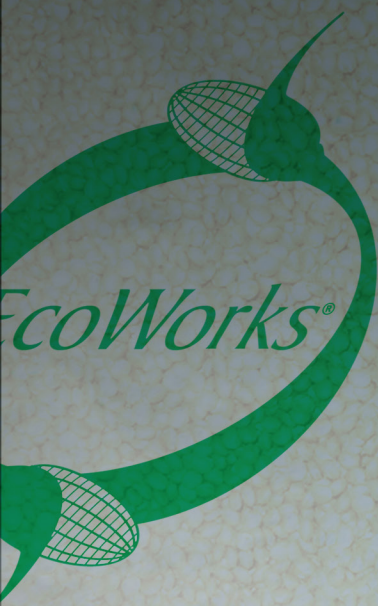


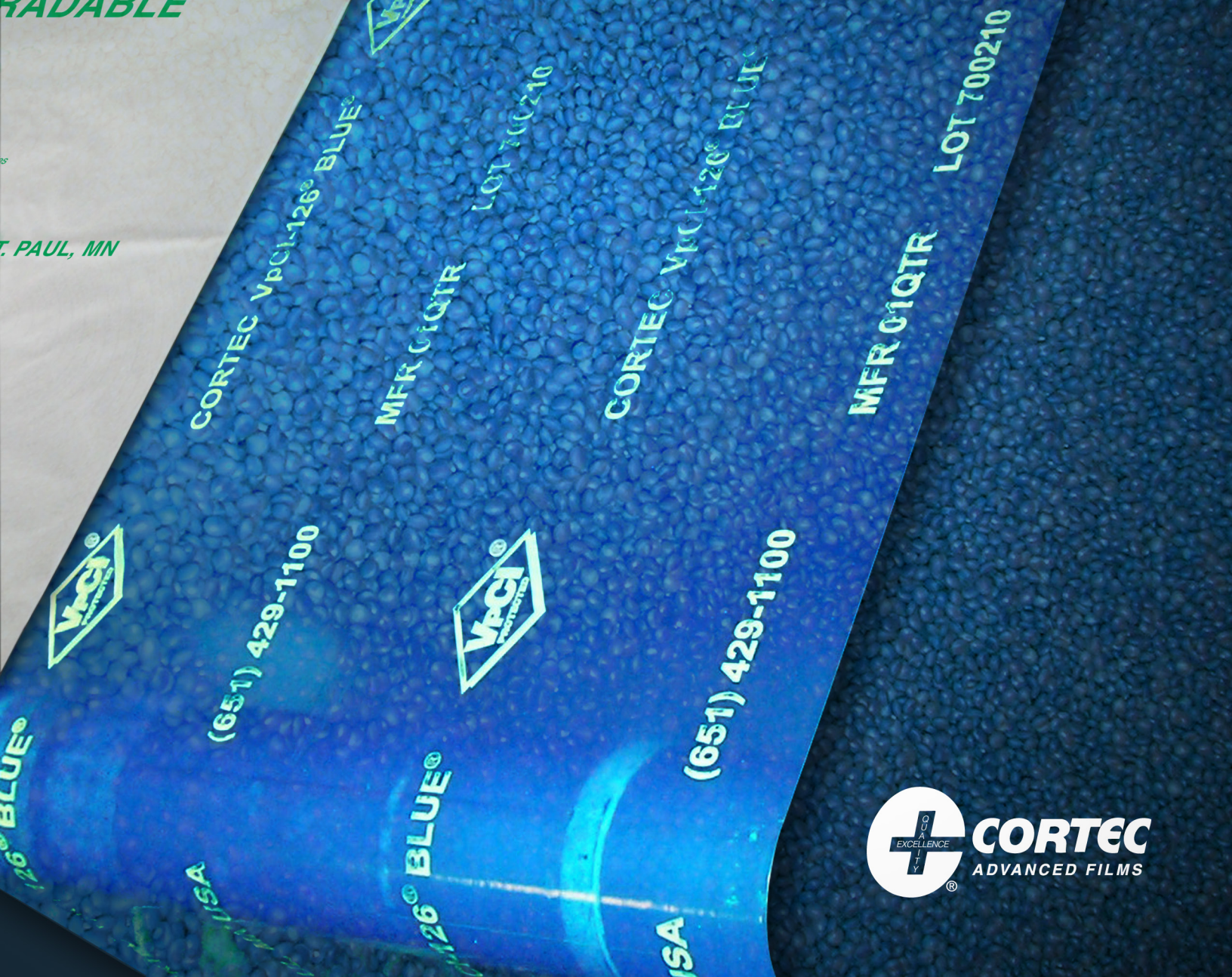
CORTEC CORPORATION (651) 429-1100 ST. PAUL, MN



GRADABLE

ST. PAUL, MN

Cortec[®] Advanced Films



Our Mission

At Cortec® Advanced Films we are continually improving and expanding our facilities, equipment, processes, and ourselves to meet our customers' needs and expectations for consistent high quality film and bags delivered on time.



