CORNING

Product Environmental Profile

MIC® Tight-Buffered Indoor Cables

About Corning Incorporated

Corning Incorporated, of which Corning Optical Communications, LLC, is a subsidiary, is vital to progress — in the industries we shape and in the world we share. We invent life-changing technologies using materials science. Our scientific and manufacturing expertise, boundless curiosity, and commitment to purposeful invention place us at the center of the way the world interacts, works, learns, and lives. Our sustained investment in research, development, and invention means we're always ready to solve the toughest challenges alongside our customers.

Corning's businesses are ever-evolving to best serve our customers, industries, and consumers. Today, we accelerate and transform life sciences, mobile consumer electronics, optical communications, display, and automotive markets.

We are changing the world with trusted products that accelerate drug discovery, development, and delivery to save lives; damage-resistant cover glass to enhance the devices that keep us connected; optical fiber, wireless technologies, and connectivity solutions to carry information and ideas at the speed of life; precision glass for advanced displays to deliver richer experiences; and auto glass and ceramics to drive cleaner, safer, and smarter transportation.

Corning Optical Communications, LLC
4200 Corning Place Charlotte, NC 28216-1298
Email: sustaincoc@corning.com
Tel: +1 (828) 901-5000
https://www.corning.com/worldwide/en/sustainability.html

Registration Number: GLWO-00001-V01.01-EN	Drafting rules: PCR ed4-EN-2021 09 06 Supplemented by PSR-0001-ed4-EN-2022 11 16
Verifier accreditation No: VH08	Information and reference documents: www.pep-ecopassport.org
Date of Issue: 04-2024	Validity period: 5 years
Independent verification of the declaration and data in compliance with ISO 14025: 2006	
Internal: External: X	
The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)	
PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019 The components of the present PEP may not be compared with components from any other program.	
Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"	

Supplemented by PSR-0001-ed4-EN-2022 11 16

Corning disclaims all responsibility of any nature to any third parties to whom this document, or any part thereof, is made known. Any such party relies on the profile at its own risk. Interpretations, analyses, or statements of any kind made by a third party and based on this profile are beyond Corning's responsibility.

Product Family Description

Corning MIC® Tight-Buffered Cables are designed for use indoors as building backbone (riser) as well as in horizontal installations and other general-purpose environments. These multifiber cables use 900 µm tight-buffered fibers to allow easy, consistent stripping and to facilitate easier termination, eliminating the need for fan-out kits.
The fibers are surrounded by dielectric strength members and protected by a flame-retardant outer jacket.

The flame-retardant outer jacket uses different materials depending on the fire rating needed:

1. Plenum: Meets the application requirements of the National Electrical Code® (NEC®) Article 770 and are OFNP and FT-6 listed.

2. Riser: Meets the application requirements of the National Electrical Code® (NEC®) Article 770 and are OFNR and FT-4 listed.

3. LSZH™/FRNC: Meets the flame-retardant requirements according to IEC 60332-1-2 (single cable) and IEC 60332-3-24 (bunch of cables), Reaction to fire requirements according to EN 50575 and EN 13501-6 and Smoke density Low Smoke according to IEC 61034, Halogen content test Zero Halogen according to IEC 60754-1.

MIC Tight-Buffered Cables are available with armor and without armor. The cables covered in this Product Environmental Profile (PEP) document fall into the following categories:

1. All-Dielectric non-armored (non-metallic) which requires no grounding or bonding (see Figure 1).

2. Interlocking Armor, where the core is protected by a flexible, spirally wrapped, aluminum interlocking armor that offers easy, one-step installation and up to seven times the crush protection of non-armored cables. This cable is particularly useful for heavy traffic or more challenging mechanical exposure conditions and applications requiring extra rugged cables (see Figure 2).

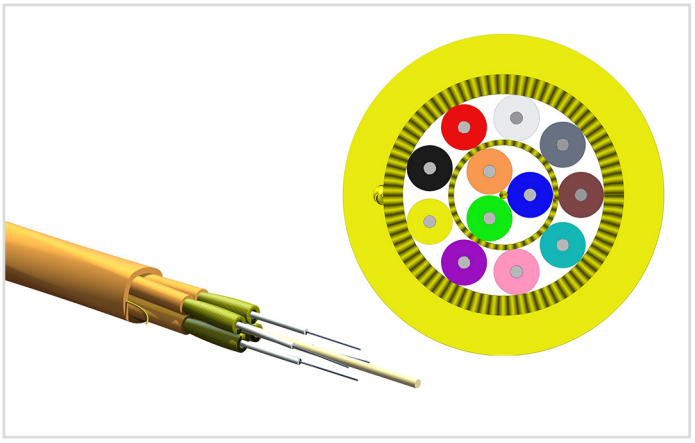

Figure 1: MIC® Tight-Buffered Cable (Plenum, Riser, LSZH/FRNC)

