



TIVAR® HPV FG UHMW-PE

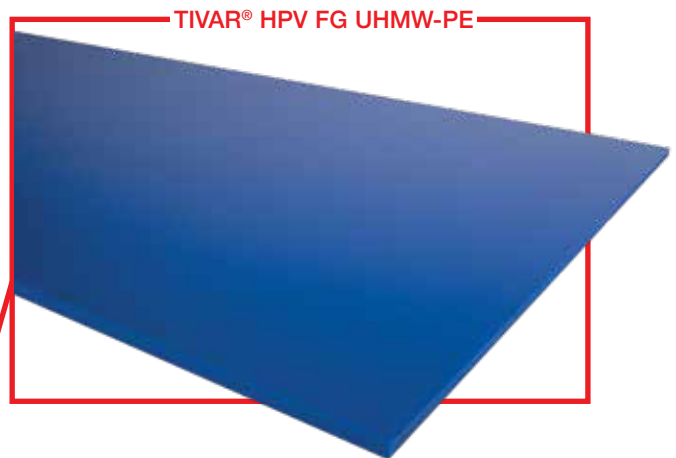
Commercial Bakery – Conveying Rail System

Problem

Our customer's metal baking trays were moving against a metal rail, causing high-wear from friction and jamming. In cases like this, where metal components rub up against other metal components, producers run the risk of metal flakes and particulates contaminating the food. This can become an even bigger problem when considering under-lubricated metal mating or wear parts. Even if metal parts are properly lubricated, the lubricant itself can be another potential food contaminant. In an environment where food manufacturers are constantly pressured to increase line speeds (causing more heat and friction), metal contamination is a serious concern.

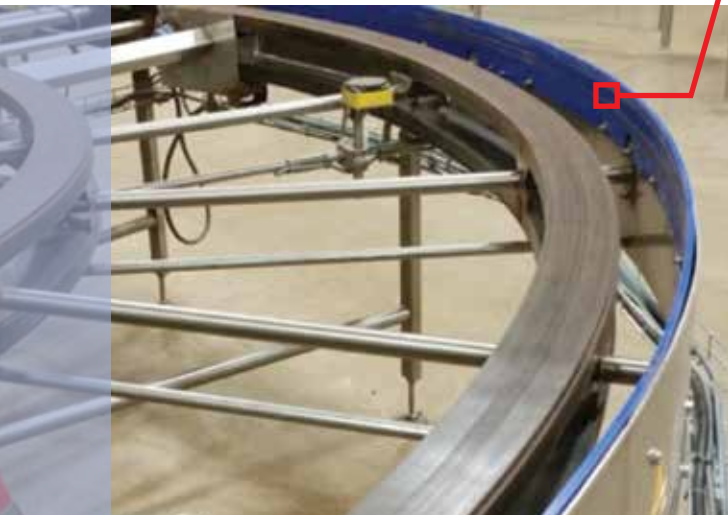
Challenge

Identify a material solution to prevent excessive wear and deformation of parts; support the longest possible conveyor life-cycle; and directly contribute to extending time in use and safety benefits.



