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## Food Conveyor Belting

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## Sanitation Guidelines

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### INITIAL CONSIDERATIONS

- Gates Mectrol food conveyor belting is designed to be easy to clean and specifically for Clean-In-Place (CIP) procedures.
- Unlike plastic modular belting, it does not require removal from the conveyor frame for soaking and immersion to achieve proper sanitation levels.
- There are 4 basic elements to keep it simple and smart:
  1. Use sanitary design principles like those published by the AMI.
  2. Involve sanitation team in selection of new equipment and SSOP development.
  3. Use and continuously improve Good Sanitation Practices.
  4. Incorporate prevention and elimination of biofilms (complex matrix of bacteria, fungi and algae, bound together in a sticky gel of polysaccharide, which hardens over time).
- There are 4 factors involved in CIP effectiveness:
  1. Chemistry
  2. Temperature
  3. Contact time
  4. Force (Heat and Mass transfer)
- These considerations and subsequent recommended guidelines apply mainly to protein applications like meat, poultry and dairy, but they can also be used in other sanitary environments like fruit and vegetable.

### RECOMMENDED PROCEDURES

#### PERFORM DRY PICK UP

- Pick up and dispose of any food products that may have accumulated on or around the conveyor to be cleaned, by mechanical means like brushes, scraper, etc.
  - Cleaning and Sanitation chemicals are NOT designed to cut through gross soil.

#### RINSE THE ENTIRE FRAME

- Rinse with hot water, approximately 120 to 140°F (49 to 60°C). The top number is 5°F (3°C) above the melting point of fats.
  - But NEVER above 185°F (85°C) because heat denatures protein above this temperature and makes it more difficult to remove.
- Start with top of belt, making sure it is NOT under tension to facilitate lifting it, and continue with bottom of belt, as well as sprockets, shafts and carryway.
  - AVOID high water pressure that may atomize water and make pathogens airborne, contaminating adjacent conveyors, including some just sanitized.

#### APPLY CLEANING DETERGENT TO CONVEYOR FRAME AND BELT

- Conveyor running if possible, until all surfaces inside and out are covered.
  - Usually chlorinated alkaline surfactant combinations delivered as foam.
    - Sodium Hydroxide (caustic soda) is found in many cleaning solutions and does NOT affect the material (polyether based TPU) of Gates Mectrol's food belting.
  - 10 to 20 minutes contact time for cold surfaces, 15 to 30 minutes for hot surfaces.
- Conveyor surfaces may need to be scrubbed to prevent biofilm formation.
  - Stainless steel mesh pads or brushes could create a rough surface, actually more prone to biofilm formation; therefore, softer brushes are recommended.

#### POTABLE WATER RINSE

- Repeat rinse as outlined before, but now with potable water.
  - Finish with top (outside) of belt to avoid recontamination.

### RECOMMENDED PROCEDURES

#### SANITIZE

- Sanitizer used needs to kill 99.999% of pathogens in 30 seconds.
  - Also able to control both gram-positive (gram stain test) as gram-negative.
- Confirm all impurities have been removed through organoleptic inspection (visual, odor, tactile) and, if possible, ATP bioluminescence test, to detect any remaining organic matter that would impact the sanitizer effectiveness.
- Sodium hypochlorite (bleach) is a common sanitizer used in the food industry.
  - It attacks all families of thermoplastic urethanes (TPUs) to some degree; therefore, the time it resides on the belt should be minimized (no more than 20 minutes) and solution be at room temperature, no more than 90°F (32°C).
    - Gates Mectrol belts are made of **polyether** based TPUs, which are more resistant to attack by typical chemicals used in the food industry, including sodium hypochlorite, than the **polyester** based TPUs used typically by our competitors.
  - Maximum concentration level: 200 PPM of available Chlorine (delivered typically by a 1% chlorinated alkaline foam).
  - If concentration levels exceed 200 PPM of available chlorine, the belt must be rinsed with potable water as per US Government regulations 21 CFR Part 178.
- Quaternary ammonium compounds (Quats) are a common sanitizer in the food industry, and do NOT attack Gates Mectrol's food belting.
  - Higher PH (10.5-11.5) are more effective than lower PH (6.2-8.7).
  - This chemical is widely used in the meat and poultry processing segments due to being the most effective against *Listeria Monocytogenes* and other pathogens.
- An alternative to Sodium hypochlorite is Chlorine dioxide
  - It has a wider spectrum, very quick kill, can penetrate biofilm, doesn't present potential of THMs (Trihalomethanes) and HAAs (Haloacetic acids), and concentration needed is 1/10th of Sodium hypochloride, BUT requires equipment to generate.

## **RECOMMENDED PROCEDURES**

### **SANITIZE (continued)**

- Another alternative is Ozone which works against both gram-positive and gram-negative organisms, as well as biofilm.
  - BUT unstable and highly reactive, as well as presenting a potential health hazard.
  - 0.2 PPM for 15 minutes being the accepted STEL (Short Term Exposure Level).
- Recommended to alternate sanitizers during the week to prevent bioresistance or proliferation of specific flora.
  - As some sanitizers are most effective against gram-positive organisms, using them exclusively can eliminate the competition for gram-negative organisms.
  - A 5-day week could use quats for 4 days and chlorine for one day.

### **FINAL RINSE (IF NECESSARY)**

- Depending on the sanitizer used as required by law or end user policy.

## **CONTACT INFORMATION**

### **USA**

#### **CORPORATE HEADQUARTERS**

Gates Mectrol, Inc.

9 Northwestern Drive

Salem, NH 03079, U.S.A.

Tel. +1 (603) 890-1515

Tel. +1 (800) 394-4844

Fax +1 (603) 890-1616

email: [contact@gatesmectrol.com](mailto:contact@gatesmectrol.com)

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