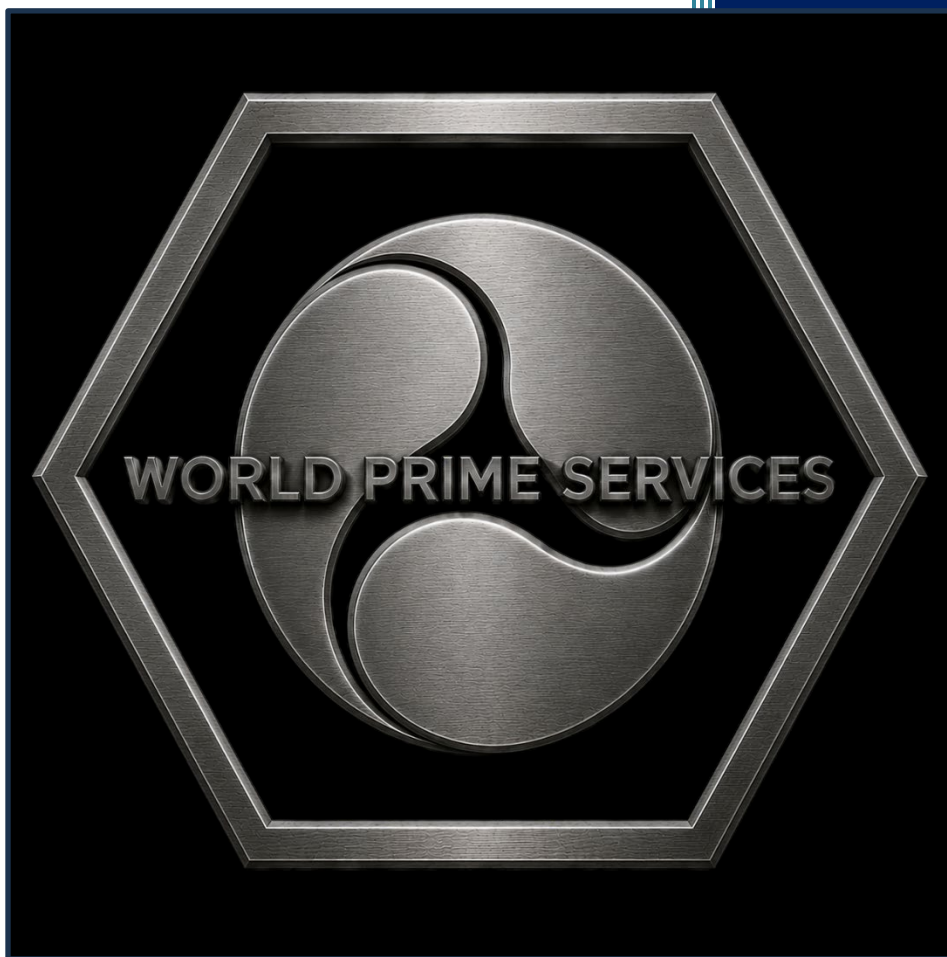


WORLD PRIME SERVICES



CONVEYOR ROLLER

HDPE / UHMWPE CONVEYOR ROLLERS

ENGINEERED POLYMER IDLER ROLLER PRODUCT CATALOG



Professional product catalog for lightweight, corrosion-resistant polymer conveyor rollers engineered for bulk-material handling systems.



1. PRODUCT DESCRIPTION

World Prime Services HDPE / UHMWPE Conveyor Rollers are engineered as non-metallic or composite belt-support rollers for demanding bulk-material conveyor systems. The polymer shell provides a corrosion-resistant and belt-friendly running surface, while the internal bearing, shaft and sealing system is selected according to conveyor load, speed, environmental exposure and dimensional interchangeability requirements.

Typical applications include carrying and return strands in mining, mineral processing, ports and terminals, coal handling, cement, aggregates, fertilizer, salt, chemical processing and power-generation conveyor systems.

