DURLON®
SEALING SOLUTIONS

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SEALING SOLUTIONS FOR

Pulp & Paper Industry

We Succeed **When you Succeed.**

Our Vision

Evolution isn't a choice in today's business landscape, it's the only way to succeed.

Progress relies on everything moving forward; from people to machinery to production. Everything must flow.

As we engineer our way to a better world, we are breaking down barriers, making sure each process is in place, always reflecting and improving. We are experts at delivering the best sealing solutions to help our customers unlock their highest potential.

Our global community of industry leading specialists drive our innovative production and materials to consistently raise the bar.

Whether through the stress of everyday use, or specialized applications and high-temperature environments, liquid or gas, our products deliver sustainable integrity.

At Durlon, we succeed when you succeed.

DURLON®
SEALING SOLUTIONS

Sealing Solutions for
Pulp and Paper

Paper manufacturing involves several steps, and gaskets are used throughout to prevent leaks, reduce maintenance costs, and ensure a smooth and efficient operation. The typical flow process is as follows:

Preparation of the pulp:
The first step in paper manufacturing is the preparation of the pulp. The most common sources of pulp are wood chips and recycled paper. Wood chips are first debarked and chipped into small pieces. The chips are then cooked with chemicals, such as sodium hydroxide and sodium sulfide, in a digester to break down the fibers and remove impurities. Recycled paper is first sorted, cleaned, and then mixed with water to create a pulp slurry.

In the pulping process, gaskets are used in the seals of the grinding and refining equipment to prevent the escape of pulping liquids and chemicals.

Formation of the sheet:
After the pulp is prepared, it is sent to the paper machine where it is mixed with water to create a paper pulp. The pulp mixture is then poured onto a wire mesh conveyor belt that moves through the paper machine. As the pulp mixture moves along the conveyor belt, excess water drains away, and the fibers begin to bond together to form a continuous sheet. This process is called forming.
In the stock preparation process, gaskets are used in the seals of the pumps and mixers to prevent the escape of the pulp slurry.

Pressing:
After the sheet is formed, it is pressed between rollers to remove any remaining water and to improve the smoothness and uniformity of the sheet. The rollers also help to bond the fibers together.

Gaskets are used in the seals of the rolls and presses to prevent the escape of water and other liquids.

Drying:
After pressing, the paper sheet is passed through a series of heated rollers to remove the remaining water and to dry the paper. The temperature and speed of the rollers are carefully controlled to ensure that the paper is dried evenly and without any wrinkles or tears.

Finishing:
After the paper is dried, it is rolled onto large spools and taken to the finishing department. Here, the paper is cut into the desired size and weight, and it may be coated with a thin layer of clay or other material to improve its brightness and printability. The finished paper is then packed and shipped to customers.

The paper-making process requires a large amount of water, and this water must be treated before it can be safely discharged into the environment. In addition, the pulp and paper industry generates a significant amount of wastewater that contains various contaminants, including organic matter, chemicals, and solids. This wastewater must also be treated before it can be safely discharged.

To treat the water used in the paper making process, the pulp and paper industry uses a variety of technologies, such as sedimentation, flotation, and biological treatment. These technologies help to remove suspended solids, dissolved organic matter, and other contaminants from the water. The treated water can then be safely discharged into the environment or reused in the paper making process.

Similarly, the wastewater generated by the pulp and paper industry is treated using various technologies, such as biological treatment, chemical treatment, and physical treatment. These technologies help to remove or reduce the levels of contaminants in the wastewater, making it safe for discharge into the environment.

Innovative products
Unparalleled service

Durlon® Compressed Non-Asbestos Gasket Sheets

What is Compressed Non-Asbestos (CNA) gasket material?

Compressed Non-Asbestos is a sealing material consisting of a blend of organic and inorganic chemically resistant fibers and fillers together with an elastomer binder. The type of binder used is a key factor to consider when choosing a Compressed Non-Asbestos sheet for gasketing applications.

