Ribbon Cast
Polyurethane System for Roller Manufacturing

Used for manufacturing both small and large rollers using Polyurethane...

Crosslink Technology Inc.
Formulated Epoxies, Urethanes • Custom Cast Parts
The Polyurethane Rotary Casting Process

Rotary casting requires the use of a Lathe machine to rotate the roll cores while a low pressure dispensing machine with either Static or Dynamic mixer, measures and mixes highly reactive urethane components at precise ratios before dispensing the mixture onto a rotating roll core.

Basic Ribbon Cast Roller Anatomy

The process starts by priming the surface of the roll with Crosslink single component primer/adhesion promoter material XAD-1890 to ensure permanent adhesion. This involves sandblasting the surface of the core to create a non-uniform surface that will enable the primer to adhere to the substrate better.

This typically involves turning to remove previous material. Rotational casting requires the use of a Lathe machine to rotate the roll cores while a low pressure dispensing machine measures and mixes fast reacting two components urethane, at precise ratios before dispensing the mixture onto a rotating roll core. The mixing head must be able to move laterally in order to dispense the polyurethane along the entire length of the rotating roll. Usually, the mixing head is attached to a transverse, multi-axis shuttle carriage that is adjacent to the spindle holding the roll core.

At this point, two-part polyurethane system is pumped from storage tanks into the mixing head. The pre-polymer and the chain extender react to form the elastomer. A polyurethane elastomer results from the reaction and cross-linking of compounds. The mixing head must be able to move laterally in order to dispense the polyurethane along the entire length of the rotating roll. Usually, the mixing head is attached to a robot or transverse, multi-axis shuttle carriage that is adjacent to the spindle holding the roll core.

A ribbon of liquid urethane is applied to a rotating roller and moved across the cylindrical surface.
After the first pass, the mixing head retracts and returns to the starting point if additional layers are needed. In this case, the first layer has started to cure, but remains active enough to bond with the next layer to become a mechanically strong homogeneous covering.

It is highly recommended to post cure the rollers at 100°C. for at least 4 hours.

Advantages of Ribbon Cast™ Systems over Hot Mould Casting

The Ribbon Casting Process is based upon the application of highly reactive two part urethanes directly onto a rotating core to create a solid roll cover in minutes. Since it eliminates the need for conventional poured moulds and a secondary curing process, rotary cast rolls can be delivered in 2 days as opposed to weeks or months. Further time and cost savings can be realized as rotary casting lends itself to coating the roll without first having to remove the bearings from the roll journals.

The Ribbon Cast process is far more flexible than the standard mould-based technology. Using this technique the processor can directly cast on any rotational-symmetric body maintaining tight tolerances. Depending upon the rotary caster’s facility, roll can be produced anywhere from 76 mm to 2000 mm. and up to 5,000 mm in length making it well-suited for a variety of industries.

<table>
<thead>
<tr>
<th>Polyether Polyurethane Systems</th>
<th>Polyester Polyurethane Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFA-680-A/B</td>
<td>RCP-090-A/B</td>
</tr>
<tr>
<td>Hardness: 80 Shore A</td>
<td>Hardness: 90 Shore A</td>
</tr>
<tr>
<td>RFD-580-A/B</td>
<td></td>
</tr>
<tr>
<td>Hardness: 80 Shore D</td>
<td></td>
</tr>
<tr>
<td>RFA-790-A/B</td>
<td></td>
</tr>
<tr>
<td>Hardness: 90 Shore A</td>
<td></td>
</tr>
</tbody>
</table>
Benefits offered by Ribbon Cast Process

Energy Conservation
Post-Curing is optional but recommended. The Polyether based base layer system is processed at ambient temperature. The majority of these can be produced with minimum energy consumption as the chemical reactions generate high heat during the molecular cross-linking. Short post curing of 1-4 hours is recommended but optional.

Shorter Production Times
Time-consuming production steps are eliminated using Rotary Casting. There is no heavy mould handling, no pre-heating, no pre-baking of adhesives and optional post curing necessary. This benefits both processors and the users, who have fewer spare rolls to store.

Reduced waste - fewer defects & less overbuild
- Less scrap due to air bubbles
- Exceptionally less labour
- Short turn-around time
- Overbuild waste is greatly reduced
- Lower production costs
- Elimination of moulds & mould Release
- Substantial increase in productivity

Crosslink Technology Inc., established in 1981, operates two separate and distinct divisions serving customers with a variety of Epoxy and Polyurethane applications and custom cast electrical components. Both divisions are certified to ISO 9001 - 2000 quality standards.

www.crosslinktech.com

6380 Viscount Road
Mississauga, Ontario, Canada L4V 1H3
Phone: (905) 673.0510  -  Fax: (905) 673.0519
Toll free North America: 1.800.563.3769

Crosslink Technology Technology Inc.
Formulated Epoxies, Urethanes • Custom Cast Parts