

# Corning Shipping Spools and Spool Covers

## Application Note

AN04

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ISO 9001 Registered

### 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. Features of these spools include a foam pad, reinforced (ribbed) flanges for greater durability, and accessibility for fiber lead lengths to facilitate on-spool measurements.

Corning's clear, clarified polypropylene shipping spool covers, with molded carrying handle and locking clasp, are designed to further protect the fiber during shipping and handling. The shipping spool cover contains a UV inhibitor to minimize photoyellowing of the fiber. The clear covers allow for in-house color identification without removal of the cover. The covers have a snug-form-fit to the Corning shipping spools. Dual locking clasps are used to keep the covers secure during shipping and normal handling. A living hinge is used between the two cover halves to assure durability and long life. Strategically located feet allow for stable storage of spools and covers in the preferred upright position.

### Packaging Recycling and Disposal

In response to a growing demand for companies to become more environmentally conscious, in 2005 Corning began deliver orders to some customers in corrugated boxes. This conversion to corrugated boxes coincides with a refocus of our efforts on recycling options for package disposal which comply with local waste disposal legislation. Corning's collection of pallets, spools, clamshells, and totes will be eliminated for those customers converted to corrugated box shipments. Those customers who are converted to the corrugated box shipments are solely responsible for the proper recycling or disposal of pallets, spools, clamshells 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 provide some assistance in your efforts to identify a qualified local recycler. Material Safety Data Sheets (MSDS) are available for all packaging upon request.

### Dimensions

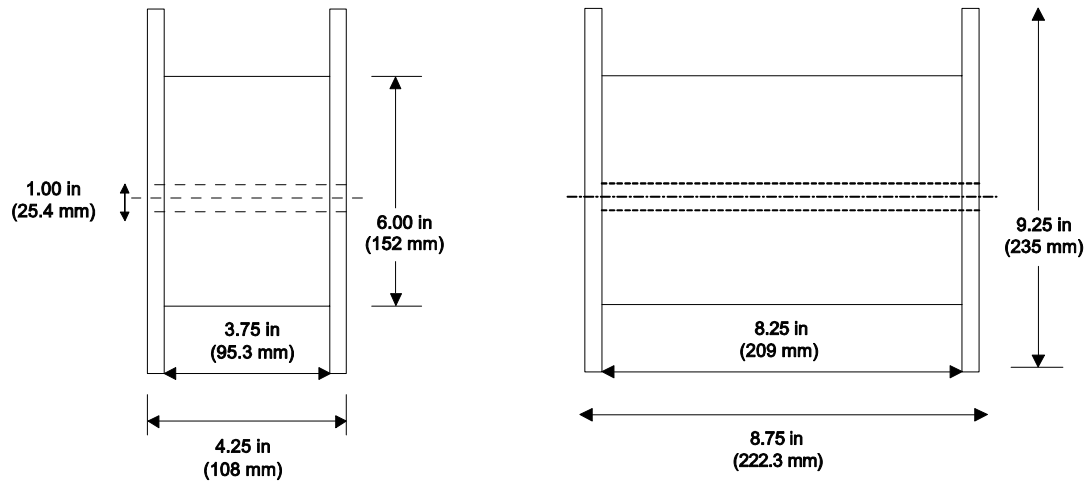
The Corning single-wide spool is approximately 4 1/4 inches (10.6 cm) wide with a flange diameter of 9 1/4 inches (23.5 cm). The double-wide spool is approximately 8 3/4 inches (22.2 cm) wide with a flange diameter of 9 1/4 inches (23.5 cm). A 3/16 inch (0.5 cm) thick polyethylene closed-cell foam pad completely surrounds the 6 inch (15.2 cm) diameter fiber barrel. The center hole is 1 inch (2.54 cm) in diameter. Molded drive holes are designed in to assist mechanical pay off. See Figure 1 for more detail.

The Corning single-wide spool cover is approximately 4 1/2 inches (11.43 cm) wide and 9 1/2 inches (24.13 cm) in diameter. The Corning double-wide spool cover is approximately 9 7/16 inches (24.0 cm) wide and 9 1/2 inches (24.13 cm) in diameter. The carrying handle extends out approximately 1 1/2 inches (3.81 cm) from the main body. The handle has a 0.92 inch (2.33 cm) finger space clearance. Two 1/2 inch (1.27 cm) snap-clasps are located on either side of the handle.

