Corning Optical Fiber Shipping Spools and Spool Covers

Application Note

AN04
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Scope

This document describes Corning® optical fiber shipping spools and protective spool covers.

General

Corning's ABS (Acrylonitrile-Butadiene-Styrene) single-wide, double-wide, and 100+ km spools are designed to protect Corning's optical fiber during shipping and handling to customers worldwide. A balanced spool construction with smooth inside surfaces ensures uniform payoff. The spools feature a foam pad, reinforced (ribbed) flanges for greater durability, and a readily accessible inner-end of the fiber (lead-meter) to help facilitate on-spool measurements or splicing for test-bed stimulations.

Corning's clear, clarified polypropylene single-wide, double-wide, and 100+ km shipping spool covers, with molded carrying handle and locking clasp are designed to further protect the fiber during shipping and handling. The single-wide/double-wide spool covers contain a UV inhibitor to minimize photo yellowing of the fiber (a non-functional yellowing of un-colored fiber coating) during long-term exposure to sources of UV light. The clear single-wide/double-wide spool covers allow for in-house fiber color identification without removal of the cover. The covers have a snug form-fit to the Corning shipping spools, and dual locking clasps are used to keep the covers secure during shipping and normal handling. A fold in the material forms a hinge between the two cover halves. These are durable and provide long shelf life. Strategically located feet allow for stable storage of spools and covers in the preferred upright position. The single-wide/double-wide spool covers are intended for reuse or recycling. The 100+ km spool cover is intended for a single use. Corning recommends that the spool covers remain fitted to the spools whenever possible for added protection of the fiber windings.

Packaging Recycling and Disposal

Unless specifically requested by Corning, customers are solely responsible for the proper recycling or disposal of pallets, spools, spool covers, and corrugated boxes in accordance with all applicable local laws, rules, codes and other regulations; and will indemnify and hold harmless Corning from and against any and all costs and expenses that Corning may incur as a result of any violation. Corning can assist customers to identify a qualified local recycler. Material Safety Data Sheets (MSDS) are available for all packaging materials upon request.

Dimensions

The Corning single-wide spool is approximately 4.69 inches (119.1 mm) wide with a flange diameter of 9.29 inches (236 mm). The double-wide spool is approximately 9.19 inches (233.4 mm) wide with a flange diameter of 9.29 inches (236 mm). The 100+ km spool is approximately 8.91 inches (226.3 mm) wide with a flange diameter of 12 inches (304 mm). A 0.2 inch (5.08 mm) thick polyethylene closed-cell foam pad completely surrounds the 6 inch (152.4 mm) diameter fiber barrel. The center hole is 1 inch (25.4 mm) in diameter. Molded drive holes are designed in to assist mechanical pay off. See Figure 1 for more detail.

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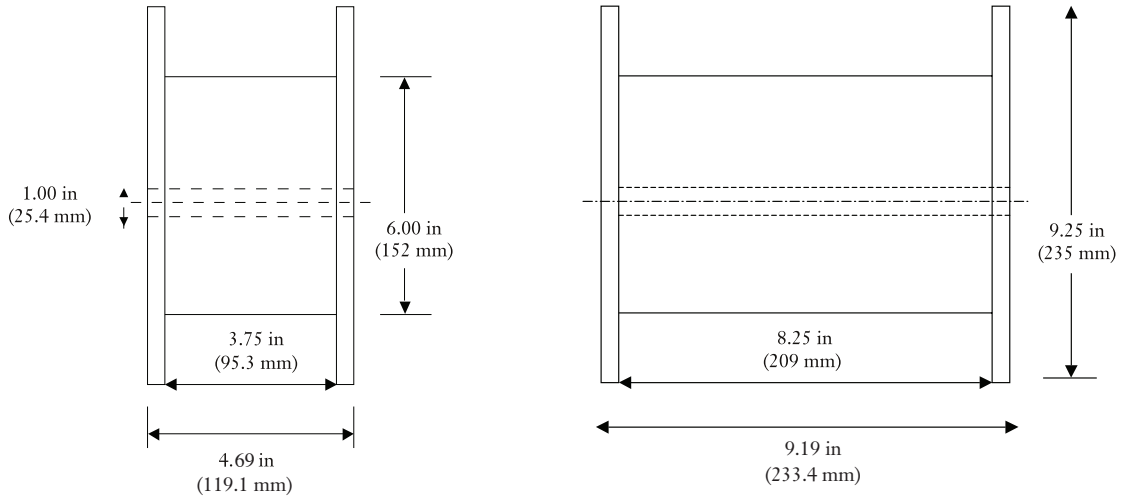
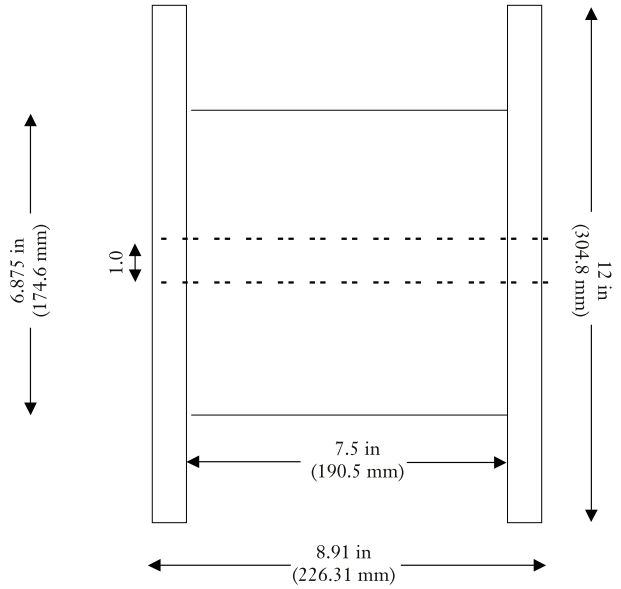
9¼" Shipping Spools