Manufacturers of compressed non-asbestos sheet produce a variety of materials that differ in the type of fibers and binders used which are purpose-suited for specific applications. Some sheets are designed for general service applications, while others are designed for use in applications involving chemicals, oils, extreme temperatures, etc.

How does Compressed Non-Asbestos differ from elastomers?

An elastomer is a polymer which possesses an elastic property. Elastomers are generally thermo-set materials which require curing through heat and pressure with the addition of sulfur or other curing agents. Natural and synthetic rubbers, such as styrene-butadiene rubber (SBR) and Buna-N (NBR), are elastomers.

Compressed Non-Asbestos, in contrast, is a material that combines organic and inorganic chemically resistant fibers and fillers. This type of binder employed gives the sheet the properties of elasticity and flexibility, while the fibers used give the sheet specific sealing characteristics and properties.

Why use Compressed Non-Asbestos sheets?

Compressed Non-Asbestos sheets have been developed to service a wide variety of sealing applications. These materials are an excellent choice for both general and severe service sealing applications.

Because Compressed Non-Asbestos sheets employ various combinations of fibers and binders, sheet manufacturers are able to produce a range of sheets with different mechanical specifications. Gaskets made from Compressed Non-Asbestos sheets have excellent sealing characteristics, torque retention, heat, and chemical resistance. These types of gaskets are an excellent choice for applications involving water, air, steam, oils, acids, and general chemicals. Our high performance industrial non-metallic gasket material sheets - Compressed Non-Asbestos contain high-pressure and high-temperature aramid fiber materials that are perfect for sealing, thermal, and mechanical applications (petrochemical, chemical, steam, pulp & paper, pharmaceutical and potable water industries).

Durlon® Compressed Non-Asbestos products range from economical to premium grades with organic and inorganic chemically resistant fibers and fillers to meet the majority of general service industrial piping applications.

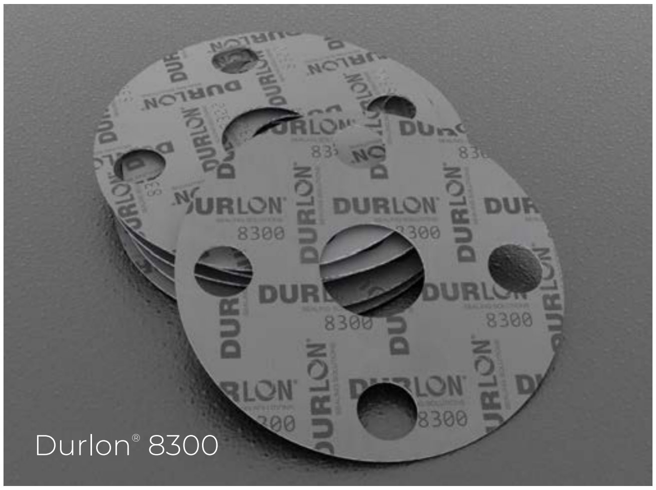
Enhanced Anti-Stick Formulation

Many gasket users have encountered problems with various compositions associated with flange adhesion for years.

Apart from the separation of flanges, surface imperfections can result from careless gasket removal. At elevated temperatures and pressures, there is a tendency for gasket materials to become embedded in the flange on opening. Sometimes disintegrated pieces stick to both flange mating surfaces, resulting in difficulty when removing the adhering gasket material in a safe, timely manner and without damaging the flanges. To overcome this problem, anti-stick technology is incorporated into the manufacturing process of the Compressed Non-Asbestos Durlon® products. This technology allows for improved separation from flange surfaces during removal, saving time and energy.

