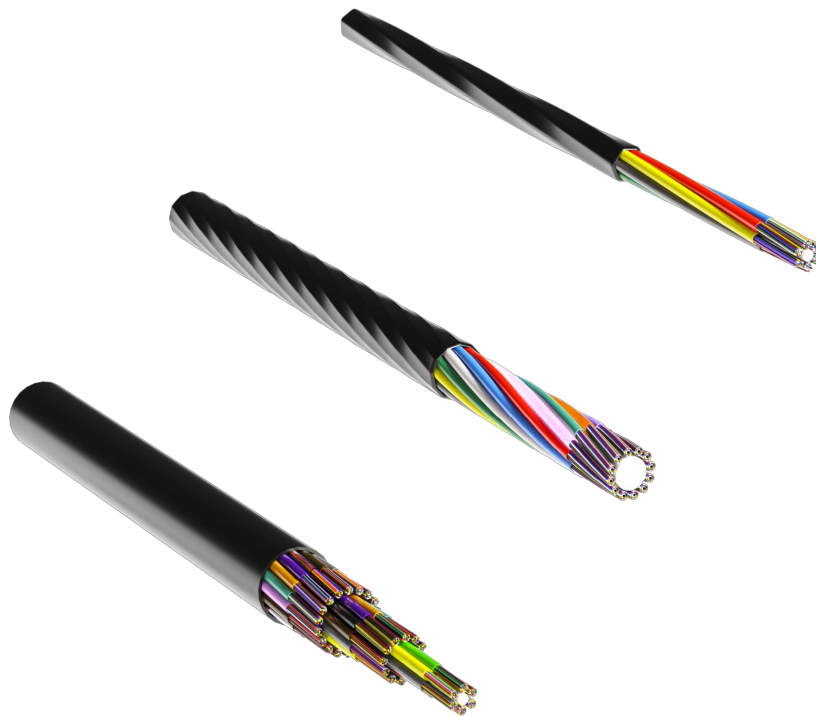


VIPER™



# High Performance Micro Cable – Super Slim

12-864 fibers G657A1 200 µm TIA598

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## Features

- Super slim design with 200µm fibers
- Up to 864 fibers
- Excellent installation performance
- Unique design with robust inner tubes that do not kink
- Temperature range from -40 to +70°C (12-96f: -35 to +70°C)
- Excellent bend performance,  $\geq 30$  mm
- Easy to prepare and identify fibers

## 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 8 to 16 mm, depending on fiber count. 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 compound. The compound gives a special strength to the product, while increasing the bending properties as well as other benefits such as extreme temperature resistance.

To enable installation into smallest possible microducts, the Hexatronic Viper 200 series is designed with 200  $\mu\text{m}$  fibers.

## 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 [°C]</b>	-40 to +70 (12-96f: -35 to +70)
<b>Temperature, Storage [°C]</b>	-40 to +70
<b>Temperature, Installation [°C]</b>	-15 to +50
<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>	0.32/0.32/0.19
<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.</p> <p>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 0.10dB/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 meters, 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
- Ducts ID 12 mm, cable OD ≤8.0 mm: 2000 m
- Ducts ID 15-16 mm, cable OD <11 mm: 2000 m, cable OD 11-12 mm: 1500 m

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.

The cable should be installed at a temperature between -15 to +40°C. 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	

TIA 598 Color Code Chart

## Articles 13

Article name	Color	No. of Fibers	Layout	Bend Radius [mm]	Tensile Force [N]	Crush [N/100 mm]	Impact [J]	Diameter Ø [mm]	Weight [kg/km]	Length [m]
<b>GNHL 12/T12 G657A1 200um TIA598</b> TOL4019038/12C	Black	12	1x12	80	600	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 24/T12 G657A1 200um TIA598</b> TOL4019038/24C	Black	24	2x12	80	600	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 48/T12 G657A1 200um TIA598</b> TOL4019038/48C	Black	48	4x12	80	800	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 72/T12 G657A1 200um TIA598</b> TOL4019038/72C	Black	72	6x12	80	800	1000	3	4.3	14	2000/K7, 4000/K7, 6000/K8, 8000/K8
<b>GNHL 96/T12 G657A1 200um TIA598</b> TOL4019038/96C	Black	96	8x12	80	1500	1000	2	5.1	17	2000/K7, 4000/K7, 6000/K10, 8000/K10
<b>GNHL 144/T24 G657A1 200um TIA598</b> TOL4019035/144C	Black	144	6x24	100	1500	3000	5	5.6	26	2000/K7, 4000/K8, 6000/K10, 8000/K10
<b>GNHL 192/T24 G657A1 200um TIA598</b> TOL4019035/192C	Black	192	8x24	100	2000	3000	5	6.7	38	2000/K7, 4000/K10, 6000/K10, 8000/K12
<b>GNHL 288/T24 G657A1 200um TIA598</b> TOL4019035/288C	Black	288	12x24	100	3000	3000	5	8.5	57	2000/K10, 4000/K12, 6000/K12
<b>GNHL 288/T12 G657A1 200um TIA598</b> TOL4019038/288C	Black	288	24x12	100	2000	2000	5	7.95	65	2000/K8, 4000/K10, 6000/K12, 8000/K12
<b>GNHL 432 G657A1 200um(18x24f) TIA598</b> TOL4019035/432C	Black	432	18x24	100	2500	–	–	8.8	56	2000/K10, 4000/K12, 6000/K12
<b>GNHL 576 G657A1 200um(24x24f) TIA598</b> TOL4019035/576C	Black	576	24x24	120	3800	–	–	10.5	80	2000/K10, 4000/K12
<b>GNHL 864/T24 G657A1 200um TIA598</b> TOL4019035/864C	Black	864	36x24	120	4500	1800	–	11.7	100	2000/K10, 4000/K12

Article name	Color	No. of Fibers	Layout	Bend Radius [mm]	Tensile Force [N]	Crush [N/100 mm]	Impact [J]	Diameter Ø [mm]	Weight [kg/km]	Length [m]
<b>GNHL 288/T12 G657A1 200um TIA598</b> TOL4019098/288C	Black	288	24x12	100	2000	1500	5	7.5	47	2000/K8, 4000/K10, 6000/K12, 8000/K12