Figure 1



The Corning 100+ km spool is 8.91 inches wide with a flange diameter of 12 inches.

Figure 2

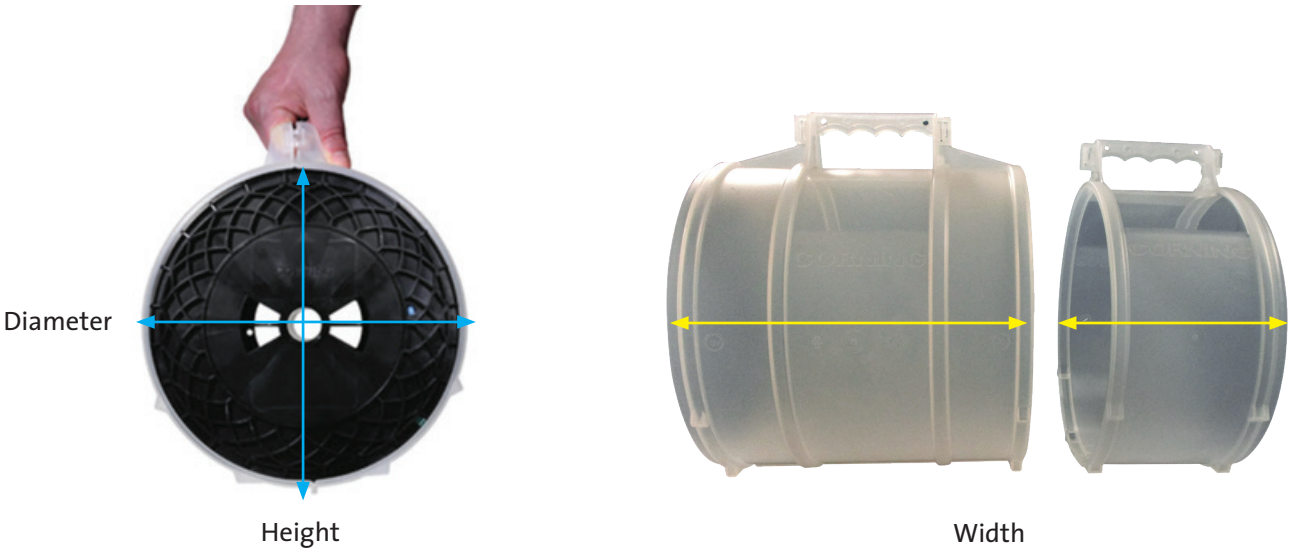


Dimensions - Spool Cover

The Corning single-wide spool cover has an approximate height of 10.8 inches (276 mm) (from top of handle to bottom), width of 4.8 inches (122 mm) and a diameter of 9.4 inches (239 mm). The double-wide spool cover has an approximate height of 11.2 inches (284 mm), width of 9.3 inches (236 mm) and a diameter of 9.4 inches (239 mm). The 100+ km spool cover has an approximate height of 15.6 inches (396 mm), width of 10.3 inches (262 mm) and a diameter of 12.2 inches (311 mm). See Figure 3 for more detail.