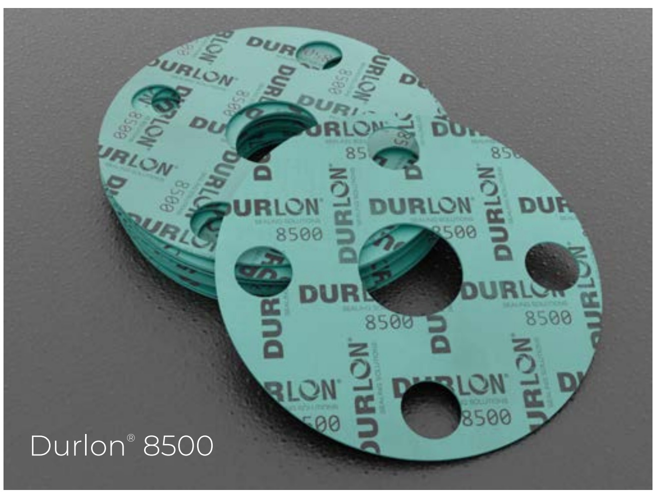
This new technology allows Durlon® CNA to be the best in the industry; gasket and sheet materials have passed the MIL-G-24696 Navy Adhesion Test: 48 hrs at 366°F (186°C).

Durlon® Product Recommendations

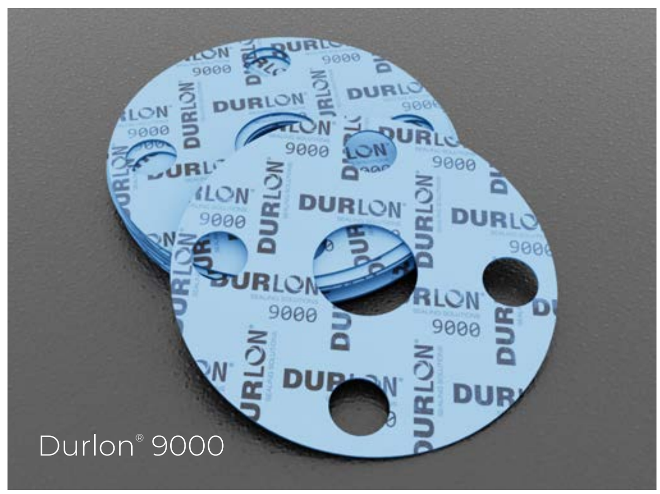


Durlon® 8300

Durlon® 8400



Durlon® 8500



Durlon® 9000

Durlon® 9200


Durlon® 9600

Physical Properties & Certifications

Physical Properties	8300	8400	8500	9000	9200	9600
Composition	Carbon NBR	Phenolic NBR	Aramid-Inorganic NBR	Inorganic Filler / Pure PTFE Resins	Barium Sulfate Filler / Pure PTFE Resins	100% Pure Expanded PTFE
Color	Black	Gold	Green	Blue/White	Granite White	White
Temperature: Min Max Continuous, Max	 -73°C (-100°F) 482°C (900°F) 343°C (650°F)	 -73°C (-100°F) 427°C (800°F) 290°C (554°F)	 -73°C (-100°F) 371°C (700°F) 287°C (548°F)	 -212°C (-350°F) 271°C (520°F) 260°C (500°F)	 -212°C (-350°F) 271°C (520°F) 260°C (500°F)	 -240°C (-400°F) 316°C (600°F) 270°C (518°F)
Pressure, max, bar (psi)	139 (2,000)	103 (1,500)	103 (1,500)	103 (1,500)	103 (1,500)	200 (2,900)
Density, g/cc (lbs/ft^3)	1.6 (100)	1.7 (106)	1.7 (106)	2.2 (138)	2.5 (156)	0.9 (56.2)
Compressibility, %	8-16	8-16	8-16	8-16	8-16	40-50
Recovery, %	50	50	50	40	35	14
Creep Relaxation, %	18	25	20	30	30	30
Tensile Strength, MPa (psi)	12.4 (1,800)	12.4 (1,800)	13.8 (2,000)	13.8 (2,000)	13.2 (1,920)	20 (2,800)
Sealability ASTM 2378 (Nitrogen)	0.05 cc/min	0.03 cc/min	0.03 cc/min	0.01 cc/min	0.01 cc/min	0.01 cc/min

