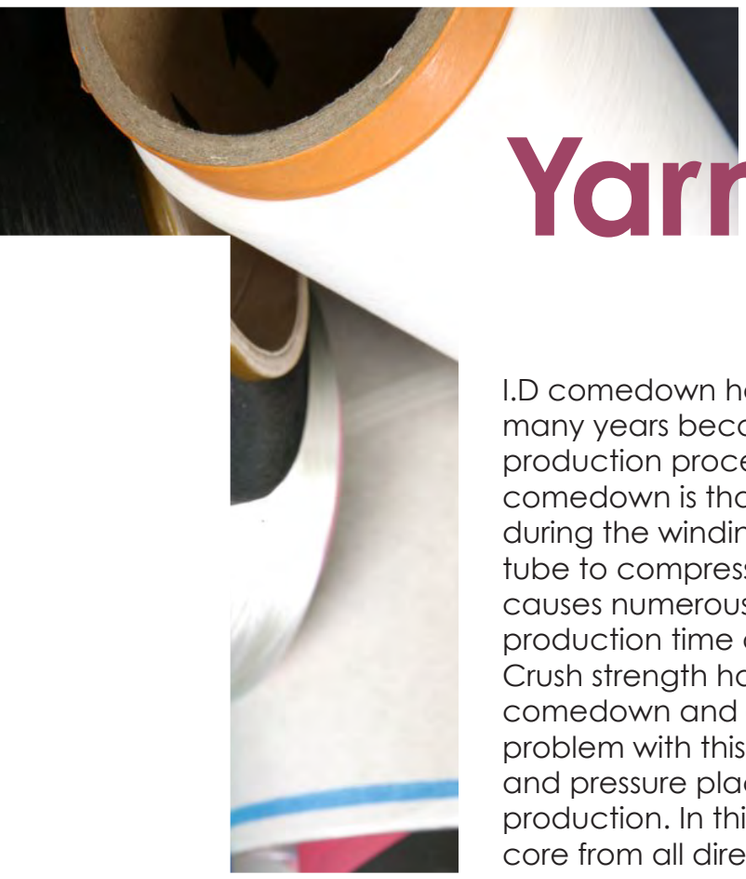

Yarn Pressure Measurement

I.D comedown has been a concern for fiber producers for many years because of the negative effects it has on the production process. Specifically, the problem with ID comedown is that the radial pressure exerted on the core during the winding process causes the diameter of the yarn tube to compress and stick to the winder chucks. This causes numerous problems such as loss of materials, loss of production time and core breakages. Traditionally, Flat Crush strength has been measured to try to avoid ID comedown and optimize carrier strength. The main problem with this testing method is that this type of loading and pressure placed on the core is rarely found during fiber production. In this industry uniform pressure is applied to the core from all directions and is known as Radial Crush.

BENEFITS IN BRIEF

Ability to design tubes that can accommodate specific yarn pressure. This delivers peak performance.

Our testing provides data that can be used to match the right tube to the specific application. This optimizes your production process.

Smooth yarn take up, faster running speeds, tighter packages and trouble-free doffing are a result of using a core that Sonoco Alcore tailors to your production process.

Fewer operating issues – when ID comedown is minimized and you receive cores specific to your application, lapses in production can be avoided. This leads to lower operating costs and increased productivity.

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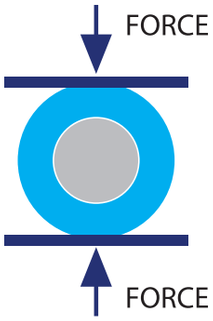
Traditional Technology (Flat Crush)

Historically, certain textile 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 yarn winding, storage and unwinding. During these stages, the yarn retracts and applies uniform pressure around the circumference of the core. If the pressure is too great, the core will experience a radial crush failure.

Flat Crush Strenght Test

Measurement is taken when pressure is applied to the top and bottom of the core. This does not simulate the pressures that occur when yarn is wound on the core.



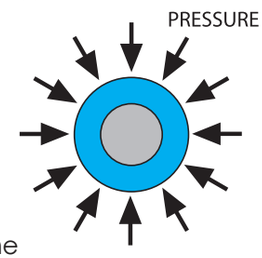
The Importance of radial crush for textile industry

Sonoco Alcore™ Technology (Radial Crush)

Sonoco Alcore developed a measuring technique to determine the pressure applied to the core by the yarn wound on it. This radial pressure can be simulated in the lab, which allows Sonoco Alcore to design a core which is tailored to a given customer's application. This provides a cost effective product while protecting the product wound on the core, thus improving your productivity.

