

JAY ELASTOMERS PVT. LTD

STEEL COIL MAKING AND PROCESSING KAIZEN TECHNIQUE



NAMASTE INDIA



PRESENTATION BY JAYANT KHADILKAR

www.jayelastomers.com

A COMPANY WHICH OFFERS CUSTOMISED SOLUTIONS



Announcement

OTAKA Rubber Company

having significant presence at China, ,Taiwan, Indonesia,

- NOW

Stands for Raw Material and Technical Assistance to relining activity of Otaka's complete proven range of Rubber rolls to India at

JAY ELASTOMERS PVT. LTD.

In marketing association with **JFE-Shoji-India.**

We are happy to serve you better and faster with personalised techno – commercial communication





KAIZEN

Kaizen Techniques:

- **Kaizen, a Japanese concept, emphasizes continuous improvement.**
- **The 3 D concept: Dependable, Durable, and Reduced Downtime.**

Kaizen Approach:

- **The goal is to enhance roll life, reduce downtime, and optimize costs.**
- **A new approach involves technical improvements to the rolls.**



Challenges in Coil Processing

- **Squeeze or Wringer rolls :**
- **Squeeze or wringer rolls play a crucial role in the steel processing line, especially during acid rinse and alkali rinse processes**
- **The existing rolls made from local rubber material have a short lifespan of just 15 days.**
- **Lack of authentic information on roll lining material selection leads to frequent downtime (approximately 4 hours every 15 days) for roll replacement.**
- **This results in large inventory, increased downtime costs and logistical expenses**



INNOVATIVE SOLUTION

- **Changed the customary smooth finish rolls to higher roughness (5/6 Mu).**
- **Used rubber in three layers, including a top layer with ceramic-embedded rubber formulation.**
- **Observed little water release after 45+ days and a smoother Ra value (1.2).**
- **Remarkably, the same roll could be ground rough to (5/6 Mu Ra value again) and reused, extending its utility to over $45 + 25 = 70$ days.**



BENEFITS RESULTED

- . **The modified rolls exhibit water release after 45+ days of use.**

- . **The Ra value (surface roughness) remains at 1.2, ensuring smooth performance.**

- . **Remarkably, these rolls can be ground rough to achieve an Ra value of 5/6 and still function effectively.**

- . **Consequently, the utility of each roll extends to more than 65 days, compared to the previous lifespan of just 15 days.**

- o **Reduced roll requirement quantity (1/3).**

- o **Controlled logistic and inventory costs.**



Challenges in Coil Processing

- **PINCH ROLL AT CTL SECTION:**
 - PINCH rolls play a crucial role at CTL steel processing line, especially while
 - The existing rolls made from local rubber material render smooth surface in short period resulting slippage of coil
 - Lack of authentic information on roll lining material selection leads to frequent downtime (approximately 4 hours) for roll replacement.
 - This results in large inventory, increased downtime costs, and logistical expenses