Double-wide & Single-wide Spool Cover

Figure 3



100+ km Spool Cover

Physical Properties	Single-wide Spool Cover	Double-wide Spool Cover	100+ km Spool Cover
Diameter	239 mm	239 mm	311 mm
Height (From top of handle to bottom)	276 mm	284 mm	396 mm
Width	122 mm	236 mm	262 mm

Impact Resistance

Spools were impact tested from a drop-height of 30 inches (76 cm) onto a hard surface with minimal damage (NSA, Test A-1). Spools dropped from this height should be inspected for damage or poor wind quality before processing.

Fiber Wind and Storage

Flange-to-flange parallel wind under nominal wind tension is sufficient to maintain wind integrity during shipment. Spool designs and wind tension allow for minimal stress and acceptable storage life.

In order to maintain optimum wind quality for extended periods of time, Corning recommends a storage temperature range of 20°C to 35°C. The maximum recommended storage environment for Corning optical fiber while on the shipping spool is -40°C to +45°C at 98% relative humidity. Corning also recommends a minimum 24 hour acclimation period to a customer's ambient environment before attempting to process (unwind) the fiber from the shipping spool.

Physical Properties

Approximate Mass (Weight)

	Single-Wide	Double-Wide	100 km Spool
Spool cover	0.23 kg (0.5 lb)	0.44 kg (0.97 lb)	0.30 kg (0.65 lb)
Empty spool	0.61 kg (1.27 lb)	0.95 kg (2.09 lb)	1.58 kg (3.48 lb)
Spools with fiber and no covers:			

Spools with Fiber and No Covers:

Length (coating)	**Mass (weight)**		
	Single-Wide	Double-Wide	100 km Spool
12.6 km (245 µm) fiber	1.38 kg (3.03 lb)	1.76 kg (3.87 lb)	2.39 kg (5.26 lb)
25.0 km (245 µm) fiber	2.17 kg (4.78 lb)	2.55 kg (5.62 lb)	3.18 kg (7.01 lb)
50.0 km (245 µm) fiber		4.15 kg (9.15 lb)	4.78 kg (10.54 lb)
100.0 km (245 µm) fiber			7.98 kg (17.59 lb)

	Single-Wide	Double-Wide	100 km Spool
12.6 km (200 µm) fiber		1.55 kg (3.43 lb)	
25.0 km (200 µm) fiber		2.15 kg (4.74 lb)	
50.0 km (200 µm) fiber		3.35 kg (7.39 lb)	
100.0 km (200 µm) fiber			

Spool Length Capacity

The Corning single-wide spool can accommodate a maximum 25.2 km length of 250 µm colored fiber, 6.5 km of 500 µm coated fiber, or 2 km of fiber overcoated to 900 µm. The Corning double-wide spool can accommodate a maximum of 63.0 km length of colored fiber, 13.0 km of 500 µm coated fiber, or 4 km of fiber overcoated to 900 µm. Corning's 100+ km spools can accommodate up to 120 km of 250 µm colored fiber. These maximum lengths maintain the recommended 4 mm flange exposure needed for protection during storage and handling.

Use of Corning Spools in the Customer's Factory

Corning's shipping spools are frequently re-used following rigorous inspection for cleanliness and dimensional integrity. It is also common practice among Corning's customer to use Corning's shipping spools as "process spools" for fiber take-up, storage, etc. In this case, Corning recommends that customers inspect their spools for any damage that would affect fiber quality or processing such as burrs, cuts, cracks, or foreign materials such as dirt, dust, tape adhesive, or stray fiber. Critical areas are on the inside flange, slot edge and slot areas. Detailed Corning inspection criteria are available from your Corning representative upon request.

Use of Corning Spools and Packaging outside the Customer's Factory

Corning is aware that many of our customers enjoy using the high-quality plastic spools and packaging delivered with the fiber purchased from Corning to safely and securely transport products within their own manufacturing facilities. Corning does not wish to interfere with this efficient practice. Corning does wish to remind its customers that Corning owns all right, title and interest in the trademarks and logos embossed on the spools, clamshell, totes, and corrugated box, and no license to any Corning-owned trademark or logo is granted to any party through the delivery of optical fiber on spools or in corrugated boxes. Accordingly, customers may not use packaging material, including spool, clamshells, totes, and corrugated boxes, upon which Corning's trademark or logo appear for any external purpose (i.e., outside a customer's operating facility), including when transporting or delivering their own products.

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