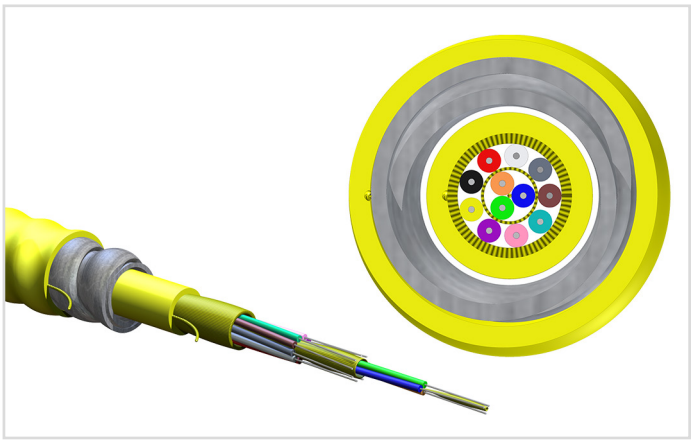

Figure 2: MIC Tight-Buffered, Interlocking Armored Cable (Plenum, Riser)

MIC Tight-Buffered Cables are available with different fiber types, both multimode and single-mode, in various counts (2F, 4F, 6F, 8F, 12F, 18F and 24F). MIC Tight-Buffered Cables All-Dielectric non-armored cables (Plenum, Riser, and LSZH/FRNC) and MIC Tight-Buffered, Interlocking Armor (Plenum, Riser) cables fiber counts from 2F to 24F are covered by this document including all OM1-OM4 multimode and OS2 single-mode fibers configurations.

Reference Product Description

MIC Tight-Buffered Cable, Plenum 12F, Single-mode (OS2):

This is a communication and data cable designed for use in plenum, riser, and general-purpose environments for intrabuilding backbone and horizontal installations (see Figure 3).

This multifiber cable uses 900 µm tight-buffered fibers to allow easy, consistent stripping and to facilitate termination. The fibers are surrounded by dielectric strength members and protected by a flame-retardant outer jacket. The all-dielectric cable construction requires no grounding or bonding. MIC® plenum cables are ideal for routing inside buildings, within plenum areas and riser shafts, to the telecommunications rooms and workstations.

Functional Unit:
To transmit one communication signal over 1 m, at a wavelength of 1310 nm and 1550 nm, for 10 years and at a utilization rate of 100% in accordance with the National Electric Code® (NEC®) Standard on the product spec sheet and as defined in PSR-0001-ed4-EN 2022 11 16.

The duration and rate of use correspond to the "BUILDINGS – Industrial (factories, warehouses)" application as defined in the table given in Appendix 6.1 of the specific rules for wire, cables and accessories.

Declared Unit:
A cable consisting of 12 optical fibers used to transmit communication signals over 1 m at a wavelength of 1310 nm and 1550 nm, for 10 years and at a rate of use of 100%, in accordance with the National Electric Code® (NEC®) Standard on the product spec sheet and as defined in PSR-0001-ed4-EN 2022 11 16.

Lifetime and use rate correspond to "BUILDINGS – Industrial (factories, warehouses)" application as defined in the table given in Appendix 6.1 of the specific rules for wire, cables and accessories.

The result of the Lifecyle impact of the reference cable is defined by the Functional and Declared Units.

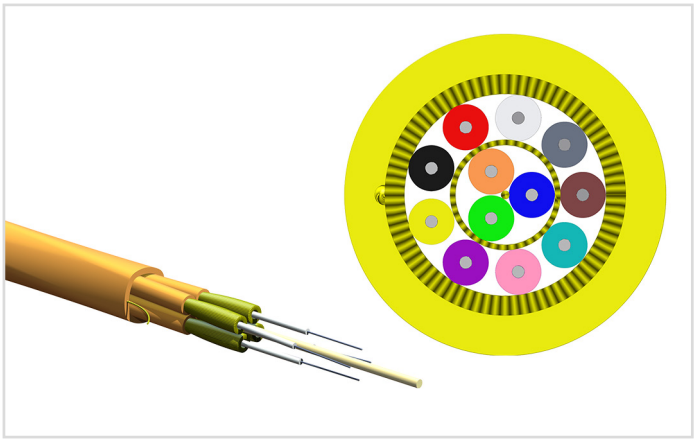

Figure 3: MIC Tight-Buffered Cable, Plenum 12F, Single-mode (OS2)

System Boundaries:
The boundaries are defined as sub-modules according to EN 15804:2012 +A2:2019 (see Figure 4).

Manufacturing (A1-A3):
This includes the inputs and outputs related to the production (extraction, treatment, transformation, etc.) and transportation of raw materials necessary to manufacture the optical fiber cables. This includes the flows associated with the waste generated by the manufacturing of the materials and creation of the cables and packaging.

Distribution (A4):
This includes transportation of the packaged optical fiber cables from the manufacturing plant to the distributor and from the distributor to the place of installation.

Installation (A5):
This includes the management of the waste generated during installation of the optical fiber cables, the transportation of the waste generated, packaging, and end-of-life treatment.