Cortec® Advanced Films (CAF), in Cambridge, Minnesota, specializes in manufacturing Cortec's innovative Vapor phase Corrosion Inhibitor (VpCI®) films and offers customers complete converting, extruding, printing, and compounding capabilities.

CAF manufactures films and bags according to customer specification in terms of product size and performance. CAF is very flexible when it comes to order size and meeting special customer requests for emergency delivery.

At present, we have eleven extruders that make up:

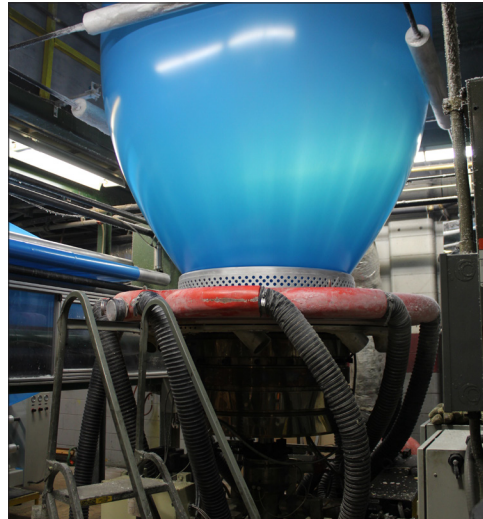
- Eight monolayer blown film lines from 3" to 360" (76-9144 mm)
- One co-extruded 3-layer blown film line
- Two compounding lines
- One pipe-strip processing line

We also have seven bag machines, including one top-seal (zipper closure) bag machine. Additionally, we have a two-color printing press.



Extruding

The first step in manufacturing is the extrusion process, where raw resin is transformed into film. Our blown film extrusion lines can produce flat tubing, gusseted tubing, single-wound sheeting, J-sheeting, centerfold, and other configurations. We can add color concentrates, VpCI®, and other specialized additives such as static dissipatives, flame retardant, and ultraviolet inhibitors to exactly match your individual needs. We are capable of extruding linear low blends up to 100%. Sizes range from a 3" (76 mm) minimum layflat width up to a 30' (9 m) maximum width depending on film configuration and film thickness.



Biodegradable/Compostable Packaging Films

Cortec® has pioneered two new technologies, Eco Film® and Eco Works®. Eco Film® and Eco Works® offer biodegradable/compostable alternatives to polyethylene films and bags for anyone concerned about reducing plastics pollution. Both product lines were designed with their entire life cycle in mind.

Eco Film® and EcoWorks® can also be combined with VpCI® technology (Eco-Corr®), ESD protection, and even adhesives, offering the most extensive biodegradable packaging lineup in the world.

Eco Film® and Eco Works® are available in all sizes and forms.



Compounding Lines

To produce a high technology VpCI® film, Cortec® begins with a high quality concentrated masterbatch. Our modern, high-tech compounding lines are on the cutting edge of the latest technology. From precise feeding systems to custom screw designs, Cortec® compounding lines are second to none for ensuring the highest film product quality to our customers.

Cortec® compounding lines will produce many different concentrated masterbatch products.* We are also able to integrate our VpCI® Technology into biodegradable products. Cortec® has been a pioneer in the formulation and compounding of bio-based and/or biodegradable resins, with over fourteen years of experience in working with these materials. We offer a range of standard grades of our Eco Works® compounded resins and will gladly make custom blends.

*Contact Cortec® customer service for compounding capabilities.



Laboratory

Cortec® Advanced Films has a world-class laboratory that can perform testing compliant to Military Specifications (MIL-STD 3010) and ASTM standards (Section 8 Series D). The laboratory is located on-site at its blown film extrusion facility. All VpCI® film batches are tested for Vapor phase Corrosion Inhibitor (VpCI®) effectiveness. Moisture levels are tested by a Computrac Moisture Analyzer for any VpCI® masterbatch production. Mechanical properties testing available include Tensile Strength, Puncture Resistance, Tear Strength, Dart Drop Impact, Coefficient of Friction, and Shrink. Static decay rates for Electrostatic Discharge (ESD) films are determined using desiccant chambers at 12.5% RH.

ESD films are manufactured as commercial equivalents to Military Specification MIL-PRF-81705 D. Each ESD order is tested on-site for static decay and surface resistivity. Static decay testing complies with Federal Standard 101 Method 4046. Surface Resistivity exceeds ESD S 11.11 specifications.

Custom VpCI® films are developed and tested on site. Specific strengths, tear resistance, puncture resistance, tackiness, and slip qualities can be formulated according to the customer's needs.



