Packaging Film Cores

Film Cores

Sonoco Alcore film cores are designed to specifically manage the stresses and pressures experienced during winding, handling, storage, and unwinding of various film types.

Depending on the film product, different core properties are required to provide efficient winding and contribute to a good roll structure. One of the biggest issues for the film industry is core crushing. When this occurs it causes machine downtime for you, the film producer (when a core gets stuck on a mandrel), and adds waste and cost to your customer (core crushes during storage or transportation). In order toavoid these issues, you need to use reliable, durable and cost effective cores. Sonoco Alcore provides the leading cores in the industry which use the latest testing technologies, such as radial crush, to ensure that you are provided with the optimal core for your needs.

SONOCO ALCORE Film Cores:
Designed with specific radial crush strengths which deliver optimal core performance.

This leads to:
- Optimal core for your needs
- Improved system cost
- Decreased waste
- Minimal downtime during manufacturing

Benefits in brief

- Specific Surface Properties - Ability to tailor the surface properties of the core to your needs.
- Vibration/pressure measurement - Measurements on your line can be completed to increase production efficiency.
- Quickstripe adhesive strip - To speed up your start-up process
- Identify the critical points in the logistic chain in regard to moisture and core properties to prevent problems.

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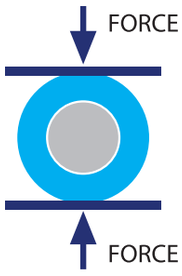
The Importance of Radial Crush in the Film Industry

CONVENTIONAL TECHNOLOGY (FLAT CRUSH)

Historically, film cores have been tested to measure flat crush strength in order to avoid core failures. This measurement is useful but does not fully represent the forces and pressures placed on the core during film winding, storage, and unwinding, of films with memory, or excessive tension.



FLAT CRUSH STRENGTH TEST

Measurement is taken when pressure is applied to the top and bottom of the core. This does not simulate the pressures that occur after an elastic material is wound on a core.

SONOCO ALCORE™ TECHNOLOGY (RADIAL CRUSH)

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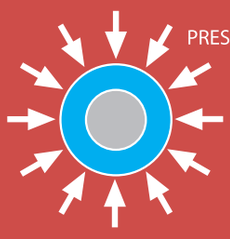


RADIAL CRUSH STRENGTH TEST

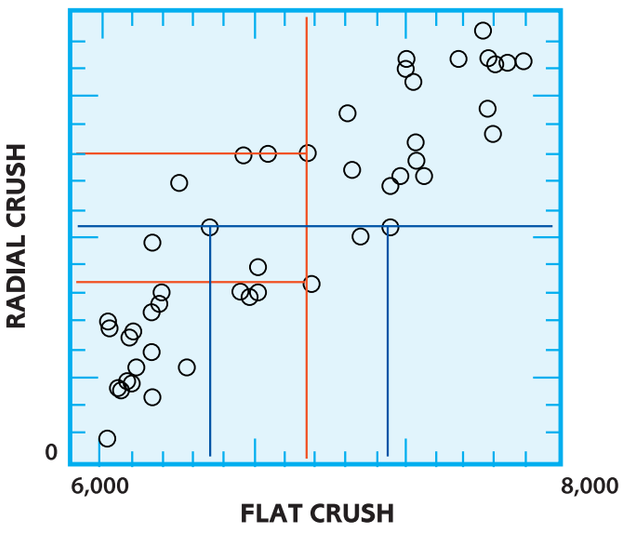
Radial Crush measures maximum pressure at which a core collapses.

The core is placed in a compression chamber and a linear growing pressure is exerted evenly on the core. Pressure build-up stops when the core breaks or at a pre-determined level. Measurements are taken to assess the cores' strength and stability.

The arrows demonstrates where the pressure is placed on the core during radial crush testing. This is the same as the environment in which a core operates during film processing.

