

COMCOEPP

Engineering Plastic Products



Comco-Cast Nylon

Maximum Performance. For Every Component.

Centrifugally cast Polyamide 6 from COMCO EPP stands for robust, durable, and precision-engineered components made from PA6G / Cast Nylon. Developed for crane and lifting technology, aerial work platforms, elevator and rope drive systems, guide systems, and CNC-machined industrial components.

Whether rope sheaves, sliding elements, wear pads, or guide components, Comco-Cast Nylon offers a high-performance alternative to steel — lighter, wear-resistant, corrosion-free, and maintenance-friendly.

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Product Information

Engineered for unmatched performance, durability, and precision.

Comco-Cast Nylon is produced using the centrifugal casting process (Schleuderguss): liquid caprolactam monomer is introduced into a rotating mould and polymerises in situ. The result is a high-crystallinity, high-density polymer structure with no internal stress — mechanical properties that extruded PA6 cannot match. Tensile and compressive strength up to three times higher than standard extruded nylon. Dimensional stability under load. Outstanding machinability for precision groove and bore geometries.

Comco-Cast Nylon components replace metal — steel, cast iron, brass, copper alloy — in high-load dynamic applications. They reduce operating weight, extend rope and cable service life, eliminate corrosion, and cut maintenance intervals significantly. Standard delivery in black; natural (off-white) available on request. Available as semi-finished stock, rough casting, near-net-shape casting, or fully machined CNC component to drawing.

Typical Components

- Sheaves and deflection pulleys
- Boom sliders and wear pads
- Rope guides and cable rollers
- Elevator drive sheaves and idler wheels
- Support pads and outrigger feet
- Gear wheels, rings, and bushings
- Slide blocks and guide elements
- Pipe clamps and brackets

Key Material Properties

Mechanical strength	up to 3x higher than extruded PA6; excellent tensile, compressive and fatigue resistance
Wear resistance	low friction coefficient; self-lubricating grades available (oil-filled, MoS ₂ , graphite, wax)
Weight	density ~1.15 g/cm ³ — approximately one-seventh the weight of steel
Corrosion resistance	inherent — no coating required; unaffected by moisture, salt water, oils, and common chemicals
Vibration and noise damping	elastic material structure absorbs shock loads and reduces running noise
Machinability	machines cleanly to tight tolerances; ideal for precision grooves, bores, and complex geometries
Temperature range	-40 °C to +100 °C continuous; short-term up to 120 °C
Modifiers available	oil lubricant, MoS ₂ — for enhanced wear resistance, lubrication, or structural performance



Comco-Cast Nylon

Crane & Construction Machinery

Cast Nylon Sheaves — Engineered for Lifting Performance

Sheaves are among the most mechanically demanding components in any crane system. They carry continuous dynamic load, run against steel wire rope at high cycle rates, and must maintain dimensional accuracy over long service periods. Comco-Cast Nylon sheaves meet these demands — and outperform steel in these parameters.

Weight Reduction — Direct Gain in Lifting Capacity

A cast nylon sheave weighs approximately one-seventh of an equivalent steel sheave. In telescoping and mobile cranes with multiple sheaves at the boom head, this weight reduction is cumulative and significant. Every kilogram removed from the boom tip translates directly into additional usable lifting capacity — or equivalent structural relief that extends boom service life. For mobile crane operators, lower sheave weight also improves axle load distribution during transport.

Wire Rope Service Life — The Decisive Economic Argument

Steel sheave grooves concentrate contact stress over a small interface area. Comco-Cast Nylon, by contrast, has a lower modulus of elasticity: under load, the groove surface deflects elastically, distributing contact pressure across a larger area. The result is a groove contact pressure of approximately one-tenth to one-twelfth that of a steel groove under equivalent loading. In service, this translates to wire rope service life extended by a factor of 2 to 3 times. Wire rope is a major recurring operating cost — this effect alone justifies the material transition.

Corrosion Resistance — Structural, Not Cosmetic

Steel sheaves require surface protection. Coatings degrade over time, and corroded grooves accelerate rope wear dramatically. Comco-Cast Nylon is inherently impervious to rust and corrosion — there is no coating to maintain, no corrosion mechanism to manage. Performance is identical whether the crane operates in a dry warehouse or a salt-spray coastal environment.