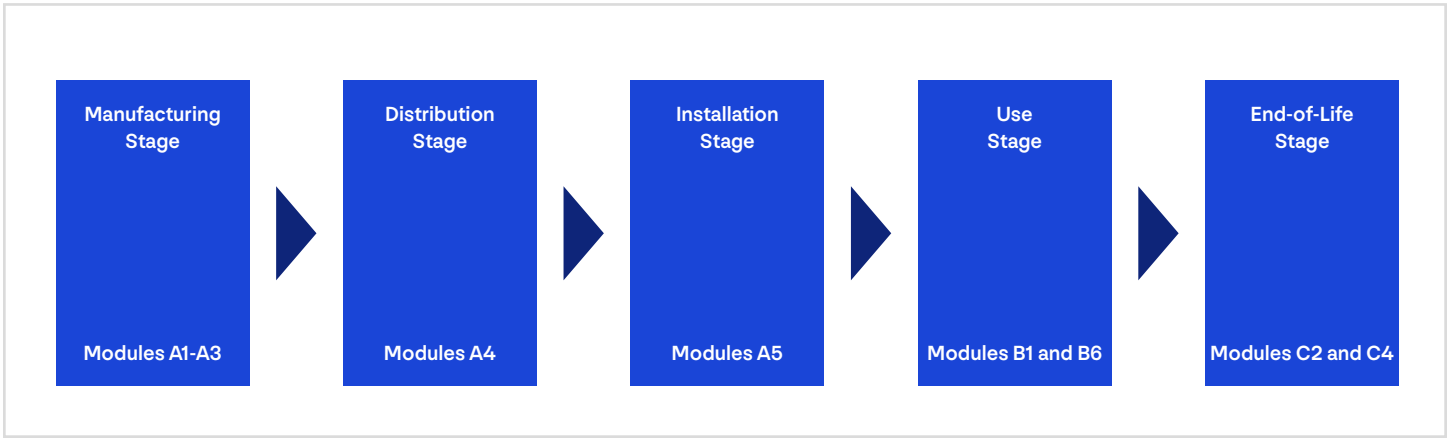

Figure 4: Life cycle boundaries of the reference product defined as sub-modules according to EN 15804:2012 +A2:2019

Use (B1 & B6):
This includes the inputs and outputs associated with the energy consumption over the reference service life (RSL) of the optical fiber cables. No consumables are required for the use of the product, and it also requires no servicing or maintenance; these modules under the EN 15804 standard were not established in the system boundary of the study.

End-of-Life (C2 & C4):
The inputs and outputs associated with the transportation required to collect the optical fiber cables at the end-of-life, transportation from the installation site to the final end-of-life treatment site and the associated inventory flow of the end-of-life scenario.

Manufacturing

Optical Fiber:
Corning invented and uses the outside vapor deposition (OVD) process. Soot preforms are formed layer-by-layer by deposition of particles on a rotating cylindrical target rod by traversing the soot-laden flame along the axis of the cylindrical target. The soot preforms are sintered to glass and then drawn to optical fibers by treating them at temperatures as high as 2,000°C. During the drawing of the optical fibers, the fibers are coated with acrylate coatings and UV-cured to protect the glass fiber from damage and mitigate attenuation increase under external forces. The fiber is then spooled and ready for transportation (see Figure 5)

Optical Fiber Cable:
The uncolored single fiber is overcoated with an appropriate buffering compound for the intended application. The tight-buffered fibers then go to a jacketing line. Here, the tight-buffered fibers are stranded around an aramid yarn core. This core continues to an armoring line if the cable requires an armor before being fed into an extruder where a jacket compound is added to the outside of the core. The produced cable is spooled into a reel (packaging) and made ready for delivery (see Figure 6).

The product weight of the declared unit is 0.0343 kg including its packaging. Table 1 shows the breakdown between the various materials contained within the product and packaging.

Component	Weight (kg/m)	Weight (%)
Plastics	0.02989	87.1%
Glass	0.00121	3.5%
Wood (Packaging)	0.00320	9.3%

Table 1: Product material weight of declared unit and percentage composition of the reference cable

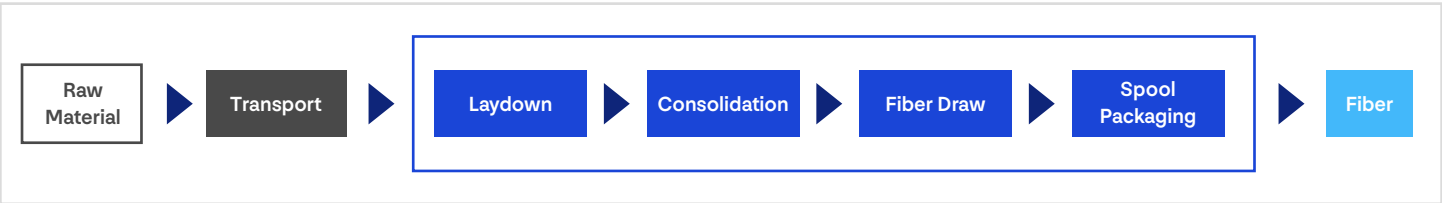

Figure 5: Manufacturing Process Flow of the Optical Fiber

Figure 6: Manufacturing Process Flow of Optical Fiber Cable

Additional Environmental Information

Substance Assessment:

Products are compliant with EU REACH as well as RoHS legal requirements and in any case in which substances of very high concern are present > 0.1% w/w, such information is introduced into SCIP database.

Manufacturing:

We maintain a comprehensive environmental, health, and safety system based on the principles of the global ISO 14001 standard to track environmental data. The manufacturing plants where this product is made are certified to the ISO 14001: 2015 standard. Where appropriate, we collaborate with suppliers to source materials locally to reduce transportation-related emissions.

