



NIBA—The Belting Association
6737 W. Washington St. #1300
Milwaukee, WI 53214
Ph: 414-389-8606
www.niba.org

Technical Article

Technical Article Content Pulled from the NIBA Belt Line Newsletter

Flat Power Transmission Belting

Contributed by Darwin Clister

Technical Engineer, Ammeraal Beltech Inc.

Beltline Reprint September 2005

General Uses:

To Transmit Power—One of the basic tasks for transmission belting is to transmit power from a source to a driven pulley. This is done through friction between the pulley and the belt, which is transferred through the belt's core or strength member by way of surface contact and tension.

For Conveying or Transfer—A second basic task for power transmission belting is for the movement or conveyance of materials through various operations or actions. Some of the same belts that are often used for power transmission may be used for these conveying purposes. This transport or conveying is often accomplished by a series of narrow belts positioned side by side with a varying amount of space between them. In many instances the belts will hold the materials being transported between a top and bottom belt to prevent the conveyed product from slipping or skewing while being transported at high speeds. In other instances the belts may even run on edge holding an item vertically, for example, an envelope placed between them as they transport it along a specific distance or length of run.

Types of Transmission Belting:

Nylon Core—One of the basic constructions is the oriented nylon core transmission belt. This is a solid extrusion of polyamide (nylon) that is processed in such a way as to align the molecules of the extruded material for the greatest strength and flexibility. The strength in these belts comes from a combination of the orienting process and the various thickness of this core that is placed between the cover materials. The thicker the core the stronger and stiffer the belt becomes. Nylon core belting is assembled into continuous loops or endless belts by means of a solution or solutions. Nylon core materials offer several unique advantages:

- Excellent shock absorbing characteristics for high impact heavy load situations.
- Splices retain nearly 100 percent of the belt's load capacity.
- Extremely durable and resist many abuses from typical applications and common hazards.
- Commonly yield extended life over alternate materials.

Thermoplastic Core—One of the newer and innovative materials found today in transmission belting is the use of thermoplastic polymers. These basic building blocks take advantage of their unique characteristic of being thermoplastic, or “the ability to be melted under heat, combined, and re-solidified.” This means the materials can be severed or cut and put back together without the need for adhesives or solutions. This is common in lightweight transport applications involving paper and document transport where the loads are particularly light, and where space for a take-up device is often limited. Unlike nylon core, the severance of the fabric reinforcement will reduce the belt strength substantially at this joint. Although it will not retain the strength in this area that a nylon core construction can, the advantages that can be obtained with these products cannot be



NIBA—The Belting Association
6737 W. Washington St. #1300
Milwaukee, WI 53214
Ph: 414-389-8606
www.niba.org

Technical Article

Technical Article Content Pulled from the NIBA Belt Line Newsletter

ignored and are the direction of many of today's equipment builders and consumers.

Advantages of thermoplastic joinable types are:

- No adhesives required.
- Eliminate need for careful handling of adhesives and maintenance of MSDS information for those adhesives.
- No expired solutions to contend with or storage requirements.
- Easily joined without attention to quantity of adhesives and methods of application through simple butt joints and/or interlocking finger joints for excellent strength- retaining qualities.
- Field preparation and splicing is simplified and can be done often in minutes rather than hours.
- Consistency of joint can solve vibration or other related issues.
- Downtime can be reduced tremendously.
- Low elongation or stretch accommodates small take- up devices.
- Often very flexible and energy efficient.

Covers Available for Transmission Belting:

Many covers are available for conveying and drive applications ranging from those with low friction to those with extreme grip for high surface friction. Belting covers include textile fabrics, leather, rubber, and thermoplastic.

Added Features Available for Transmission Belting:

Many applications require more than just a standard belt to get the job done. Some applications may call for added grip, increased wear resistance, special surface configurations, guide mechanisms, and other special requirements. Following is a list of some of the common "additions" to transmission belting.

- Natural and synthetic solid covers for added wear and grip in various hardnesses from 20 to more than 80 Shore A.
- Perforations for vacuum applications to enhance product holding.
- Natural and synthetic foams for compression and handling requirements in very soft to extremely hard constructions.
- Various tracking guide shapes and configurations in standard and custom styles.
- Custom grooved and contoured surfaces for handling uniquely shaped parts such as in custom extrusions and cable pulling applications, or for added traction and grip.

Applications for Transmission Belting:

- Paper production/drives
- Paper converting/transport including sheeting, stacking, etc.
- Paper box folding/transport and folding



NIBA—The Belting Association
6737 W. Washington St. #1300
Milwaukee, WI 53214
Ph: 414-389-8606
www.niba.org

Technical Article

Technical Article Content Pulled from the NIBA Belt Line Newsletter

- Printing and graphics/transport, folding, etc.
- Direct mailing and mail processing/transport, inserting, extraction
- Textile production/drives
- Wood processing industries/drives on molders, planers, saws, drills, lathes, etc.
- Flour milling/drives on mill stands
- Packaging industry/strapping, filling, orienting, etc.
- Poultry/feather removal drives
- Paper tube production/tube winding
- Wire and cable production/drives, capstans, pull belts, etc.

Trouble Shooting Transmission Belting:

- Slipping on drive—Properly re-tension to factory specifications for the material used.
- Mistracking—Check for or apply proper height crown in manufacturer's recommended configuration and properly re-tension.
- Stretching beyond equipment take-up—Pretension prior to installation or extend take-up provisions. Check that proper belt selection has been made to adequately perform the function required.
- Customer's belt does not fit, measurements differ from production—Check that customer is measuring in same manner as production; for example, inside circumference. An outside circumference can amount to several inches of difference on thicker constructions.