FLAT vs RADIAL CRUSH DATA

All 3-in.-I.D. Cores



RELATION FLAT CRUSH/RADIAL CRUSH

This graph illustrates that there is no correlation between flat crush and radial crush. Therefore the core design needs to be based on radial crush as it simulates the type of loading and pressure placed on the core during film winding, actual storage, and unwinding.

BENEFITS IN BRIEF

The benefits of specifically designed radial crush tested cores

Avoids the film crush failures which can result in the core getting stuck on the mandrel

Decreases costs as it minimizes core failures and prevents film damage

Increases production efficiency due to less core failures

Every Sonoco Alcore film core is produced with radial crush as the most influential factor. This delivers a core that minimizes core failures, prevents the risk of added cost and protects your product.

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RADIALCORE

SONOCO ALCORE'S RADIAL CORE IS THE INDUSTRY STANDARD

Today, Sonoco Alcore is leading the way in standardising Radial Crush Technology in the European paper core market. As the technology leader, Sonoco Alcore focuses on understanding customers' needs as well as market changes. We realize that many producers are experiencing added pressure to reduce costs associated with production, packaging and inventory while at the same time increasing productivity. In particular, we are seeing significant focus by the European Commission to reduce packaging waste for both plastic and paper as well as reduce carbon footprints. Cores designed using Radial Crush Technology allow producers to reduce costs and increase productivity by using the right core for the right application.

THE RIGHT CORE FOR THE RIGHT APPLICATION

Why is Radial Crush important for the film & textile industry?

When applying winding tension to elastic material it elongates and, due to its memory effect, it tries to return to its original state, consequently creating radial pressure on the surface of the core. This means that the force is exerted uniformly around the circumference of the core surface as shown to the left in figure1.

The core reacts to the radial pressure by reducing its inside and outside diameter and simultaneously the core length increases. Traditionally, the method for measuring core strength has been Flat Crush. However, the deformations occurring in this test are different from those when radial pressure is applied, thus not simulating the right conditions when film or textiles are wound on the core.

figure 1.

Sonoco's radial crush tester has been endorsed by the Composite Can and Tube Institute in the USA as an accepted test method (CCTI Standard Testing Procedure T-158) as of June 2012. Commercial testers are now available directly from Sonoco Alcore so you can independently test the radial crush strength of your cores.

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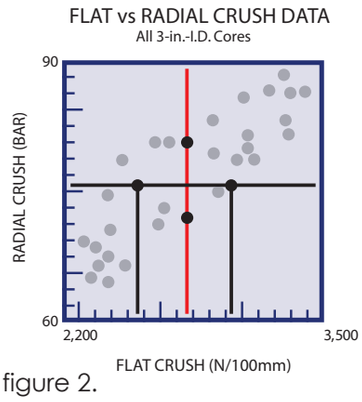
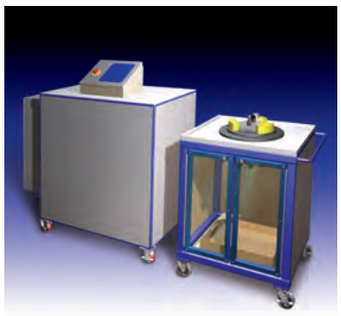


figure 2.

There is not a consistent correlation between Flat Crush and Radial Crush meaning that Flat Crush is not an effective indicator of core performance in applications involving the winding of elastic material. This is shown in figure 2.

WHAT DOES RADIAL CRUSH MEAN TO YOU?

The core must be designed to manage the radial forces occurring in your applications in order to retain the required dimensional stability and functionality.



THE SONOCO ALCORE™ RADIAL CRUSH SOLUTION

Sonoco Alcore designed the Radial Crush testing method to simulate the deformations occurring when elastic materials are wound on a core. During this test the core is placed in a compression chamber and a linear growing pressure is exerted evenly on the core. Pressure build-up stops when the core breaks or at a pre-determined level. Measurements are taken to assess the core's strength and stability.