Distribution:

The product is transported to distributor locations across the world before final transportation to different international customers. Packaging and distribution are constantly being optimized to reduce impact.

Installation:

Details on installation can be found in the product specification sheets.

Use:

The product does not use parts that require periodic replacement or require special maintenance.

End-of-Life (EOL):

No special EOL treatment is required. The assumption made for the EOL scenario for the product is 100% landfill.

Life Cycle Assessment

Data sources:

The Bill of Materials (BOM) was used for all data related to each product including raw material weight, material type, supplier locations and secondary processing of materials. Primary data (waste, water, and electricity) of the manufacturing plant where the product configuration is produced was also collected. Other relevant manufacturing data, e.g., upstream processing of materials, was taken from the GaBi 2022 databases (Sphera Solutions GmbH, 2022) and represent state-of-the-art industrial processes. The Product Category Rule (PCR) provided information on the Use and End-Of-Life Phase of the products.

LCA Software:

LCA for Expert Software (GaBi) version 10.6.2.9 by Sphera (2023)

Impact Assessment:

This is the Impact Result of the cable and packaging within the established system boundary and functional unit according to EN 15804: 2012+A2:2019 as specified by the PEP ecopassport® program (2021) and calculated using the LCA for Expert Software version 10.6.2.9 by Sphera (2023) also known as GaBi. These represent the potential environmental impacts estimated as environmental effects or pressure on the environment, resulting directly or indirectly from the elementary flows in the system boundary established for the cables. The environmental indicators for the Life Cycle Impact Result of the cables are categorized into Environmental Impact Indicators and Inventory Flows indicators.

Reference Service Life (RSL):

10 years (as recommended by the Product Specific Rule)

Product Category:

Communication and data wires and cables

Use Scenario:

100% of the RSL (as recommended by the Product Specific Rule)

Geographical Representativeness:

All primary and secondary data were collected specific to the United States. Where country-specific or region-specific data were unavailable, proxy data were used. The data used are considered highly geographically representative and the Data Quality Assessment can be found in the report.

Technological Representativeness:

All primary and secondary data were modeled to be specific to the technologies or technology mixes under study. Where technology-specific data were unavailable, proxy data were used. The technological representativeness is high, and the Data Quality Assessment can be found in the report.

Life Cycle Impact Assessment (LCIA) Results

Functional Unit

LCIA results of this analysis for the functional unit of the reference cable are represented in Table 2. The LCIA result of the functional unit shows the potential life cycle impact of the reference cable to transmit one communication signal over 1 m, at a wavelength of 1310 nm and 1550 nm, for 10 years and at a utilization rate of 100% in accordance with the National Electric Code® (NEC®) Standard on the product specification sheet and as defined in PSR-0001-ed4-EN 2022 11 16.

Indicators	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
Environmental impact indicators						
Climate Change – total [kg CO2 eq.]	1.19E-02	1.31E-03	4.78E-04	2.97E-06	4.49E-04	1.41E-02
Climate Change, fossil [kg CO2 eq.]	1.23E-02	1.29E-03	7.24E-05	2.97E-06	4.47E-04	1.41E-02
Climate Change, biogenic [kg CO2 eq.]	-4.17E-04	1.82E-05	4.06E-04	2.93E-09	1.35E-06	8.77E-06
Climate Change, land use and land use change [kg CO2 eq.]	3.73E-06	2.73E-08	4.42E-08	1.95E-10	2.74E-07	4.07E-06
Ozone depletion [kg CFC-11 eq.]	4.26E-13	9.13E-17	3.14E-17	2.24E-17	1.95E-16	4.26E-13
Acidification [Mole of H+ eq.]	2.03E-05	3.39E-05	8.93E-07	3.72E-09	1.17E-06	5.62E-05
Eutrophication, freshwater [kg P eq.]	3.58E-08	2.92E-10	7.22E-09	3.84E-12	9.02E-08	1.34E-07
Eutrophication, marine [kg N eq.]	6.24E-06	8.99E-06	5.53E-07	9.69E-10	4.45E-07	1.62E-05
Eutrophication, terrestrial [Mole of N eq.]	6.89E-05	9.84E-05	3.98E-06	1.01E-08	4.94E-06	1.76E-04
Photochemical ozone formation, human health [kg NMVOC eq.]	2.47E-05	2.51E-05	4.96E-07	2.68E-09	1.04E-06	5.14E-05
Resource use, mineral and metals [kg Sb eq.]	8.61E-09	5.33E-11	2.20E-11	5.92E-13	1.36E-10	8.82E-09
Resource use, fossils [MJ]	2.64E-01	1.63E-02	9.60E-04	6.81E-05	5.96E-03	2.87E-01
Water use [m³ world equiv.]	1.77E-03	2.66E-06	5.83E-06	6.25E-07	2.65E-05	1.80E-03
Resource use indicators						
Use of renewable primary energy (PERE) [MJ]	3.17E-02	7.55E-05	5.36E-05	1.02E-05	3.33E-04	3.22E-02
Total use of renewable primary energy resources (PERT) [MJ]	3.17E-02	7.55E-05	5.36E-05	1.02E-05	3.33E-04	3.22E-02
Use of nonrenewable primary energy (PENRE) [MJ]	2.67E-01	1.64E-02	1.02E-03	6.81E-05	6.33E-03	2.90E-01
Total use of nonrenewable primary energy resources (PENRT) [MJ]	2.67E-01	1.64E-02	1.02E-03	6.81E-05	6.33E-03	2.90E-01
Use of net fresh water (FW) [m³]	6.44E-05	1.10E-07	1.80E-07	1.87E-08	8.91E-07	6.56E-05
Output flows and waste categories						
Hazardous waste disposed (HWD) [kg]	2.97E-09	6.35E-14	1.27E-14	2.65E-15	7.89E-14	2.97E-09
Nonhazardous waste disposed (NHWD) [kg]	7.02E-04	1.58E-06	3.02E-04	1.76E-08	2.45E-03	3.46E-03
Radioactive waste disposed (RWD) [kg]	1.62E-05	2.14E-08	4.35E-09	1.23E-08	2.70E-08	1.62E-05
Optional indicators						
Particulate matter [Disease incidences]	2.56E-10	5.76E-10	7.14E-12	3.72E-14	1.26E-11	8.51E-10
Ionizing radiation, human health [kBq U235 eq.]	1.37E-03	3.16E-06	3.84E-07	1.01E-06	2.38E-06	1.38E-03
Ecotoxicity, freshwater [CTUe]	1.19E-01	1.14E-02	4.28E-03	2.26E-05	9.20E-03	1.44E-01
Human toxicity, cancer [CTUh]	3.54E-12	2.12E-13	4.63E-14	2.89E-16	1.42E-13	3.94E-12
Human toxicity, noncancer [CTUh]	2.18E-10	9.56E-12	1.83E-12	1.49E-14	1.14E-11	2.41E-10
Land Use [Pt]	1.24E-01	6.30E-05	1.69E-04	1.37E-05	1.05E-03	1.25E-01