Vibration Damping and Bearing Protection

Comco-Cast Nylon absorbs the vibration and shock loads generated by rope movement, protecting adjacent bearings, pins, and structural connections from peak stress cycling. In practice: longer bearing service life, reduced unplanned downtime, lower total maintenance cost.

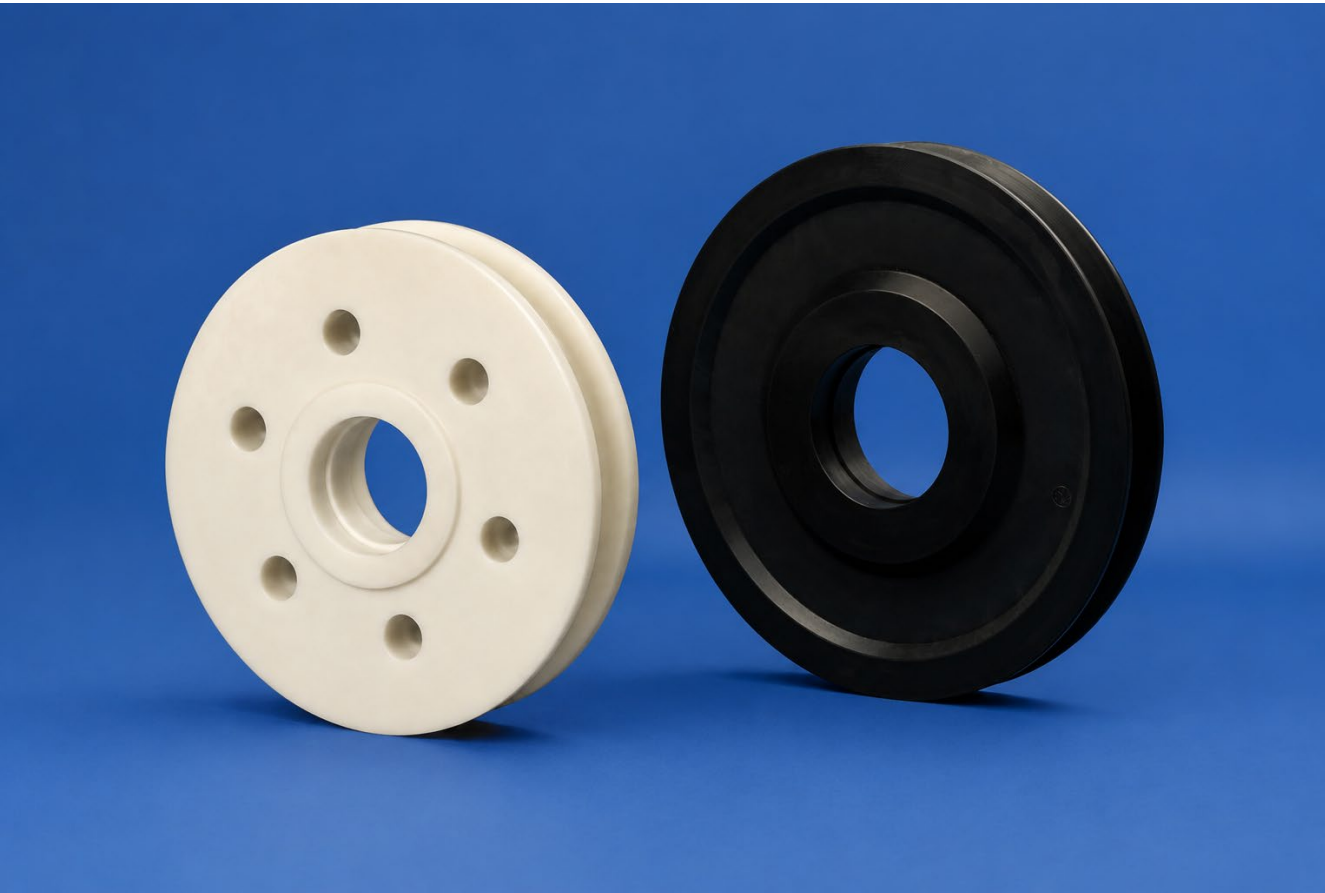
Advantages at a Glance

Weight	~1/7 of steel — direct gain in lifting capacity and transport efficiency
Wire rope life	2–3× longer service life vs. steel grooves
Groove contact pressure	~1/10 to 1/12 of equivalent steel sheave
Corrosion resistance	inherent — no coating, no maintenance
Vibration damping	protects bearings and structural elements
Noise	significantly lower running noise vs. steel or cast iron
Lubrication	single lubrication at installation sufficient; self-lubricating grades available
Customisation	cast-to-near-net-shape; custom spoke pattern, bore, groove profile per drawing

