

Launch of Kink-Resistant, Flame-Retardant Micro-duct Optic Cable

1. Outline

In recent years, communication traffic has increased rapidly due to progress in cloud computing, video streaming services, and support for 5G. Therefore, large data centers (DCs) are currently being built. Optic cables connecting DCs are mostly installed in a duct. There are instances where micro-duct optic cables are used, being suitable for the installation method that pushes the cable into the duct by feeding high-pressure air (air-blowing method). Because the interiors of DCs are required to be flame retardant, there is a need for a connection point connecting to a non-flame-retardant optic cable used outside the DC. Sumitomo Electric Industries, Ltd. has developed and launched a 288-fiber flame-retardant micro-duct optic cable, which can be used inside and also outside DCs for continuous installation without a connection point.

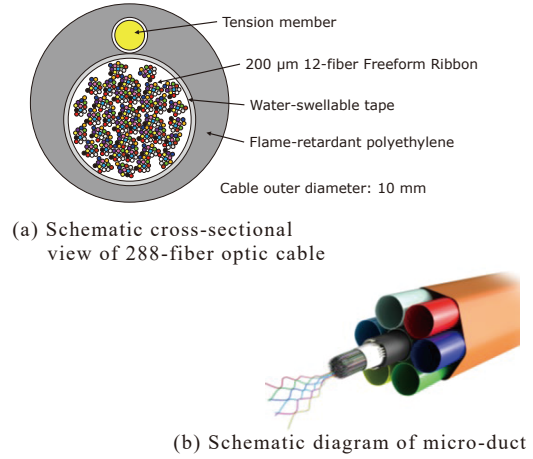
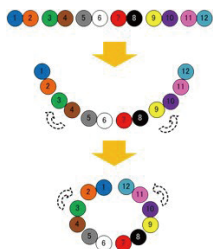
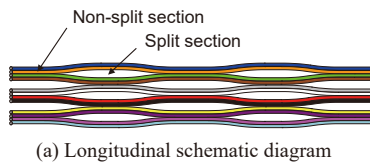


Fig. 2. Schematic diagrams of optic cable and micro-duct

2. Structure

For the newly developed optic cable to be thin and lightweight, 200 μm 12-fiber Freeform Ribbon shown in Fig. 1 was employed. Freeform Ribbon has splits in the longitudinal direction for every two fibers to ensure both flexibility and ease of mass fusion splicing. These features are achieved by optimizing the ratio and length of the split section and the non-split section.



(b) Schematic cross-sectional view illustrating the ribbon's flexibility

Fig. 1. Schematic diagram of 200 μm 12-fiber Freeform Ribbon

Figure 2 illustrates the structure of the optic cable. A monotube structure was employed with importance placed on it being thin and lightweight to meet the requirements of the air-blowing method. Its characteristic structure—one tension member placed in the jacket—is fairly strong

against buckling, even under small radius bending, and offers superb ease of handling. The jacket is made of highly flame-retardant polyethylene to meet the stringent standards for flame-retardant cables in North America (UL 1666). In addition, the jacket produces low smoke.

3. Features

- (1) Improved duct utilization factor: The use of Freeform Ribbon enabling improved fiber density increases the number of optical fibers per duct.
- (2) Workability: Installation time can be reduced by 31% due to its suitability for installation by the air-blowing method and its flame-retardant prop-

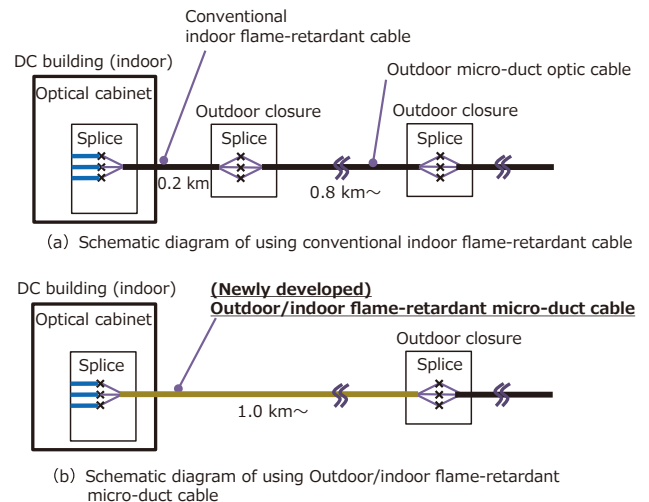


Fig. 3. Comparison of cable installation systems

- erty for continued indoor and outdoor installation without a connection point (Fig. 3).
- (3) The cable is highly flame retardant, Low Smoke Zero Halogen, and is compliant with UL standards in North America (UL 1666).
 - (4) Ease of handling: The placement of one tension member in the jacket is fairly effective for providing strength against buckling and kinking.

- Freeform Ribbon is a trademark or registered trademark of Sumitomo Electric Industries, Ltd.