Table 2: Life cycle Impact Result for the functional unit of the reference cable

Declared Unit

LCIA results of this analysis for the declared unit of the reference cable are represented in Table 3. The LCIA result for the declared unit shows the potential life cycle impact of the reference cable consisting of 12 optical fibers used to transmit communication signals over 1 m at a wavelength of 1310 nm and 1550 nm, for 10 years and at a rate of use of 100%, in accordance with the National Electric Code® (NEC®) Standard on the product specification sheet and as defined in PSR-0001-ed4-EN 2022 11 16.

Indicators	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
Environmental impact indicators						
Climate Change – total [kg CO2 eq.]	1.43E-01	1.57E-02	5.74E-03	3.57E-05	5.39E-03	1.70E-01
Climate Change, fossil [kg CO2 eq.]	1.48E-01	1.55E-02	8.68E-04	3.56E-05	5.37E-03	1.69E-01
Climate Change, biogenic [kg CO2 eq.]	-5.00E-03	2.18E-04	4.87E-03	3.52E-08	1.62E-05	1.05E-04
Climate Change, land use and land use change [kg CO2 eq.]	4.47E-05	3.28E-07	5.30E-07	2.33E-09	3.29E-06	4.89E-05
Ozone depletion [kg CFC-11 eq.]	5.11E-12	1.10E-15	3.77E-16	2.68E-16	2.34E-15	5.11E-12
Acidification [Mole of H+ eq.]	2.43E-04	4.07E-04	1.07E-05	4.47E-08	1.41E-05	6.75E-04
Eutrophication, freshwater [kg P eq.]	4.30E-07	3.50E-09	8.66E-08	4.61E-11	1.08E-06	1.60E-06
Eutrophication, marine [kg N eq.]	7.49E-05	1.08E-04	6.64E-06	1.16E-08	5.34E-06	1.95E-04
Eutrophication, terrestrial [Mole of N eq.]	8.27E-04	1.18E-03	4.78E-05	1.21E-07	5.92E-05	2.12E-03
Photochemical ozone formation, human health [kg NMVOC eq.]	2.96E-04	3.02E-04	5.96E-06	3.22E-08	1.25E-05	6.16E-04
Resource use, mineral and metals [kg Sb eq.]	1.03E-07	6.39E-10	2.64E-10	7.11E-12	1.64E-09	1.06E-07
Resource use, fossils [MJ]	3.17E+00	1.96E-01	1.15E-02	8.17E-04	7.15E-02	3.45E+00
Water use [m³ world equiv.]	2.12E-02	3.19E-05	6.99E-05	7.50E-06	3.18E-04	2.17E-02
Resource use indicators						
Use of renewable primary energy (PERE) [MJ]	3.81E-01	9.06E-04	6.43E-04	1.22E-04	3.99E-03	3.86E-01
Total use of renewable primary energy resources (PERT) [MJ]	3.81E-01	9.06E-04	6.43E-04	1.22E-04	3.99E-03	3.86E-01
Use of nonrenewable primary energy (PENRE) [MJ]	3.20E+00	1.97E-01	1.22E-02	8.18E-04	7.59E-02	3.48E+00
Total use of nonrenewable primary energy resources (PENRT) [MJ]	3.20E+00	1.97E-01	1.22E-02	8.18E-04	7.59E-02	3.48E+00
Use of net fresh water (FW) [m³]	7.73E-04	1.32E-06	2.16E-06	2.25E-07	1.07E-05	7.87E-04
Output flows and waste categories						
Hazardous waste disposed (HWD) [kg]	3.56E-08	7.61E-13	1.52E-13	3.17E-14	9.47E-13	3.56E-08
Nonhazardous waste disposed (NHWD) [kg]	8.42E-03	1.90E-05	3.62E-03	2.11E-07	2.94E-02	4.15E-02
Radioactive waste disposed (RWD) [kg]	1.94E-04	2.56E-07	5.22E-08	1.47E-07	3.24E-07	1.95E-04
Optional indicators						
Particulate matter [Disease incidences]	3.07E-09	6.91E-09	8.56E-11	4.46E-13	1.52E-10	1.02E-08
Ionizing radiation, human health [kBq U235 eq.]	1.64E-02	3.79E-05	4.61E-06	1.22E-05	2.86E-05	1.65E-02
Ecotoxicity, freshwater [CTUe]	1.43E+00	1.37E-01	5.13E-02	2.72E-04	1.10E-01	1.73E+00
Human toxicity, cancer [CTUh]	4.25E-11	2.55E-12	5.56E-13	3.46E-15	1.70E-12	4.73E-11
Human toxicity, noncancer [CTUh]	2.62E-09	1.15E-10	2.19E-11	1.78E-13	1.36E-10	2.89E-09
Land Use [Pt]	1.49E+00	7.56E-04	2.02E-03	1.64E-04	1.26E-02	1.50E+00

