

# Lateral Pressure Resistant Optical Fiber Cable “Gorilla Cable”

## 1. INTRODUCTION

In recent years, the transmission capacity has been increasing and the optical fiber cables which are connecting between equipment are becoming more important. Therefore, the high strength optical fiber cable to mitigate for the falling objects caused by earthquake disaster is now required. Also, inside the factory, the optical fiber cable which has a good load resistance is required because Ethernet has been deployed and the optical fiber cable is used for long distance transmission.

Okano Electric Co., Ltd. has developed the lateral pressure resistant optical fiber cable which has an excellent load resistance without using the metallic protection to increase its mechanical strength. This cable is superior to conventional cables on flexibility. Its commercial name is “Gorilla Cable”.

## 2. FEATURES OF THE GORILLA CABLE

### 2.1 Cable Construction

The metallic components and the tension member rods are used for conventional optical fiber cables. When lateral pressure is applied to the cable, it will be deformed and the optical fiber will be attenuated due to the pressure cause by the outer jacket and the tension members. In our case, Gorilla cable does not use a tension member in order to reduce the lateral pressure applied to the optical fiber. Further, by using a halogen-free special elastomer for the jacket material, the cable has a high recovery force because of its buffering effect. Also the cable was able to realize both a moderate repulsion and a higher flexibility.

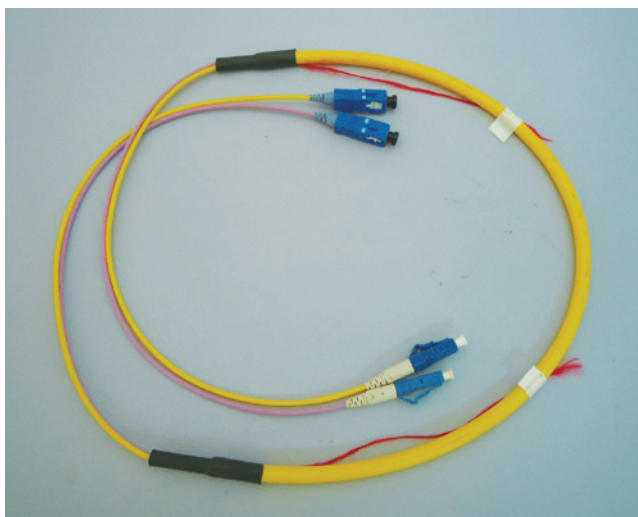


Figure 1 Connectorized Gorilla cable.

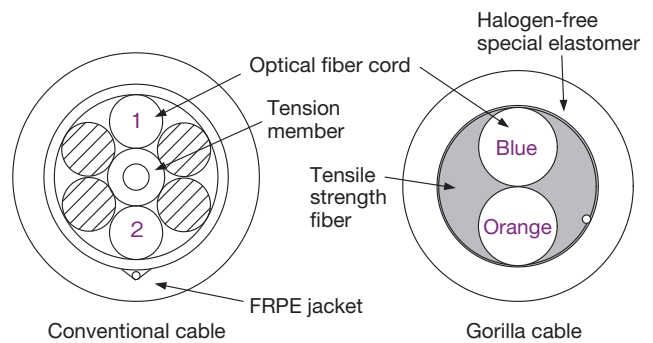


Figure 2 The comparison of the Gorilla cable construction to our conventional cable.

### 2.2 Lateral Pressure Characteristics

When the optical loss caused by the load applied across the 100 mm width plates is monitored, it is increasing in proportion to the load in case of a conventional cable, but there is no optical loss in case of the Gorilla cable.

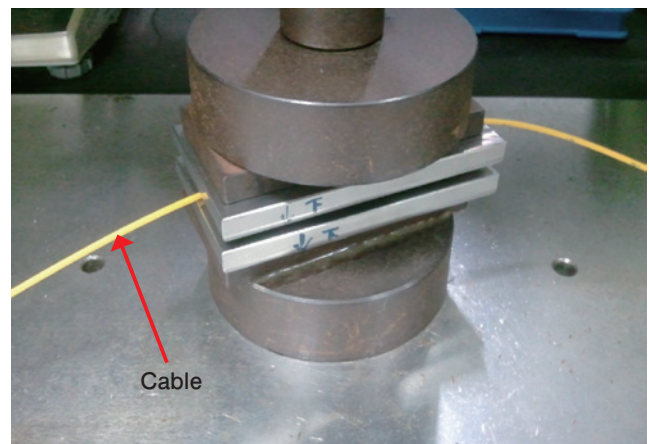


Figure 3 Lateral pressure resistant test.