BENEFITS IN BRIEF

We combine Radial Testing with field tests at the customer's site to match the strength requirements with the corresponding core properties. These requirements are influenced by both the material properties and machine parameters. For example, film gauge, lay-on roll, number of film layers, web tension and formulation type.

What benefits do Radial Crush optimised cores deliver?

- Cost performance - use optimised cores and reduce costs
- Increased productivity - consistent and reliable performance by adjusting the safety margin
- Decreased waste - less film / textile product is lost due to core failures
- Optimised production process - deliver insights into a customer's different machines, settings and material types

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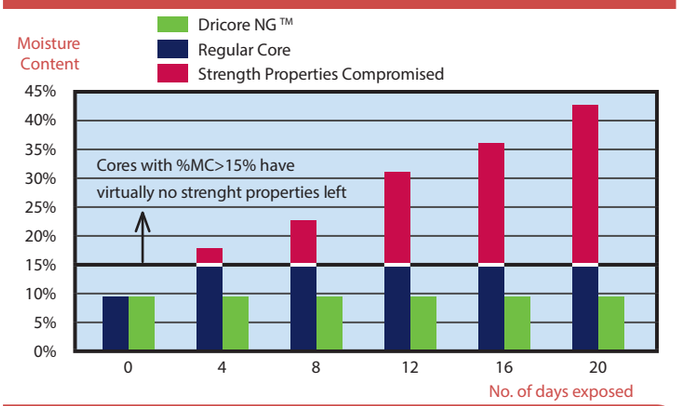
MAKE THE CHANGE TO THE NEW DRICORE NG TODAY

DRICORE

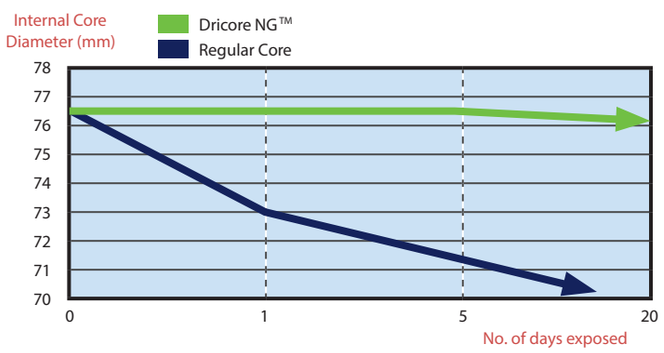
Rain resistant cores for agricultural films

Introducing the new generation Dricore NG water resistant paper core for the agricultural film industry. Sonoco Alcore has continued its focus on working together with agricultural film producers to develop the new and more environmentally friendly grade of Dricore water resistant paper cores. The new Dricore NG has the appearance of a traditional paper core, however, it maintains all of the same critical performance characteristics as the original Dricore product. In addition, the Dricore NG is available in various different colours with printing or branding capabilities to suit the customer needs. The Dricore NG is intended to replace the use of plastic cores in the agricultural film industry bringing benefits to both film producers and the end user as plastic cores are difficult to dispose after use.

Influence of outside (high humidity/rain) conditions on cores



Dimensional Stability of cores under high humidity conditions



As the world's leading producer of paperboard cores, Sonoco Alcore is committed to providing economical and environmentally friendly solutions to all of the industries it serves. With the advantage of our world-leading research and development resources, we have developed the new rain-resistant Dricore NG range as a preferred alternative to plastic cores that are used in the agricultural film market today.

Benefits for film producers

Eliminate the vibrations caused by plastic cores by converting to the paperboard rain-resistant Dricore NG and benefit from higher line speeds and production efficiency.

Saving can be up to 6% per piece compared with plastic cores.

Core dimensions, tolerances and strength properties are tailored to your process demands, based on Sonoco's Radial technology.

Benefits to end users

Dricore NG is a rain-resistant core that holds it's dimensional stability and strength properties even after 20 days outside in the rain. (see chart for moisture barrier)

Dricore NG is an environmentally friendly core made from a minimum of 97% paperboard. (This depends on build-up specifications and core dimensions.)