Table 3: Life cycle Impact Result for the declared unit of the reference cable

Extrapolation:

The LCIA of the optical fiber cables with part numbers listed in Tables 9 through 11 can be extrapolated using the LCIA results of the functional or declared unit of the reference optical fiber cable (see Tables 2 and 3) and the extrapolation ratios in Tables 7 and 8.

Example:

To estimate the total Climate Change Impact for the functional unit of MIC® Tight-Buffered Cables, Riser with part number: 006E81- 31131-B2 (shown in Table 8), we first determine the fiber count which is dictated by the first 3 digits of the part number. In this example, the fiber count is 6. We determine the Total Climate Change impact for the functional unit of the reference cable (MIC Tight-Buffered Cable, Plenum 12F, Single-mode [OS2]) as shown in Table 2 and shown in Table 4 below.

1. The Climate Change Total for the functional unit of the Reference Cable (MIC Tight-Buffered Cable, Plenum 12F, Single-mode [OS2]) used for extrapolation is given in Table 2 and for reference in Table 4 below.

Indicators	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
Climate Change - total [kg CO2 eq.]	1.19E-02	1.31E-03	4.78E-04	2.97E-06	4.49E-04	1.41E-02

Table 4: Climate Change Impact Total for the functional unit of MIC® Tight-Buffered Cable, Plenum 12 F, Single-mode (OS2)

2. We identify the extrapolation ratio for the functional unit of the same reference cable given a fiber count of 6. This is shown in Table 7 and for reference in Table 5 below.

Fiber Count	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
6	0.74	0.77	0.87	0.50	0.76	0.72

Table 5: Extrapolation Ratios for MIC Tight-Buffered Cables, Plenum, MIC Tight-Buffered Cables, Riser and MIC Tight Buffer Indoor LSZH™/FRNC products with fiber count 6.

3. We calculate the total Climate Change impact by multiplying the Life Cycle impact result of the reference cable and its extrapolation ratio. The results are given in Table 6 below.

Indicators	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
Climate Change – total [kg CO2 eq.]	8.78E-03	1.01E-03	4.15E-04	1.48E-06	3.42E-04	1.01E-02

Table 6: Climate Change total impact for the functional unit of MIC Tight-Buffered Cables, Riser with Part Number: 006E81-31131-B2

Extrapolation Ratios:

Table 7 contains the extrapolation ratios for the functional and declared unit of the MIC® Tight-Buffered Cables, Plenum, MIC Tight-Buffered Cables, Riser and MIC Tight-Buffered Indoor LSZH™/FRNC Cable products. The extrapolation ratios in the Table covers all non-armored, plenum, riser, and LSZH/FRNC and SM/MM fiber cables.

Fiber Count	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
2	0.55	0.61	0.76	0.17	0.59	0.52
4	0.61	0.67	0.76	0.33	0.65	0.59
6	0.74	0.77	0.87	0.50	0.76	0.72
8	0.87	0.88	0.97	0.67	0.87	0.85
12	1.00	1.00	1.00	1.00	1.00	1.00
18	1.52	1.42	1.50	1.50	1.41	1.49
24	1.96	1.79	1.90	2.00	1.77	1.92

Table 7: Extrapolation Ratios for the functional and declared unit of MIC Tight-Buffered Cables, Plenum, MIC Tight-Buffered Cables, Riser and MIC Tight Buffer Indoor LSZH/FRNC Cable

Table 8 contains the extrapolation ratios for the functional and declared unit of the MIC Tight-Buffered, Interlocking Armored Cables, Plenum and MIC Tight- Buffered, Interlocking Armored Cables, Riser products. The extrapolation ratio in the table covers all armored, plenum, riser, and SM/MM fiber cables.