Product Specification

Comco-Cast Nylon sheaves are supplied to customer drawing as semi-finished blanks for final machining, or as fully finished, assembly-ready components. Outer diameter range: 140 mm to 1,272 mm. Custom dimensions on request. Spoke or solid disc structure. Groove profile machined to rope diameter. Bore for standard rolling bearing types.

Recommended minimum D/d ratio: 18:1 (ISO standard for load-lifting cranes); 24:1 per European preferred practice.



Comco-Cast Nylon

Cast Nylon Sliders and Wear Pads — Truck Crane Boom Support

Telescoping crane boom systems rely on sliders and wear pads positioned between nested boom sections to guide extension and retraction, absorb lateral loads, and prevent metal-to-metal contact. These components operate under high static and dynamic pressure, continuous sliding movement, and frequent shock loads — in environments that are often dusty, wet, or contaminated with hydraulic fluid.

From Brass to Cast Nylon — A Proven Transition

Brass sliders were the traditional solution. Their limitation is well-documented: limited service life due to wear under load, dependency on regular re-greasing, and susceptibility to fretting under dynamic load cycles. Comco-Cast Nylon sliders address all three limitations. Service life in direct field comparison is 4 to 5 times that of brass — a single lubrication at installation is sufficient in most applications due to the material’s self-lubricating properties.

Technical Advantages

Service life	4–5× that of brass sliders in equivalent applications
Self-lubrication	oil-filled and MoS ₂ grades available; one-time lubrication at installation typically sufficient
No stick-slip	low, consistent friction coefficient prevents jerky boom movement
Impact and shock resistance	superior to brass; absorbs dynamic loads without cracking or deformation
Weight	significantly lighter than metal alternatives — contributes to overall boom weight optimisation
Corrosion resistance	no galvanic corrosion at the metal interface; unaffected by hydraulic fluid, oils, and lubricants
Fastening options	steel inserts for bolted attachment available; custom hole patterns per drawing
Customisation	any geometry and dimension to drawing; supplied as plate stock for customer machining or as finished pads ready for installation

Application Range

Boom extension and retraction guides in telescoping truck cranes, all-terrain cranes, and crawler cranes. Sliding guide elements in hydraulic cylinder guidance within the boom. Wear pads in aerial work platforms (AWP / boom-type EWP). Sliding contact elements in any application where a self-lubricating, high-load wear surface is required.



Comco-Cast Nylon

Cast Nylon Rope Guides and Cable Rollers

Rope guide elements control wire rope movement during spooling and reeving in electric hoists, winches, and crane drum systems. They prevent tangling, overlapping, and rope cross-overs — directly protecting both the rope and the drum from damage. In high-cycle industrial hoist applications, rope guide material choice significantly affects maintenance intervals and system reliability.

Material Advantages in Rope Guide Applications

Comco-Cast Nylon rope guide components offer the full advantage profile of the material: low friction coefficient reduces rope wear and operating noise; inherent elasticity cushions dynamic rope loads; self-lubricating properties extend lubrication intervals; corrosion resistance eliminates surface degradation in wet or chemically active environments. Compared to metal rope guides, rope and drum wear is reduced significantly, and running noise is lower — relevant for hoists operating in production halls, warehouses, and urban installations.

Advantages

Rope protection	low contact pressure and friction reduce wear on outer rope strands
Self-lubricating	reduced lubrication intervals; suitable for long-service-interval maintenance programmes
Corrosion resistance	unaffected by water, humidity, oils, and typical industrial environments
Low noise	elastic material structure absorbs rope impact; quieter operation vs. metal
Long service life	wear resistance significantly exceeds that of copper and white-metal alternatives
Easy installation	lightweight; machinability allows precise fit to drum and housing geometry

Structure

- Rope guide nut
 - Rope guide plate
- Connecting steel belt (where applicable)
 - All elements supplied to drawing or matched to existing hoist geometry.