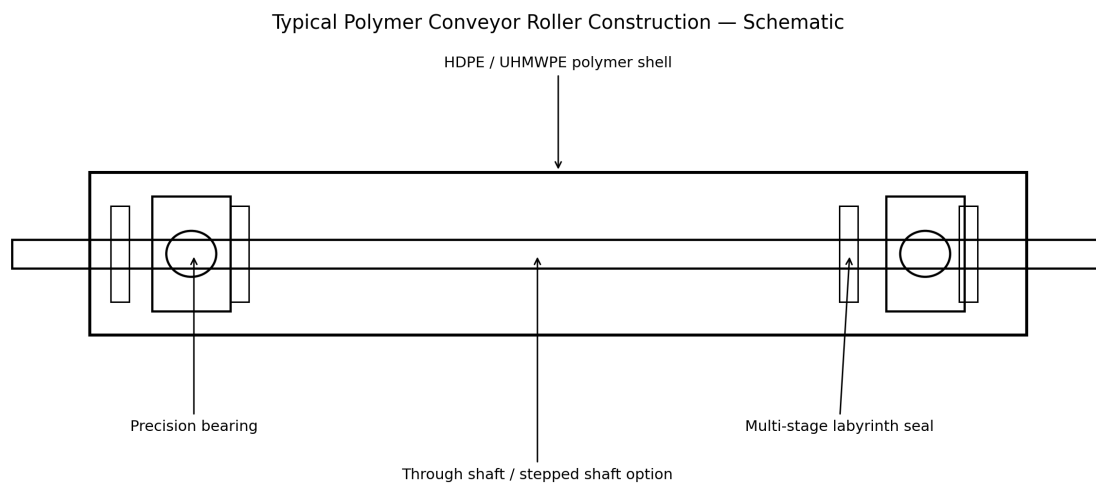


Typical polymer roller installation in a bulk-material belt conveyor.

2. ENGINEERING ADVANTAGES

- Corrosion-resistant polymer shell for wet, saline, humid and chemically aggressive environments.
- Lower roller mass than many comparable steel-shell constructions, improving manual handling and maintenance ergonomics.
- Belt-friendly polymer contact surface that does not develop steel corrosion scale.
- Low material adhesion characteristics that can reduce carryback accumulation on selected applications.
- Low rotational inertia and potential for reduced breakaway resistance when combined with correctly selected bearings and seals.
- Resistance to moisture and many industrial chemicals, subject to verification of polymer compatibility.
- Reduced noise potential due to the damping characteristics of the polymer shell.
- Multi-stage sealing concepts can protect bearings against dust and moisture contamination.
- Available anti-static and fire-resistant formulations should be treated as project-specific options requiring applicable certification.
- Custom diameters, lengths, shaft ends and bearing arrangements can be engineered for replacement or new conveyor systems.

3. TYPICAL CONSTRUCTION



Typical polymer conveyor roller construction schematic.



Component	Typical Specification / Function
Shell	HDPE or UHMWPE polymer tube; material grade selected according to duty, wear, chemical exposure and temperature.
Bearing Housing	Engineered polymer or composite housing; integrated or mechanically retained construction depending on design.
Bearings	Deep-groove ball bearings selected according to radial load, speed, shaft size and life requirement.
Shaft	Carbon-steel or stainless-steel shaft; stepped, machined-flat, slotted or threaded ends available.
Sealing	Multi-stage labyrinth sealing, with contact-seal arrangements available for severe contamination.
End Protection	End-cap or seal-guard arrangement designed to restrict external contaminant ingress.
Lubrication	Typically sealed-for-life bearing arrangement where specified; final lubrication system depends on bearing design.

4. REFERENCE SIZE RANGE

Modern heavy-duty HDPE conveyor rollers are commercially available in broad dimensional ranges. As a current market benchmark, heavy-duty designs may use tube diameters from approximately 127 mm to 219 mm, bearing series from 6305 to 6312 and shaft sizes from approximately 26 mm to 62 mm. These figures are industry references only and do not constitute a fixed World Prime Services manufacturing limit.

Parameter	World Prime Services Catalog Guidance
Tube / Roller Outside Diameter	Project-specific. Reference legacy sizes: 89.1, 102, 108, 114.3, 127, 133, 139.8, 152.4, 159 and 165 mm. Heavy-duty custom designs may extend beyond this range.
Face Length	Manufactured to conveyor frame and belt-width requirements.
Shaft	Project-specific machined steel shaft; verify end geometry by approved drawing.
Bearing	Selected by calculated load and speed. Legacy supplied references include 6205ZZ.
Seal System	Labyrinth or multi-stage labyrinth/contact arrangement according to contamination level.

5. LEGACY DIMENSIONAL CROSS-REFERENCE

The following dimensional combinations are based on the historical product documents supplied for this catalog and are retained as cross-reference dimensions. All new orders require dimensional drawing approval.

Roller O.D.	Face / Tube Length	Overall Reference Length	Shaft Reference	Bearing
127 mm	229 mm	261 mm	Ø25–20 mm reference	6205ZZ
127 mm	280 mm	312 mm	Ø25–20 mm reference	6205ZZ
127 mm	331 mm	362 mm	Ø25–20 mm reference	6205ZZ
127 mm	388 mm	420 mm	Ø25–20 mm reference	6205ZZ
127 mm	439 mm	470 mm	Ø25–20 mm reference	6205ZZ



6. REFERENCE POLYMER TUBE WALL THICKNESS

The following values reproduce the outside-diameter / wall-thickness references contained in the supplied legacy technical sheet. They are preliminary reference values and shall not replace an approved engineering drawing.

Tube Outside Diameter	Reference Wall Thickness
89.1 mm	6.2 mm
102 mm	6.9 mm
108 mm	7.2 mm
114.3 mm	7.4 mm
127 mm	7.9 mm
133 mm	8.0 mm
139.8 mm	8.5 mm
152.4 mm	10.4 mm
159 mm	12.0 mm
165 mm	13.1 mm

Legacy sheet reference for outside-diameter variation: $\leq 1\%$. Final manufacturing tolerances shall be established on the approved product drawing.