Fiber Count	Manufacturing (A1-A3)	Distribution (A4)	Installation (A5)	Use (B1&B6)	End-Of-Life (C2&C4)	Total
2	4.23	3.42	7.78	0.25	2.80	3.05
4	4.22	3.42	7.58	0.33	2.82	3.08
6	4.44	3.60	7.93	0.49	2.98	3.27
8	4.67	3.78	8.28	0.64	3.14	3.46
12	4.69	3.81	7.97	1.00	3.21	3.55
18	5.80	4.69	10.02	1.44	3.93	4.43
24	6.67	5.39	11.52	2.00	4.52	5.15

Table 8: Extrapolation Ratios for the functional and declared unit of MIC Tight Buffered, Interlocking Armored Cables, Plenum and MIC Tight- Buffered, Interlocking Armored Cables, Riser

Product part numbers covered under extrapolation rules:

MIC® Tight-Buffered Cables, all OM1-OM4 multimode and OS2 single-mode fibers, All-Dielectric Non-Armored (Plenum, Riser and LSZH™/FRNC) Cables and fiber counts from 2F to 24F are covered in this document. Table 9 contains the part numbers of MIC Tight-Buffered Cables, Plenum and Riser, 2-24 fiber products.

MIC Tight-Buffered Cables, Plenum	MIC Tight-Buffered Cables, Riser
002E88-31131-29	002E81-31131-29
002E88-31131-B2	002E81-31131-B2
002E88-31131-B3	002E81-31131-B3
002E88-35131-SL	002E81-35131-SL
002Z88-31131-29	002Z81-31131-29
002Z88-35131-BL	002Z81-35131-BL
002Z88-35131-WH	002Z81-35131-WH
004E88-31131-29	004E81-31131-29
004E88-35131-OR	004E81-35131-OR
004E88-35131-RD	004E81-35131-RD
004Z88-32131-29	004Z81-32131-29
006E88-31131-29	006E81-31131-29
006E88-31131-B2	006E81-31131-B2
006E88-31131-D3	006E81-31131-D3
006E88-32131-29	006E81-32131-29
006E88-35131-BK	006E81-35131-BK
006E88-35131-GR	006E81-35131-GR
006E88-35131-RD	006E81-35131-RD
006E88-35131-VI	006E81-35131-VI
006E88-35131-WH	006E81-35131-WH
006E88-D1066-29	006E81-D1066-29
006Z88-35131-WH	006Z81-35131-WH
006Z88-D0811-D3	006Z81-D0811-D3
008E88-35131-GR	008E81-35131-GR
012E88-33131-29	012E81-33131-29
012E88-33131-D3	012E81-33131-D3
012E88-34131-29	012E81-34131-29
012E88-33131-29	012E81-33131-29
012E88-33131-D3	012E81-33131-D3
012E88-34131-29	012E81-34131-29
012E88-37131-GR	012E81-37131-GR
012E88-37131-RD	012E81-37131-RD
012E88-37131-SL	012E81-37131-SL
012E88-D1131-29	012E81-D1131-29
012Z88-34131-29	012Z81-34131-29
012Z88-D0812-D3	012Z81-D0812-D3
012Z88-D0813-D3	012Z81-D0813-D3
024E88-33131-29	024E81-33131-29
024E88-33131-D3	024E81-33131-D3
024E88-37131-BK	024E81-37131-BK
024E88-37131-BL	024E81-37131-BL
024E88-37131-GR	024E81-37131-GR
024E88-37131-OR	024E81-37131-OR
024E88-37131-RD	024E81-37131-RD
024E88-37131-SL	024E81-37131-SL
024E88-37131-VI	024E81-37131-VI
024Z88-33131-29	024Z81-33131-29
024Z88-34131-29	024Z81-34131-29

Table 9: MIC Tight-Buffered Cable, Plenum, Single-mode (OS2) Optical Fiber Cables covered by the extrapolation ratios

Table 10 contains the part numbers of the MIC Tight-Buffered, Interlocking Armored Cables, Plenum, 2-24 fiber products.

MIC Tight Buffered, Interlocking Armored Cables, Plenum	MIC Tight Buffered, Interlocking Armored Cables, Riser
002E88-31131-A3	002E81-31131-A3
002Z88-D0954-AV	002Z81-D0954-AV
004E88-31131-A3	004E81-31131-A3
006E88-31131-A3	006E81-31131-A3
006E88-32131-A3	006E81-32131-A3
006E88-35131-AO	006E81-35131-AO
006E88-35131-AR	006E81-35131-AR
006E88-35131-AW	006E81-35131-AW
006E88-35131-DA	006E81-35131-DA
006Z88-35131-AW	006Z81-35131-AW
012E88-33131-A3	012E81-33131-A3
012E88-37131-AG	012E81-37131-AG
012E88-37131-AR	012E81-37131-AR
012Z88-34131-A3	012Z81-34131-A3
024E88-33131-A3	024E81-33131-A3
024E88-37131-AK	024E81-37131-AK
024E88-37131-AQ	024E81-37131-AQ
024E88-37131-AR	024E81-37131-AR
024E88-37131-AU	024E81-37131-AU
024E88-37131-AV	024E81-37131-AV
024E88-61131-A3	024E81-61131-A3

Table 10: MIC Tight Buffered, Interlocking Armored Cables covered by the extrapolation ratios

Table 11 contains the part numbers of the MIC® Tight-Buffered Indoor Cable (LSZH™/FRNC) products.