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Cast Nylon — Gear, Ring, and Roller Series

Transmission gears, ring gears, and drive rollers in industrial machinery operate under continuous load, impact, and wear. Comco-Cast Nylon components offer a proven metal replacement in low- to medium-speed transmission applications where noise reduction, weight savings, and reduced lubrication are priorities.

Key Properties

High mechanical strength	structural integrity maintained under sustained load and impact without deformation or fatigue failure
High precision	cast blanks machined to tight tooth and bore tolerances; smooth, stable transmission with low energy loss
Wear resistance	lower wear rate than cast iron in meshed transmission; extends service intervals
Noise damping	PA6 absorbs meshing impact — significantly quieter than steel-on-steel or iron transmission
Self-lubrication	oil-filled grades reduce or eliminate external lubrication requirements
Weight	one-seventh of equivalent steel components — relevant for high-speed rotating elements where inertia matters

Typical Applications

- Worm gears and helical gears in low- to medium-speed drives
- Ring gears in slewing drives and rotation systems
- Drive rollers and idler rollers in conveyor and handling systems
- Sprocket wheels in chain drives
- Coupling elements where damping of torque peaks is required



Comco-Cast Nylon

Aerial Work Platform

Cast Nylon Pulleys and Guide Elements

Aerial work platforms (AWP) and mobile elevated work platforms (MEWP) depend on lightweight, reliable components across their boom extension systems, lifting mechanisms, and hydraulic guide elements. Weight is a direct parameter for platform capacity and stability; maintenance frequency determines availability. Comco-Cast Nylon components address both.

Sheaves and Pulleys

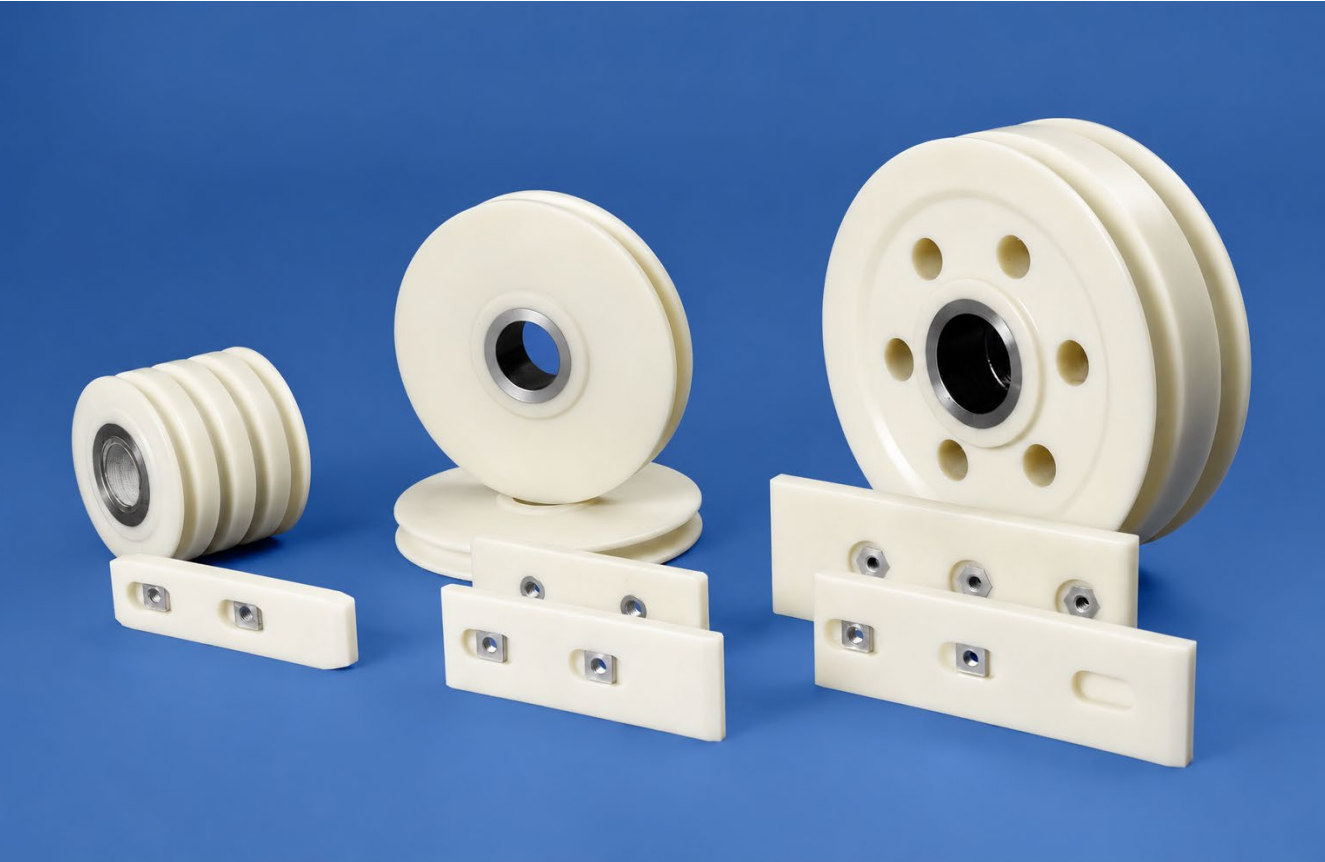
Cast nylon sheaves for AWP lifting systems provide the same rope-life and weight advantages as in crane applications, at smaller diameters suited to AWP geometry. The lightweight construction is particularly relevant for scissor lifts and articulated booms where total arm weight determines working height and capacity. Bearings are integrated to drawing specification.