7. ROLLER CONFIGURATIONS

Roller Type	Typical Duty
Carrying Roller	Supports the loaded conveyor belt in flat or troughed idler arrangements.
Return Roller	Supports the empty belt on the return strand.
V-Return Roller	Used in V-return idler sets for belt support and tracking stability.
Training / Guide Application	Used only as part of a properly engineered tracking system.
Impact-Zone Configuration	Requires specific impact roller design; standard smooth HDPE rollers are not a substitute for engineered impact rollers.
Special Corrosion-Resistant Roller	Configured for marine, fertilizer, salt and chemical-processing environments.



Polymer rollers installed in a conveyor idler arrangement.

8. APPLICATION INDUSTRIES

Industry	Typical Applications	Key Design Factors
Mining & Minerals	Overland, plant, stockyard and processing conveyors	Tonnage, belt speed, abrasive dust, roller load.
Ports & Terminals	Ship loading, unloading, reclaim and stockyard conveyors	Salt spray, rain, corrosion and high utilization.
Coal Handling	Mine, terminal and power-plant conveyors	Dust sealing, static requirements and contamination.
Cement & Aggregates	Limestone, aggregate and raw-material conveyors	Dust, abrasion, loading and local temperature.
Fertilizer	Production, storage and export conveyors	Chemical compatibility, humidity and corrosion.
Salt	Mine, washing, storage and port conveyors	Severe corrosion and moisture.
Chemical Processing	Bulk solids conveying	Chemical compatibility must be verified case by case.



Bulk-material conveyor application reference.

9. BEARING AND SEALING SYSTEM

Bearing and sealing performance are critical to conveyor roller service life. The bearing must be selected for calculated radial loading, rotational speed, expected operating hours, contamination level and shaft deflection. Premium heavy-duty HDPE roller designs in the international market use multi-tier sealing arrangements combining labyrinth and contact seals. Seal-performance testing may be specified against recognized project standards such as DIN 22112 where applicable.

The legacy roller references supplied for this catalog identify 6205ZZ bearings in selected Ø127 mm configurations. This bearing designation should be considered a dimensional reference rather than a universal specification for every roller size.

10. SELECTION DATA REQUIRED

- Conveyor belt width and belt construction.
- Carrying or return duty.
- Idler configuration and trough angle.
- Roller outside diameter and face length.
- Existing frame dimensions and shaft-end geometry.
- Belt speed in m/s.
- Maximum material capacity and bulk density.
- Idler spacing and calculated load per roller.
- Operating temperature range.
- Ambient moisture, washdown and rainfall exposure.
- Dust and fine-particle contamination level.
- Chemical, saline or corrosive exposure.
- Required bearing life and bearing series.
- Anti-static, flame-resistant or other regulatory requirements.
- Required dimensional standard and inspection/testing documentation.



11. INSPECTION AND MAINTENANCE

Inspection Point	Recommended Practice
Rotation	Check for free rotation, abnormal drag, noise or roughness.
Shell	Inspect for wear, grooves, deformation, cracking or chemical degradation.
Bearing	Investigate abnormal heat, vibration and noise.
Seals	Inspect for displacement, damage and evidence of contamination.
Shaft / Mounting	Verify correct seating and frame-slot engagement.
Alignment	Check idler-frame alignment and conveyor tracking.
Material Buildup	Remove accumulation that interferes with roller rotation.
Replacement	Replace seized, structurally damaged or excessively worn rollers promptly.

12. PRODUCT ORDERING DESIGNATION

Recommended ordering format:

WPS – [MATERIAL] – [OD] – [FACE] – [SHAFT] – [BEARING] – [SEAL] – [OPTION]

Code Field	Example	Meaning
MATERIAL	HDPE / UHMWPE	Polymer shell material.
OD	127	Nominal roller outside diameter, mm.
FACE	331	Nominal roller face length, mm.
SHAFT	25/20	Shaft dimensional reference; drawing governs.
BEARING	6205ZZ	Bearing reference.
SEAL	LAB	Labyrinth sealing configuration.
OPTION	AS / FR / UV	Project-specific anti-static, fire-resistant or UV-stabilized requirement.

Example: WPS – HDPE – 127 – 331 – 25/20 – 6205ZZ – LAB – AS

13. PRODUCT PHOTOGRAPHS



Individual HDPE polymer conveyor roller — product reference image.



Conveyor roller application — each image presented individually.



Polymer roller operating-condition reference.



Conventional roller operating-condition reference.

14. TECHNICAL DISCLAIMER

All dimensions, materials and configurations in this catalog are product-family and preliminary engineering references. Final roller selection must be based on the conveyor operating data and an approved technical drawing. Performance, chemical resistance, fire resistance, anti-static behavior, seal performance and regulatory compliance must be confirmed for the specific ordered product. World Prime Services product identification shall apply only to products supplied under the corresponding approved commercial and technical documentation.