Radial Crush Strenght 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 demonstrate 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 yarn processing.

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String-Up Efficiency

Yarn transfer/string-up is a critical component of the fiber producing process. A number of factors impact yarn transfer efficiency, including yarn tension, polymer type and quench air uniformity. One of the easiest ways to improve string-up efficiency is to use a high quality tube that is tailored to your specific operations. Sonoco Alcore utilizes its close relationships with manufacturers, investment in R&D, and knowledge of the industry to design and manufacture tubes that facilitate string-up efficiency.

Today, Sonoco Alcore engineered tubes deliver string-up performances in excess of 99.5%. These excellent results are achieved on both traditional and state-of-the-art winding equipment, offering numerous costs savings and benefits to manufacturers.

Cores designed by Sonoco Alcore™ focus on string-up efficiency.

User cost savings/benefits:

• REDUCED POLYMER WASTE
When string-up failure occurs, the polymer is still flowing but cannot be used, as it is not produced under the right conditions. This can be avoided by using a high quality core designed to increase transfer efficiency.

•DECREASED LABOR COSTS
When a breakout occurs labor is required to restring the line and dispose of polymer waste. This can be avoided by using a Sonoco Alcore core that maximizes string-up efficiency.

• OPPORTUNITY COST/ADDITIONAL PRODUCTION
Avoid the costs of having to make additional kgs to replace the kgs lost during string-up failure.

• INCREASED PRODUCTIVITY/CAPACITY
Due to decreased waste and efficient production process, productivity and capacity are increased due to improved string-up efficiency.

• MATERIAL COST
After a failed string-up, the tube should be discarded, since it received the initial stress during string-up and attempts to re-use could lead to more failures.

No matter what machinery you use or your specific manufacturing needs, Sonoco Alcore can provide you with high performance textile carriers.

With Sonoco Alcore you have a business partner with knowledge, experience and resources committed to providing you with the highest quality products and services available.

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Draw Textured Yarn Tubes

Setting the Standard

Sonoco Alcore combines technical and manufacturing expertise with industry knowledge to deliver draw textured yarn tubes designed to meet your demands for consistency, performance, and value. Every Sonoco Alcore draw textured yarn tube is designed to cope with the demands of accelerated winding speeds and the unique requirements of automated machinery. This ensures maximum productivity and virtually eliminates downtime, giving you a competitive advantage.

We set the industry standard for yarn tubes and developed tubes with rolled (or crimped) ends. This end formation offers maximum protection from snagging, as the yarn moves across the end during knitting and weaving. Further benefits of this design are its superior dimensional control and ability to fit any end cap.

Our varied line of groove, notch, and score configurations are suitable for all winders in the industry and can be tailored specifically to meet your needs. We continue to work closely with equipment manufacturers to improve winding solutions and integrate new technology into carrier design to improve your efficiency/productivity.

We have the ability to optimize the true strength of the core and can tailor it to your application. This provides you with strong, reliable, and production efficient cores. Contact the global supplier of draw textured yarn tubes to use high quality and cost effective carriers.

Benefits in Brief

- Excellent dimensional stability which facilitates winding and unwinding without sticking
- Scores, notches and groove designs that enhance string up efficiency
- Rolled noses and burnished ends ensure consistent yarn delivery
- An incorporation of colored glassproof paper which increases surface smoothness
- A broad range of tubes that can be customized
- Ability to choose from solid colors or combinations for your tubes to aid in yarn identification

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Cloth Tubes

Reliable Tubes for the Textile Industry

Sonoco Alcore is the leading producer of high quality and cost effective tubes for the textile industry. With a global network of research and development centers, Sonoco Alcore is the market leader in providing innovative packaging solutions. This commitment to research and development accompanied by high investment in new manufacturing technologies ensures you receive tubes that meet your requirements for take-up, handling, transport and storage. Sonoco continues to strive for textile carrier technology that offers increased performance, quality, cost savings, as well as environmental benefits. Sonoco Alcore can also improve the efficiency of your system as we have the capability to provide start up features such as tapes and adhesives that will assist in initial wrapping. Regardless of where in the world you compete, or the markets you would like to enter, choose Sonoco Alcore for your textile tube needs.

Benefits in Brief

- Superior straightness and roundness ensure quick start-ups and efficient winding
- Improved beam strength
- Customised packaging available
- Numerous cost savings are generated by using reliable, high-performance tubes

SONOCO ALCORE™ TUBES are made from 100% recycled paper and are recyclable after use.

" Using the world leader protects your investment and enhances your competitive advantage"

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