INNOVATIVE SOLUTION

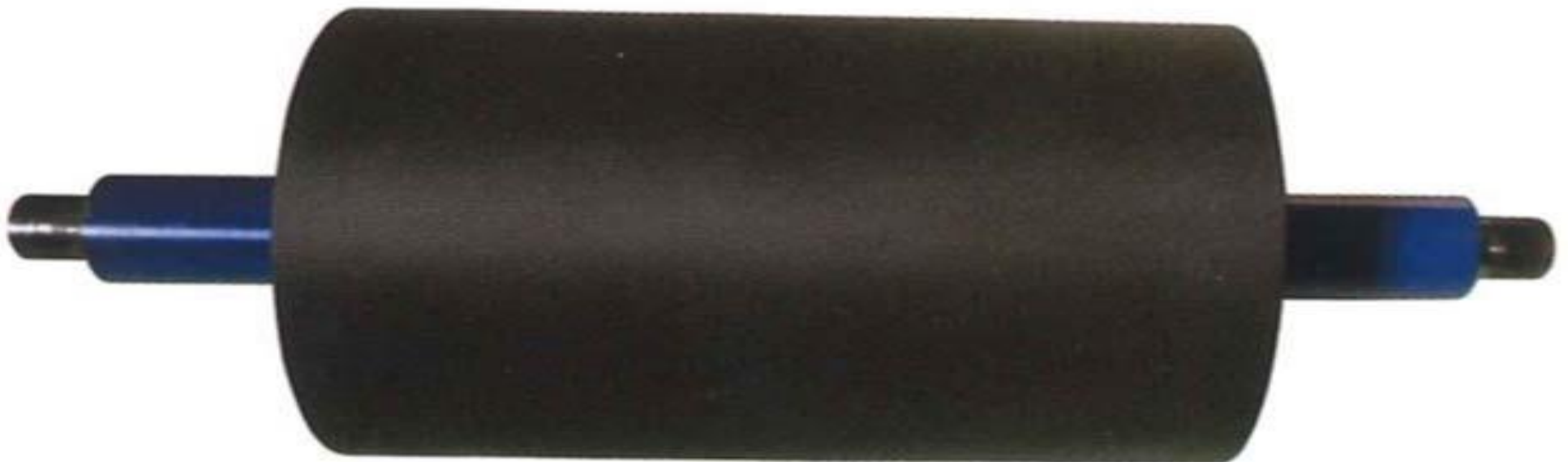
- **Changed customary finish to Grained finish**
- **Pre granulated specially formulated rubber grains of specific properties are arranged to be spread over the roller surface**
- **Embedded rubber granules exert the typical pressure**
- **The granulated rubber offers better grip to arrest slippage if any.**
- **Cutting resistance is improved significantly**



OTAKA –JAPAN FORMULA BASED ROLLS



Grained Rubber PINCH Roller

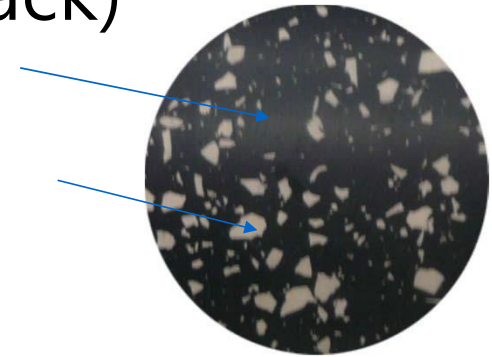


Ceramic embedded Wringer/Squeeze Roller

【 High clutch 960 】

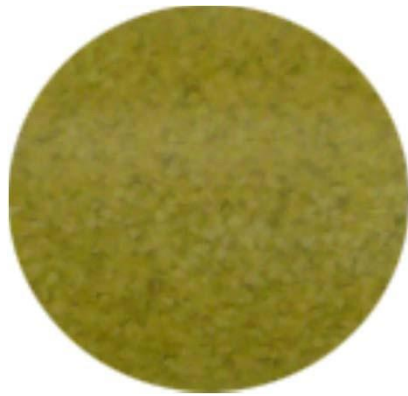
Base rubber (Black)

Grain rubber (Light yellow)



- (1) This is the special Rubber Roll of monolithically molding construction made of the base rubber with prominent elasticity and strength on which grain rubber is evenly dispersed.
- (2) Because of difference of hardness between base rubber and grain rubber of 5 ~ 20 JISA approx., when the roll is deformed by compression, thus resulted difference of pressure distribution between base and grain rubber stands to the high friction coefficient in contact with the metal strip.
- (3) When oil and/or liquid used for processing are retained on the strip surface, the grains of High Clutch Roll will scrape them off for removal so that high friction coefficient shall be maintained

【 High Clutch U 】



Ether High Clutch



Ester High Clutch

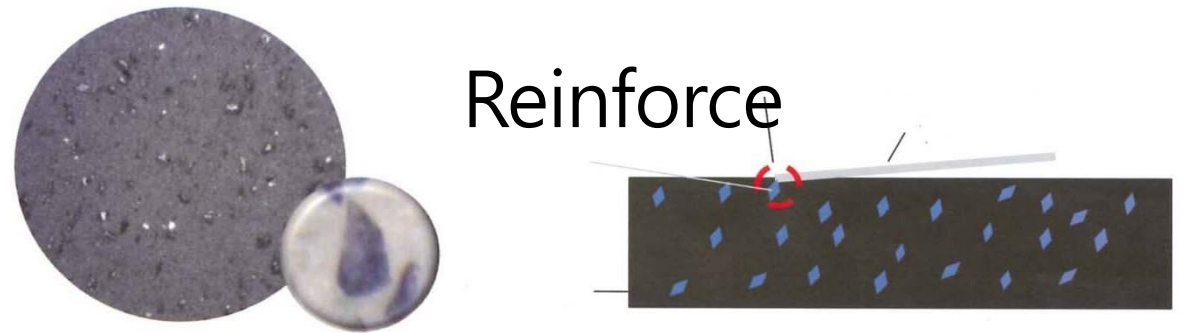
Made of high-grade composite material :