Slide Blocks and Wear Pads

Telescoping boom sections in articulated AWP's require precision slide guidance. Comco-Cast Nylon slide blocks and wear pads enable smooth boom extension with minimal friction — no stick-slip, low noise, long maintenance intervals. Oil-filled grades are available for high-cycle applications.

Pipe Clamps

Hydraulic, pneumatic, and oil line clamps for AWP frames and boom structures. Comco-Cast Nylon clamps secure pipes without risk of surface damage, dampen vibration in the pipe run, and resist corrosion and hydraulic fluids. Supplied in standard geometries or to drawing.



Key Features

High load capacity	suitable for the full load range of AWP lifting and guidance systems
Smooth operation	low friction coefficient; precision bearing interfaces where specified
Lightweight	direct contribution to platform payload capacity
Corrosion resistance	suitable for outdoor use in all weather conditions without surface treatment
Low maintenance	extended lubrication intervals; self-lubricating grades available
Delivery	to drawing, sample, or component specification; suitable for customer-specific series and spare parts programmes



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Cast Nylon — Slide Block Series

Nylon slide blocks provide smooth, guided linear movement in conveyor systems, rail guides, machine tool beds, and automated production equipment. The combination of low friction, wear resistance, and dimensional stability under load makes cast nylon the material of choice for demanding slide guidance applications where metal-to-metal contact must be avoided and lubrication intervals minimised.

Properties

Wear resistance	high — suitable for continuous sliding contact under load
Self-lubrication	low friction coefficient; oil-filled grades for extended intervals
Noise	significantly quieter than metal slides in rail and conveyor guidance
Chemical resistance	unaffected by lubricants, hydraulic fluid, and common industrial chemicals
Machinability	supplied as blank or finished to drawing; custom hole patterns and groove profiles