Dricore NG is re-pulpable and 100% recyclable.

Dricore NG is easy to dispose of compared with plastic cores.

Save on landfill waste costs for plastic cores by using Dricore NG.

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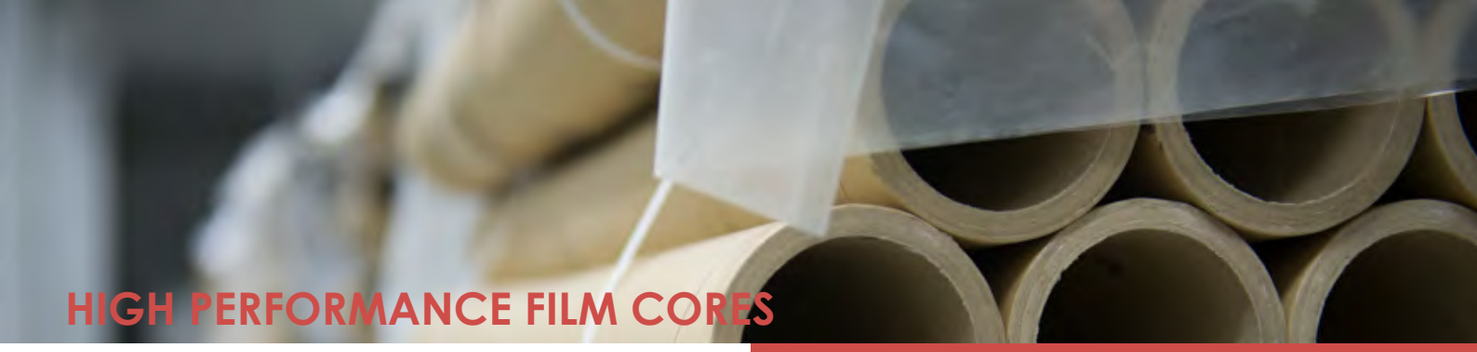

HIGH PERFORMANCE FILM CORES

QS Series

The Sonoco Alcore QS Series of high performance film cores are specifically engineered to meet the increasing demands of packaging highly sensitive films and foils (see table 1 on reverse side for core properties). Our high performance film cores are designed to offer maximum dimensional stability, straightness and smoothness. If these features are not optimized and tailored to your specifications the risk of surface defects, wrinkles, and deformations for your customer may be increased. Sonoco Alcore high performance film cores are specified and tested to minimize these problems during the film production and transportation. Every high performance film core we produce is measured in terms of roughness, smoothness and moisture content, as well as straightness and outside diameter (OD). This ensures that your high value product is protected during winding, transportation and unwinding, maximizing your productivity and lowering your overall cost.

BENEFITS IN BRIEF

- Increased film yields
- Reduced set-up times
- Decreased film wastage caused by defects
- Protection of high value film

SONOCO ALCORE™ - HIGH PERFORMANCE FILM CORE RANGE:

TABLE 1

Dimension	Waviness Average/Maximum µ	Roughness Average/Maximum µ
QS1100	140 - 230	Not Applicable
QS1200	125 - 220	Not Applicable
QS1400	60 - 125	2.5 - 4.0
QS1525	25 - 50	0.5 - 1.5
QS1550	50 - 90	1 - 5

SONOCO ALCORE - added services to the film industry:

- Specific surface properties - ability to tailor the surface properties of the core to your needs.
- Vibration/pressure measurement - measurements on your line can be completed to troubleshoot production deficiencies.

Maximum Output

Efficient film winding is dependent on the core's smoothness, straightness and surface properties. Specifically, waviness and roughness are crucial properties in more demanding applications. Sonoco Alcore understands the importance of these attributes to your productivity and has created a specific range of high performance film cores with properties corresponding to your needs. This delivers a smooth, straight, and clean core that minimizes film damage and maximizes production efficiency.

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