

DRY RUNNING LINE CONSIDERATIONS

Technical considerations for dry-running conveyor lines — material selection, friction management, and wear optimization.

1. Overview

Dry running lines operate without external lubrication — common in food, pharmaceutical, and cleanroom environments. Material selection and friction management are critical.

2. Friction Management

COMPONENT	RECOMMENDED MATERIAL	FRICTION COEFFICIENT
Chain (belt)	POM (acetal) or PP	0.15 – 0.25
Wear strip	UHMW or Nolu-S	0.08 – 0.15
Combination	POM on UHMW	0.10 – 0.15
Combination	POM on Nolu-S	0.08 – 0.12
Combination	PP on UHMW	0.12 – 0.18

3. Heat Generation in Dry Running

Without lubrication, friction generates heat. Excessive heat causes:

- Chain material softening and accelerated wear
- Wear strip deformation and groove formation
- Thermal expansion causing belt tracking issues
- Premature chain failure

SPEED	MAX RECOMMENDED LOAD	WEAR STRIP REQUIRED
0 – 30 ft/min	Full rated load	UHMW acceptable
30 – 80 ft/min	75% rated load	UHMW or Nolu-S
80 – 150 ft/min	50% rated load	Nolu-S required
150+ ft/min	Consult engineering	Specialty required

4. Material Selection for Dry Running

BEST COMBINATION FOR DRY RUNNING

POM (acetal) chain on Nolu-S wear strips provides the lowest friction coefficient (0.08-0.12) and is the recommended combination for dry-running applications.

MATERIAL	DRY RUNNING SUITABILITY	NOTES
POM (Acetal)	Excellent – first choice	Low friction, good wear, FDA approved
PP	Good	Lower friction but softer – higher wear rate
PE	Fair	Very low friction but poor wear at higher speeds
Nylon	Poor	High friction without lube – not recommended
Steel	Poor	Requires lubrication – not for dry running

5. Design Recommendations

- ☐ Use POM chain on Nolu-S wear strips for best performance
- ☐ Reduce conveyor speed where possible — lower speed = less heat
- ☐ Ensure adequate wear strip thickness (min 6mm) for heat dissipation
- ☐ Install belt scrapers to prevent debris from entering hinge area
- ☐ Regular inspection of wear strip surface — replace when grooved
- ☐ Consider adding cooling fins or thermal breaks in high-speed sections

DRY RUNNING SYSTEM DESIGN

Uniking Canada specializes in dry-running conveyor solutions.
info@unikingcanada.com