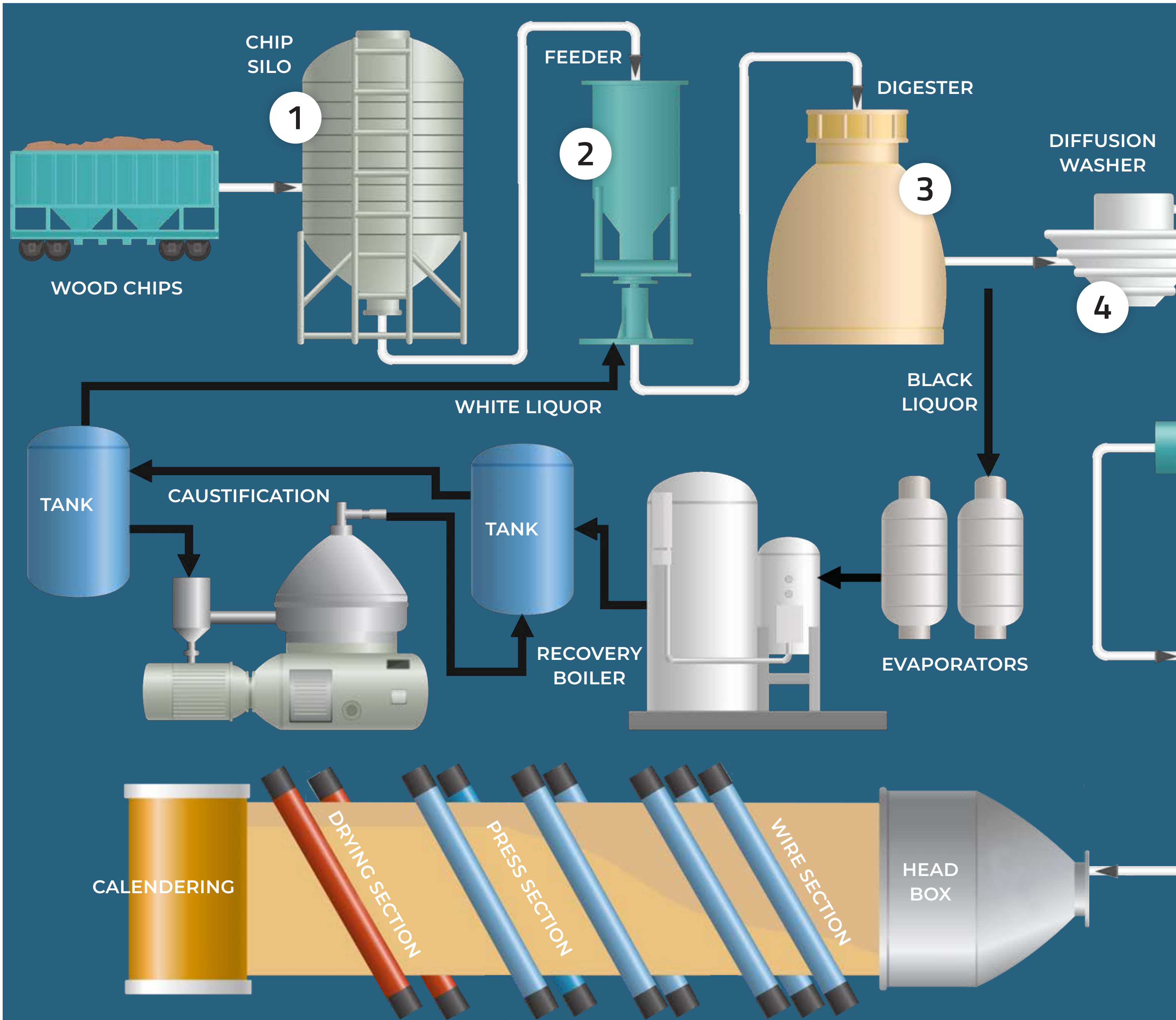
Style	Certifications
8300	California Proposition 65, RoHS Reach Declaration
8400	California Proposition 65, RoHS Reach Declaration.
8500	California Proposition 65, RoHS Reach Declaration, API 6FB Fire Test with avg. temperature >650°C, 30 minutes, 40 bar, 1 ml (inch/min.) max allowable leakage, Conforms to the FDA requirements of 21 CFR 177.2600
9000	RoHS Reach Declaration, ANSI/API 607 Fire Test 6th edition, Zero leakage (The test fixture was subjected to an external flame of 875°C (1607°F) average for 30 minutes. The measured leakage was 1.8 ml/min, where the max allowable limit is 1200ml/sec.), Approved material for WRAS (Water Regulations Advisory Scheme), USP Class VI 121°C (250°F) for 30 min., TA-luft (VDI Guideline 2440), ABS-PDA & Pamphlet 95, the chlorine institute, DNV-GL, (EC) 1935/2004 & EU (10/2011), and conforms to FDA requirements of 21 CFR 177.1550 for food and drug contact.
9200	RoHS Reach Declaration and approved material for ABS-PDA & Pamphlet 95, the chlorine institute, DNV-GL and TA-luft (VDI Guideline 2440). BAM oxygen service: gaseous & liquid up to 260°C (500°F) at 52 bar (754 psi), and conforms to FDA requirements of 21 CFR 177.1550 for food and drug contact.
9600	Conforms to FDA requirements of 21 CFR 177.1550 for food and drug contact. Approved material for ABS-PDA. California Proposition 65, RoHS Reach Declaration.