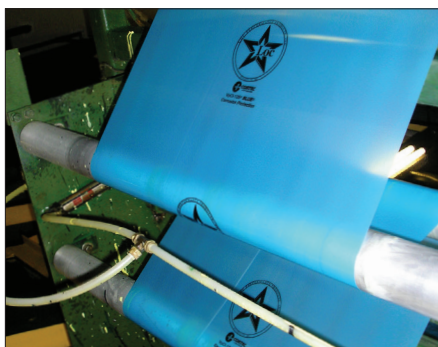
Converting

In our converting department the film is made into bags in a wide variety of sizes and styles for packaging equipment, hardware, spare parts, or just about anything you require. Many different sizes of holes can be punched for venting, hanging, or carrying products. We are well equipped to manufacture the popular bag-on-roll and top-seal (zipper closure) bags. This department solves packaging requirements with creativity and experience.



Printing

Our printing department can provide some of the most appealing packaging available. We can print materials from 9" (229 mm) up to 44" (1118 mm) wide, with one to two colors.



EXTRUSION CAPABILITIES

Film Products:

Biobased Compostable films	Yes	
Biodegradable/Compostable	Yes	VpCI® (Vapor phase Corrosion Inhibitors)
Coextruded blown stretch film	Yes	
EVA	Yes	Opaque Colors
Fractional Melt	Yes	Custom Colors
High Clarity	Yes	Tinted Colors
High Density Polyethylene	Yes	Anti-Block
Industrial Clear	Yes	Flame Retardant
Liner	Yes	Static Dissipating
Linear Low Density	Blends up to 100%	Slip
Low Density Polyethylene	Yes	UVI
Random Reprocessed	Yes	
Shrink	Yes	
Skin Film	Yes	
Stretch Film	Yes	
Water Soluble Films (PVA)	Yes, limited sizes	

Available Additives:

* Complete compounding department for the production of masterbatches and concentrates.

FILM CONFIGURATIONS

Film Products:

Size (Inches):

Size (Centimeters):

Flat Tubing	Width - 3" to 80"	Width - 7.6 cm to 203.2 cm
Gusseted Tubing	Lay-flat width - 9" to 180"	Width - 22.8 cm to 457.2 cm
Centerfold Sheeting	Width - 4.5" (opens to 9") to 80" (opens to 160")	Width - 11.4 cm (opens to 22.8 cm) to 203.2 cm (opens to 406.4 cm)
Single Wound Sheeting	Width - 4" to 80"	Width - 10.1 cm to 157.4 cm
Double Wound Sheeting	Width - 4" to 80"	Width - 10.1 cm to 203.2 cm
Slit-Gusseted Tubing (Sheeting)	Max width opens to 360"	Width - 914.4 cm
J-Sheeting		
M-Sheeting		
U-Sheeting		
Slit Seal	Width - 4.5" to 18"	Width - 11.4 cm to 45.7 cm

* Contact Cortec® customer service for manufacturing capabilities of various film products.

CONVERTING CAPABILITIES

BAGS

Bottom Seal	Width - 4" to 48" Length - 6" to 80"	Width - 10.1 cm to 121.9 cm Length - 15.2 cm to 203.2 cm
Side Seal	Resealable Zipper Closure - 3.25" x 3" (smallest bag size) to 60" x 42" (largest bag size) Heat Seal - 3.25" x 3" (smallest bag size) to 60" x 54" (largest bag size)	Resealable Zipper Closure - 8.25 cm x 7.62 cm (smallest bag size) to 152.4 cm x 106.6 cm (largest bag size) Heat Seal - 8.25 cm x 7.62 cm (smallest bag size) to 152.4 cm x 137.1 cm (largest bag size)

OTHER BAG OPTIONS

Bottom Gusset	Venting (limited side seal capabilities)	Die Cut Handles
Resealable Zipper Closure		

BAG ON A ROLL OR PERFOR SHEETS ON A ROLL

In-line	Width - 3" to 80" Length - 6" to 9999"	Width - 22.8 cm to 203.2 cm Length - 15.2 cm to 25,400 cm
Off-line	Width - 3" to 80" Length - 6" to 9999"	Width - 22.8 cm to 203.2 cm Length - 15.2 cm to 25,400 cm
* Minimum film thickness	0.75 mil	20 microns
* Maximum film thickness	10 mil Tubing and Sheeting	250 microns
* Maximum sealing thickness	24 mil (6 mil Gusseted Tubing)	600 microns (150 microns Gusseted Tubing)

PRINTING IN-LINE

PRINTING OFF-LINE

* One Color	* Two Color
Random	Up to 44"/111 cm
* Web width - 9" to 30 ft (22.9 cm to 9 m)	

LIMITED WARRANTY

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Cortec® Corporation warrants Cortec® products will be free from defects when shipped to customer. Cortec® Corporation's obligation under this warranty shall be limited to replacement of product that proves to be defective. To obtain replacement product under this warranty, the customer must notify Cortec® Corporation of the claimed defect within six months after shipment of product to customer. All freight charges for replacement product shall be paid by customer.

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4119 White Bear Parkway, St. Paul, MN 55110 USA
Phone (651) 429-1100, Fax (651) 429-1122
Toll Free (800) 4-CORTEC, E-mail productinfo@cortecvci.com
www.CortecVCI.com

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