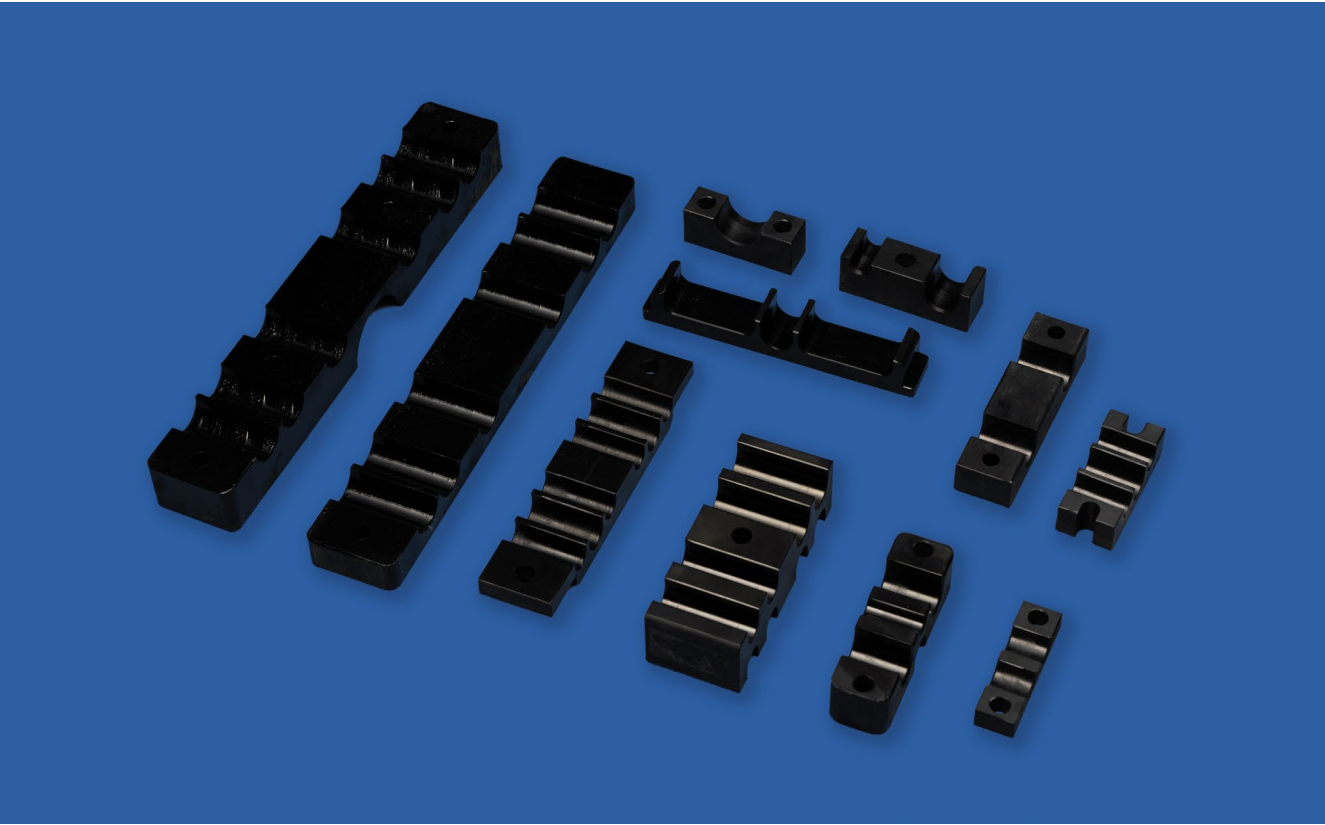
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Pipe Clamps — Mobile and Industrial Applications

Pipe clamps in aerial work vehicles secure hydraulic, oil, and pneumatic lines against vibration fatigue and mechanical damage. Comco-Cast Nylon clamps combine the structural strength needed to hold lines under dynamic load with the compliance required to avoid pipe surface damage and transmit vibration damping to the mounting structure.

Key Features

Secure fixation	high clamping force under dynamic and impact loads
Pipe surface protection	no metallic edge contact; prevents paint damage and fretting corrosion on pipe surface
Vibration damping	elastic material structure reduces vibration transmission along pipe runs
Chemical resistance	compatible with hydraulic fluid, oil, and fuel
Weather resistance	outdoor use without surface treatment
Weight	lighter than aluminium or steel clamps — relevant for large AWP boom assemblies



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Cast Nylon — Brackets, Pads, and Support Elements

Support brackets, wear pads, and positioning elements from Comco-Cast Nylon provide reliable, lightweight solutions wherever metal components are over-specified or require excessive maintenance. The dimensional stability and high compressive strength of cast PA6 make it suitable for static and quasi-static high-load applications in machinery, vehicles, and lifting equipment.