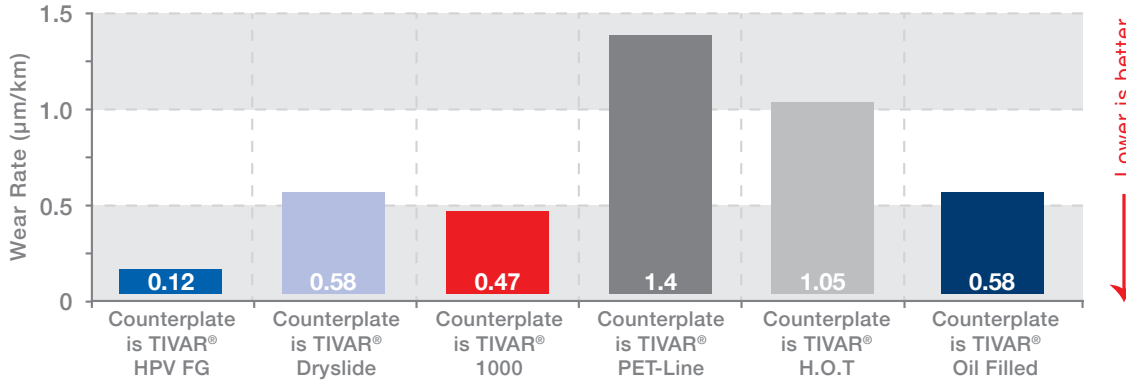
Solution

Mitsubishi Chemical Advanced Materials replaced the existing metal rail with one made of FDA / EU approved TIVAR® HPV FG (High Pressure & Velocity - Food Grade) extreme sliding material. This resulted in the total elimination of both metal-on-metal particulate and lubricant contamination, due to TIVAR® HPV FG's built-in dry lubricant. TIVAR® HPV FG was developed specifically for use in today's most demanding conveying and automated production environments – applications experiencing high speeds, high temperatures, high friction, high loads, and aggressive cleaning agents. TIVAR® HPV FG materials and finished parts offer reduced friction, near zero level “slip stick”, and a LPV value 18-35% higher (more slick = less wear) than competitive materials, along with a COF reduction of 80%. The superior sliding performance of TIVAR® HPV FG reduces friction of components against mating components, leading to less noise, less energy, and better wear protection. Components made with TIVAR® HPV FG show improved sliding behavior, high wear, and abrasion resistance at key touch points in conveyor systems.



Lab Testing: WEAR RATE of the POM C Pin

(measured on a "plastics pin on rotating disk" - tribo system, 3MPa pressure, 0.33m/s speed @23°C)



• Tribological test procedure: similar to Test method A "pin-on-disk", as described in ISO 7148-2: 1999
 • Test conditions: 3 MPa pressure / POM-C pin / sliding velocity 0.33 m/s / normal environment: air, 23°C, 50% RH / unlubricated operation / test time: 24 hrs
 • Data Source: Mitsubishi Chemical Advanced Material Lab Tests

Key Benefits



FDA

- Very low wear of belt & slide plates
- COF reduced by 80% vs POM-C*
- LPV value approximately 18-35% higher than competitive dry lubricant material



EU STD

- FDA / EU compliant



USDA

- Noise reduction
- Built in dry lubricant
- Reduces energy consumption



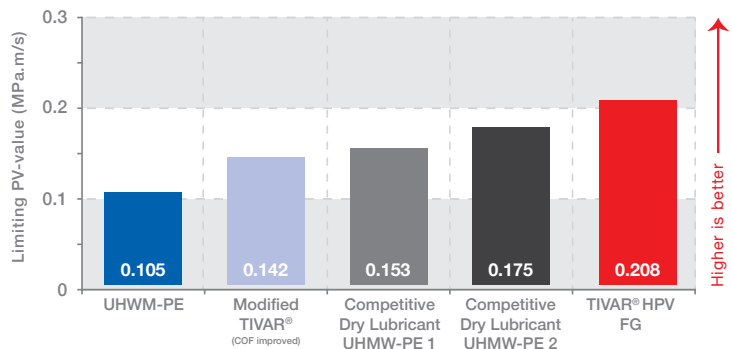
TIVAR® HPV FG Guide Rail

Why TIVAR® HPV FG UHMW-PE?

Longer productive cycles between maintenance, shorter downtimes, and your systems run with less interruption saving costs and energy. The time required for failure analysis and installation of replacement parts is reduced, the safety and return on your investment improves, all while being environmentally friendly.

Limiting PV-Values

• Tribological test procedure: Thrust Washer testing
 • LPV-limits measured on a Thrust Washer rotating against a metal system, speed 0.5 m/s (wear as limit)
 • Data Source: Mitsubishi Chemical Advanced Material Lab Tests



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