Durlon® 9000 is made with Teflon™ fluoropolymer. Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Triangle Fluid Controls Ltd.

Note: ASTM properties are based on 1/16" sheet thickness, except ASTM F38 which is based on 1/32" sheet thickness. This is a general guide only and should not be the sole means of accepting or rejecting this material. The data listed here falls within the normal range of product properties, but should not be used to establish specifications limits nor used alone as the basis of design. For applications above Class 300, contact our technical department.

Warning: Durlon® gasket materials should never be recommended when both temperature and pressure are at the maximum listed. Properties and applications stated are typical. No applications should be undertaken by anyone without independent study and evaluation for suitability. Never use more than one gasket in one flange joint and never reuse a gasket. Improper use or gasket selection could cause property damage and/or serious injury. Data reported is a compilation of field testing, field service reports and/or in-house testing. While the utmost care has gone into publishing the information contained herein, we assume no responsibility for errors. Specifications and information contained within are subject to change without notice. This edition cancels and obsoletes all previous editions.

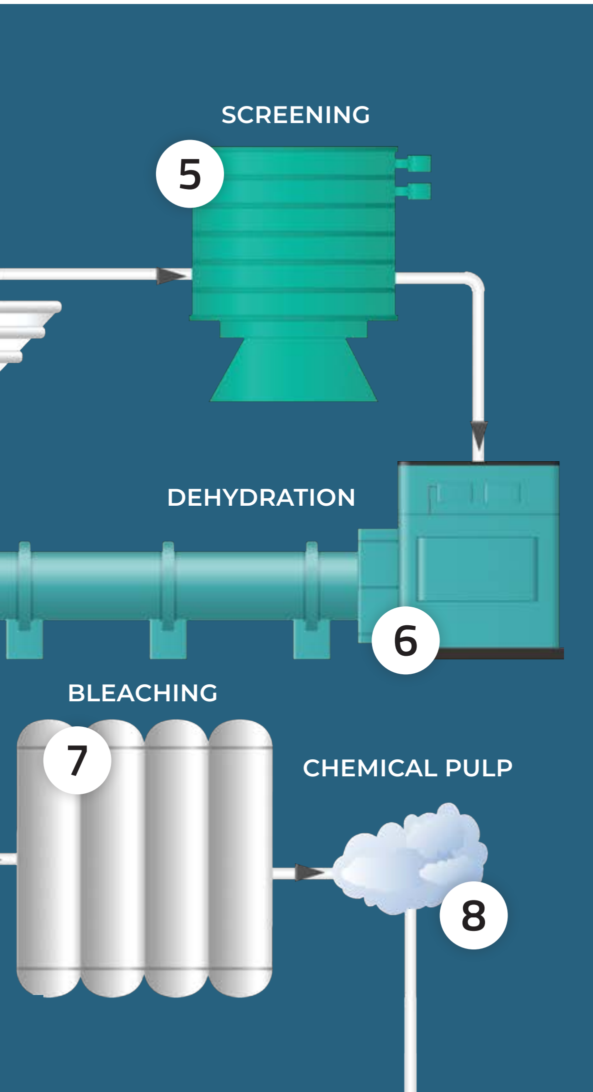
Pulp & Paper Production Process Flow Diagram