On the special urethane rubber base with high abrasion resistant and high tear resistant properties,

Strong grain rubber particles are evenly dispersed and bound through our particular ratio balance mixing technology.

【 Hard Clutch 】

Block of Steel Plate stress by
Reinforcing material to
prevent Rubber Abrasion



Hard Clutch is the Rubber Roll developed for the purpose of extending the life of Wringer Roll for acid pickling.

As a new reinforcing structure, strong polygonal material is used.

This reinforcing material will not dissolve into rubber but will remain therein in the form of an individual level.

By kneading this material into rubber, extremely high friction coefficient and edge abrasion resistance of this Rubber Roll properties are available.

Heat resistance

Recommendable usage

Bridle roll, Deflector roll

Pinch roll, Snubber Roll

Products



High Power (based on NBR)

Poly Ace

High Hope

Hyper Hope

Ultra Tough Ace

Mineka V6(based on Urethane)

Contact temperature

150°C

180°C

220°C

300°C

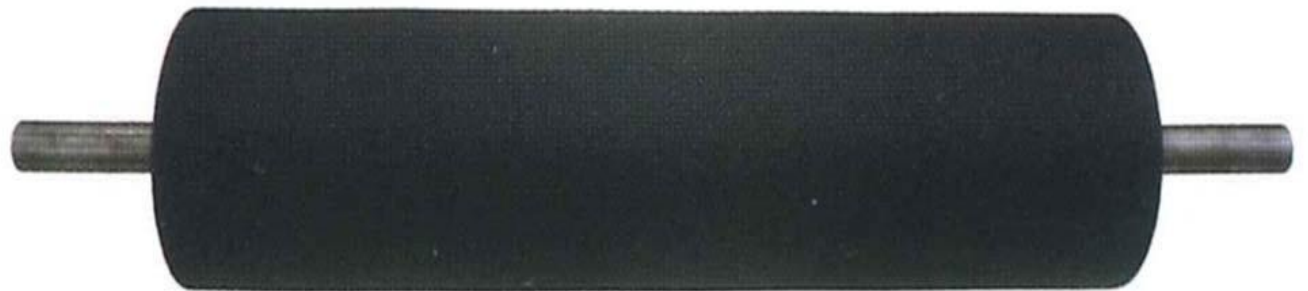
150°C

170°C

Durability

Some products have strong durability and long life. Rubber rolls are used to get damaged by iron plates. Durability is very important factor to have long life.