MIC Tight Buffered Indoor Cable (LSZH/FRNC)	MIC Tight Buffered Indoor Cable (LSZH/FRNC)	MIC Tight Buffered Indoor Cable (LSZH/FRNC)
002J8Z-32125E2G	004Z8Z-36125EDE	012T8Z-36198ERD
002J8Z-32125EDE	004Z8Z-36125ERD	012U8Z-32125E2G
002J8Z-32125TDE	004Z8Z-36125EWH	012U8Z-32125TDE
002U8Z-32120E2G	004Z8Z-36125EYL	012V8Z-32198E2G
002U8Z-32125E2G	006E8Z-32125E2G	012Z8Z-32125E2G
002U8Z-36122EOR	006E8Z-32125EAT	012Z8Z-36125EGR
002U8Z-36125E2G	006J8Z-32125TDE	012Z8Z-36125EWH
002U8Z-36125EB2	006K8Z-32108E2G	012Z8Z-36125EYL
002U8Z-36125EVI	006T8Z-32138E2G	016E8Z-32125E2G
002U8Z-36125EWH	006T8Z-32188E2G	016J8Z-32125EB2
002U8Z-36125EYL	006T8Z-32188EAT	016K8Z-32108E2G
002Z8Z-32125E2G	006T8Z-32198E2G	016T8Z-32138E2G
002Z8Z-32125E2G	006T8Z-36188EYL	016T8Z-32188E2G
004E8Z-32125E2G	006U8Z-32125TDE	016T8Z-32198E2G
004E8Z-36125EBL	006U8Z-36122EOR	016U8Z-32125EB2
004E8Z-36125EGR	006Z8Z-32125E2G	016U8Z-32125TB2
004E8Z-36125ERD	006Z8Z-36125EYL	016Z8Z-32125E2G
004J8Z-32125E2G	008E8Z-32125E2G	016Z8Z-36125EYL
004J8Z-32125EDE	008J8Z-32125EB2	024E8Z-32125E2G
004J8Z-32125TDE	008J8Z-32125EDE	024E8Z-36125EBL
004J8Z-36125TYL	008J8Z-32125TDE	024E8Z-36125EGR
004K8Z-32108E2G	008K8Z-32108E2G	024E8Z-36125ERD
004T8Z-32138E2G	008T8Z-32138E2G	024J8Z-32125E2G
004T8Z-32188E2G	008T8Z-32188E2G	024J8Z-32125EB2
004T8Z-32198E2G	008T8Z-32198E2G	024J8Z-32125EDE
004T8Z-36138ERD	008T8Z-36188ERD	024K8Z-32108E2G

Table 11: MIC Tight-Buffered Indoor Cable (LSZH/FRNC) covered by the extrapolation ratios

Table 11 Continued.

MIC® Tight Buffered Indoor Cable (LSZH™/FRNC)	MIC Tight Buffered Indoor Cable (LSZH/FRNC)	MIC Tight Buffered Indoor Cable (LSZH/FRNC)
004T8Z-36138EYL	008T8Z-36198ERD	024T8Z-32138E2G
004T8Z-36188EBL	008U8Z-32125E2G	024T8Z-32188E2G
004T8Z-36188EDE	008U8Z-32125EB2	024T8Z-32198E2G
004T8Z-36188EGR	008U8Z-32125TB2	024T8Z-32198EAT
004T8Z-36188ERD	008Z8Z-32125E2G	024T8Z-32198EBK
004T8Z-36188EYL	008Z8Z-36125EYL	024T8Z-36188EBL
004T8Z-36198EBL	012E8Z-32125E2G	024T8Z-36188ERD
004T8Z-36198ECU	012E8Z-36125ERD	024T8Z-36198EEV
004T8Z-36198EGR	012J8Z-32125EB2	024V8Z-32198E2G
004T8Z-36198ERD	012J8Z-32125EDE	024Z8Z-32125E2G
004T8Z-36198EVI	012J8Z-32125TDE	024Z8Z-36125EWH
004T8Z-36198EYL	012K8Z-32108E2G	024Z8Z-36125EYL
004U8Z-32125E2G	012T8Z-32138E2G	
004U8Z-32125EB2	012T8Z-32188E2G	
004U8Z-32125TDE	012T8Z-32188EAT	
004V8Z-32198E2G	012T8Z-32198E2G	
004Z8Z-32125E2G	012T8Z-32198EAT	
004Z8Z-32125EDE	012T8Z-32198EBK	
004Z8Z-32125TDE	012T8Z-36188ERD	

Table 11: MIC Tight-Buffered Indoor Cable (LSZH/FRNC) covered by the extrapolation ratios

Corning Optical Communications LLC • 4200 Corning Place • Charlotte, NC 28216 USA
800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/opcomm