The logo consists of the word "CORNING" in white, uppercase, sans-serif font, centered on a solid blue rectangular background.

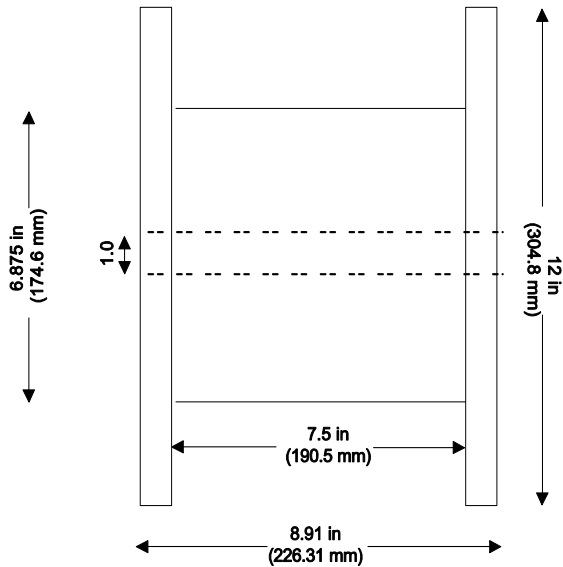
## 9 1/4" Shipping Spools

Figure 1



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

Figure 2



## Functionality Testing

The following tests have been performed to demonstrate resistance of the packaging system to the following concerns; generation of wind disruption (e.g. flange gaps, cascades), fiber breaks, damage to spool or cover or box, dislodgement of the fiber ends taped to the spool.

- Heat soak at +45°C for a duration of 16 hours.
- International Safe Transit Association (ISTA) Protocol 3A (exposure to random vibration and shock testing)

## 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 allow for minimal stress and acceptable storage life.

The storage environment for Corning optical fiber while on the shipping spools is -40° to +45°C at 98% relative humidity. To maintain optimum wind quality for extended periods of time, Corning recommends a storage temperature of 20° to 35°C.

## Physical Properties

### *Approximate Mass (Weight)*

	<u>Single-Wide</u>	<u>Double-Wide</u>	<u>100 km Spool</u>
Spool cover	0.23 kg (0.51 lb)	0.44 kg (0.97 lb)	n/a
Empty spool	0.57 kg (1.26 lb)	0.95 kg (2.09 lb)	1.58 kg (3.48 lb)
Spools with fiber and no covers:			

### **Length (coating)**

	<u>Single-Wide</u>	<u>Double-Wide</u>	<u>100 km Spool</u>
12.6 km (242 μm) fiber	1.38 kg (3.04 lb)	1.76 kg (3.88 lb)	2.39 kg (5.27 lb)
25.0 km (242 μm) fiber	2.18 kg (4.80 lb)	2.56 kg (5.64 lb)	3.19 kg (7.03 lb)
63.0 km (242 μm) fiber		5.00 kg (11.03 lb)	5.63 kg (12.41 lb)
100.0 km (242 μm) fiber			8.01kg (17.66 lb)

### *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 100 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 frequently reuses shipping spools returned from customers following rigorous inspection for cleanliness and dimensional integrity. It is also common practice among Corning's customers to use Corning's shipping spools as "process spools" for fiber takeup, storage, etc. in their own facilities. 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. Corning's Inspection Criteria are available from your Corning representative.

## Use of Corning Spools and Packaging Outside the Customer's Factory

Corning is aware that many of our customers enjoy using the high quality 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, spool covers and packaging, and no license to any Corning-owned trademark or logo is granted to any party through the delivery of optical fiber from Corning. Accordingly, customers may not use packaging material, including spools, spool covers, or packaging, 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.

Customers should maximize use of shipping spool covers with an encircled UV emblem in their storage operation. The UV emblem covers contain an UV inhibitor to protect the fiber from fluorescent lights during extended storage.

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