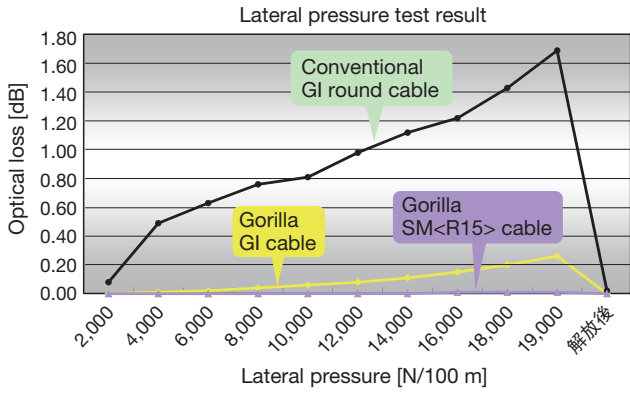


Figure 4 Optical loss vs. lateral pressure.

2.3 Cable Shape Recovery Force

Table 1 shows the recovery rate after a lateral pressure test. A conventional cable does not recover the shape after a 20,000 N lateral pressure test, but the Gorilla cable has a high recovery rate when using newly developed halogen-free special elastomer.

Table 1 The recovery rate of fiber cables.

Recovery rate (%)	Conventional cable	Gorilla cable
	10	95

Remark) recovery rate=diameter after test/diameter before testX100

2.4 Flexing Characteristics

We have a long experience in producing flexible cables and the associated technologies are applied to the Gorilla cable. If we compare the 90 degree flexing characteristics, a conventional cable has an optical loss, but the Gorilla cable has almost no optical loss even during flexing test.

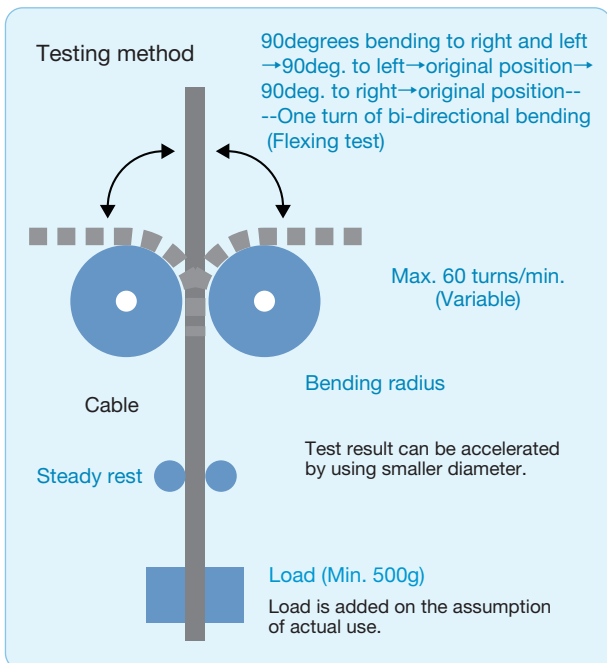


Figure 5 Flexing test.

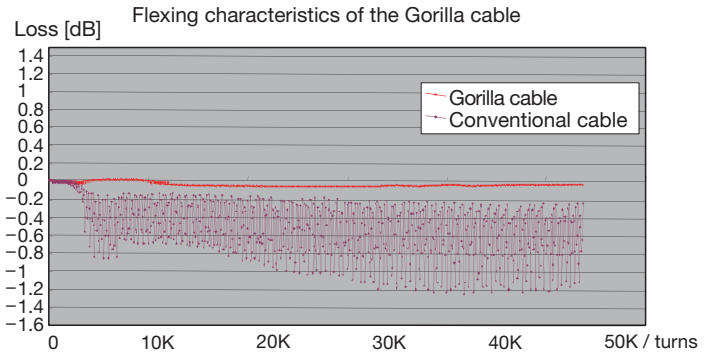


Figure 6 Optical loss during flexing test.

2.5 Cable Characteristics

Table 2 shows the properties of the Gorilla cable. This cable is focused on lateral pressure characteristics and has no tension member, but it has excellent transmission, mechanical, temperature cycling and flame retardant properties.

Table 2 Cable specification.

Items	specification
No. of fibers	2 fibers
Optical fiber	SM [R15], GI50/125 (OM3/2)
Adaptable connectors	SC, S2, DSC, MU, dMU, LC, dLC, FC, D, MTRJ, ST
Cable diameter	6.0 mm
Weight of product	35 g/m
Allowable tension	less than 400 N
Lateral pressure	less than 10,000 N/100 mm
Operating temperature range	-10 – +60°C
Flame retardant	JIS C 3005 60 degree tilt test

3. Conclusion

Okano Electric Co., Ltd. has developed and commercialized an optical fiber cable which has an excellent load resistant property. The features of this cable are to have a small optical loss when the load is applied to the cable, a high recovery force of cable appearance and an excellent scratch-resistance.

The plan is to develop design of Gorilla Cable with a higher count of fibers and to aggressively target sales in overseas market.

For more information about the Gorilla cable please contact:

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