NOTE: This is a graphical representation of a pulp and paper production process, showing the primary process flow path. It does not show the minor details of the process, rather it focuses on the equipment used, and other instruments that are present. It helps to illustrate how the major components of this type of process plant interacts with each other to bring about the desired effect.

Black Liquor - a by-product of the paper making process that is rich in organic matter and has a high pH. The black liquor is collected and sent to the recovery process for the recovery of the chemicals.

White Liquor - a solution of sodium hydroxide and sodium sulfide that is used in the paper making process to separate wood fibers from each other.



Durlon® Product List

1. 8300, 8500
2. 8300, 8500
3. 8400, 9000, 9200, 9600, Kammprofile
4. 8400, 9000, 9200, 9600
5. 8400, 9000, 9200, 9600
6. 8400, 9000, 9200, 9600
7. 9000, 9200, 9600, Durtec®
8. 8300, 8400, SWG, 9000, 9200, 9600

The pulp and paper production process involves the following stages:

1. CHIP SILO
A storage container for wood chips.

2. FEEDER
Regulates the flow of wood chips into the process.

3. DIGESTER
A large, pressurized vessel containing chemicals and steam that cook the wood chips several hours, breaking down the lignin and separating the fibers.

4. DIFFUSION WASHER
A large tank where the cooked wood chips are mixed with hot water and the chemicals are extracted.

5. SCREENING
The pulp slurry is then screened to remove any impurities, such as bark or dirt. This is done using screens or centrifugal cleaners.

6. DEHYDRATION
The pulp slurry is then dehydrated to remove excess water, resulting in wet pulp.

7. BLEACHING
The wet pulp is then bleached to remove any remaining impurities and to achieve the desired brightness level. This is typically done using chemicals such as chlorine, hydrogen peroxide, or ozone.

8. CHEMICAL PULP
Used to make high-quality paper products.

CHEMICAL RECOVERY
Involves extracting chemicals from the pulping process for reuse.
Evaporator: Uses heat to evaporate the water from the black liquor, which results in a concentrated liquor called the weak black liquor.
Recovery Boiler: Used to burn the concentrated black liquor from the evaporator to recover the inorganic chemicals, such as sodium hydroxide and sodium sulfide.
Caustification: A process in which the weak black liquor is treated with calcium oxide (lime) to convert the sodium carbonate in the liquor to sodium hydroxide.
Coal kiln: Used to burn lime and produce quicklime - an essential component of the white liquor process.

PAPER MAKING
Involves forming a sheet of paper from the pulp, pressing, and drying it.
Head box: Pulp is distributed evenly across the width of the paper machine.
Wire Section: Pulp is spread over a moving wire mesh, removing water and allowing the fibers to bond together.
Press Section: This process squeezes out more water from the paper to help compact the fibers.
Dryer Section: Removes the remaining water from the paper by passing it through a series of heated rollers.
Coating: Paper can be coated with various materials such as clay or latex to improve its properties.
Calendering: A series of rollers smooth and compress the surface.

The core of the Durlon® brand is to provide fluid sealing solutions that make sense, both financially and strategically. We accomplish this through process-oriented design, sector-specific knowledge, and extensive testing. Our goal is to ensure performance and safety while adhering to the quality management system registered to ISO 9001:2015.

At Durlon, we offer specially developed sealing solutions tailored directly to your specific needs.

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