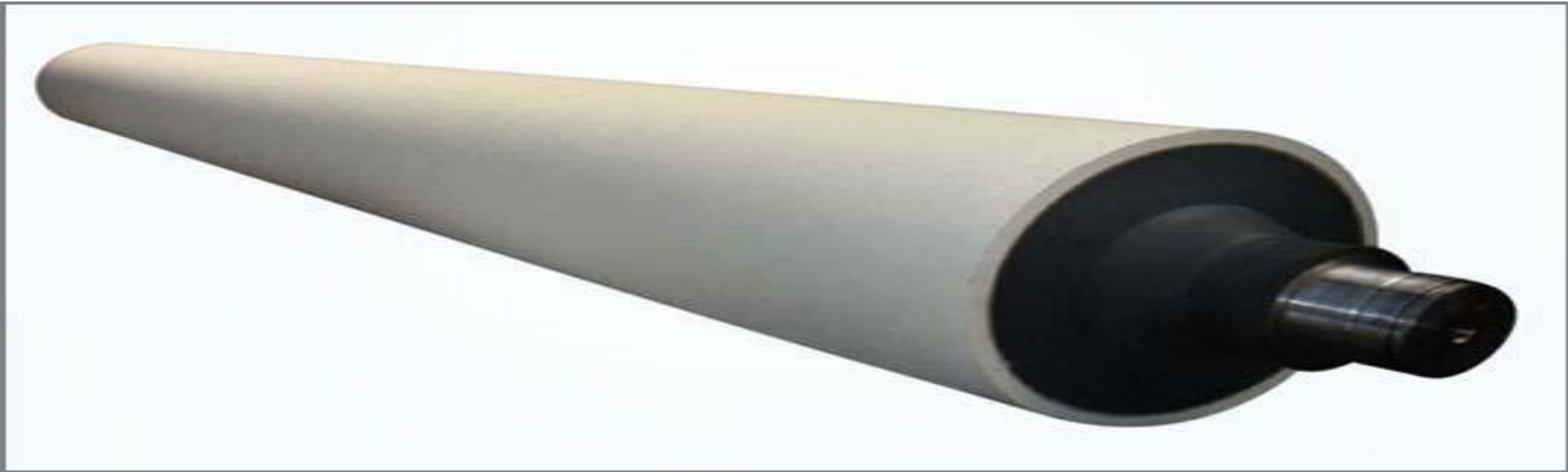
Tough Ace



Wringer roll Bridle roll Support roll

JAYPLON

*Completely formulated in India ,with more than 50% Bio content
Acid / Alkali resistant Rolls used in Steel Plants / Color Coating Lines*



Jayplon features

- **Ceramic nano particles distributed in PU resin**
- **Biopolyol with phenolic group crosslinked with Isocyanate**
- **Tested for Hydrochloric acid 25 % at 80 degree**
- **Tested for Grinding after used in acidic areas**
- **Tested for Alkalis and rinse solutions**
- **High cut resistance being polyurethane backbone**



'ARYASEAL' COMPOUND SEALANT

Discover our innovative Arya seal compounds, designed for various industrial applications. These high-performance sealants offer exceptional features:

1. Industrial Floor Joint Sealant

1. Ideal for sealing joints in industrial floors.
2. Resistant to 25% HCL at 80°C.
3. Quick-setting for efficient application.

2. Acid Tank Tile Lined Joint Sealant

1. Specifically formulated for acid tank applications.
2. Ensures reliable sealing in corrosive environments.

3. Expansion Joints Sealant

1. Perfect for expansion joints in structures.
2. Provides flexibility and durability.



ARYASEAL SALIENT FEATURES

- **HCL Resistance:** Withstands exposure to hydrochloric acid.
 - **Quick Setting:** Saves time during installation.
 - **Shore Hardness (S.H.) Range:** Offers flexibility with a range from **35 to 85 'A'**.
 - **Bio-Based Green Chemistry:** Environmentally friendly.
 - **User-Friendly Two-Pack System:** Easy to use.
 - **Patent Applied:** Demonstrates innovation and uniqueness.
- Choose Arya seal compounds for reliable, efficient, and eco-friendly sealing solutions!



Passivation OF Steel Coils

1. Passivation

- **Definition:** Passivation is a chemical treatment that removes free iron or other surface contaminants from stainless steel while simultaneously promoting the formation of a passive chromium/nickel oxide layer.
- **Purpose:**
 - **Corrosion Resistance:** The oxide layer acts as a barrier, preventing further corrosion.
 - **Surface Enhancement:** It improves the surface finish and appearance of stainless steel.
- **Process:**
 - Stainless steel is immersed in an acid bath containing specific formulations (such as ammonium citrate).
 - The acid removes surface contaminants (including free iron) and promotes the formation of a stable oxide layer.
 - The resulting oxide layer provides long-term protection against rust and corrosion.



FEATURES OF PICKLING OF STEEL

2. Pickling

- **Definition:** Pickling is another acid-bath treatment used primarily for cleaning metal surfaces.
- **Purpose:**
 - **Surface Cleaning:** It removes oxides, scales, and other impurities from the metal surface.
 - **Preparation for Further Processing:** Pickling prepares the metal for subsequent treatments (e.g., welding, coating).
- **Process:**
 - The metal (not limited to stainless steel) is immersed in an acid solution (typically hydrochloric acid or sulfuric acid).
 - The acid dissolves oxides and other contaminants, leaving a clean surface.
 - Unlike passivation, pickling does not form a protective oxide layer; its goal is surface preparation



THANK YOU

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