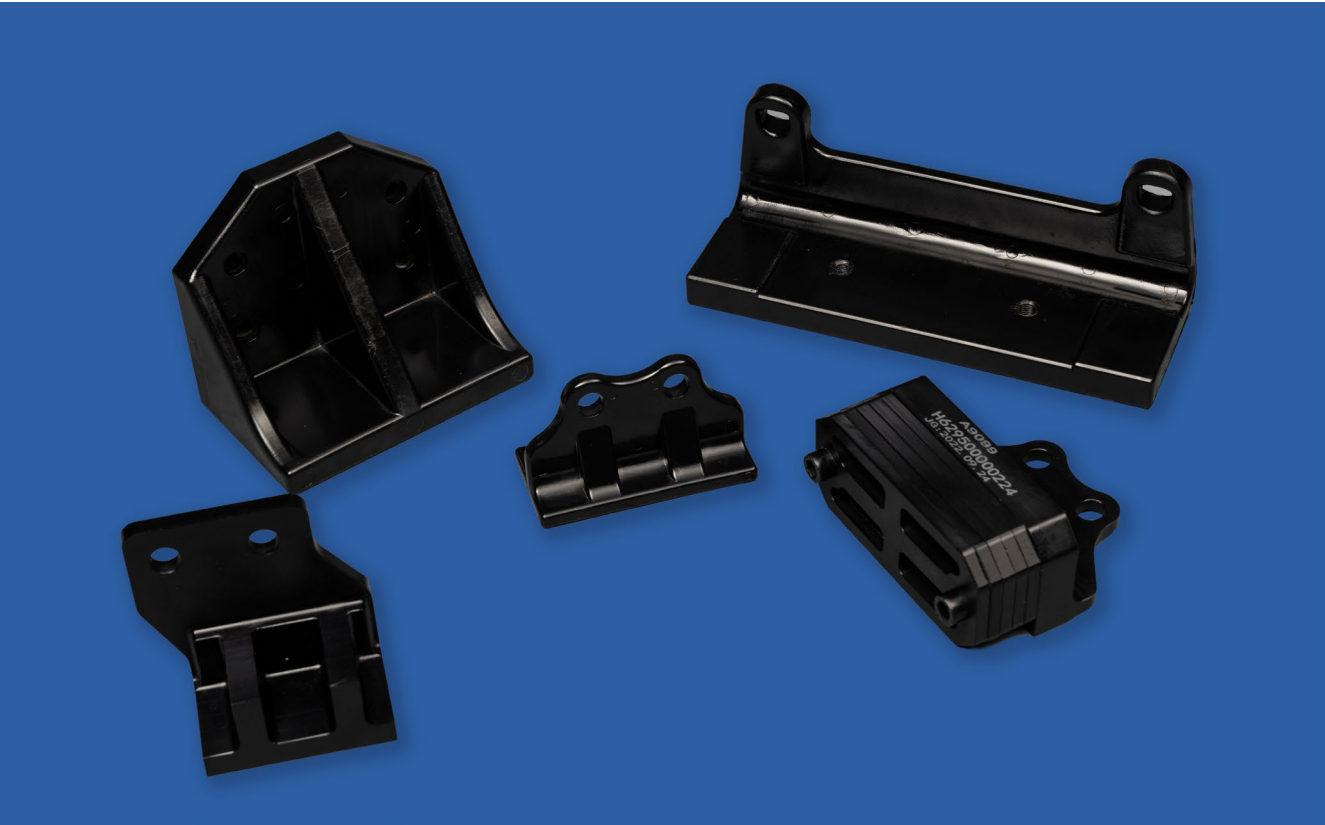
Crane Support Pads and Outrigger Feet

Crane outrigger pads and support feet from cast nylon distribute load from outrigger cylinders onto the ground with less concentrated bearing stress than steel plates. The material's compressive strength is sufficient for typical outrigger loads; the lower weight simplifies on-site handling; the resistance to oils and fuel eliminates surface maintenance. Available in standard pad geometries or custom shapes to drawing. Dimensioning must be verified on a project-specific basis, taking into account support force, bearing area, and ground conditions.

Leaf Spring Pads — Automotive Suspension

Leaf Spring Pads for commercial vehicle and truck suspension systems. The pad sits between leaf spring and axle housing, absorbing vibration, preventing metal-to-metal contact, and adjusting ride height. Cast nylon delivers lower weight and longer service life versus comparable rubber or metal components, with stable mechanical properties across the temperature range of normal vehicle operation.

Material	cast nylon — high strength, low weight, stable under sustained compressive load
Structure	multi-support geometry for uniform load distribution and dimensional stability
Application	automotive and commercial vehicle suspension; construction machinery support structures
Supply	to drawing or matched to existing component geometry; standard or custom hole pattern



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Stage Equipment — Components

Stage and entertainment technology demands reliable, quiet, and low-maintenance components in lifting and positioning systems. Fly systems, counterweight rigging, scenery drives, and lighting grid adjustments all involve rope or cable-guided loads that cycle frequently and must operate with minimal noise.

Comco-Cast Nylon pulleys and guide rollers are well-suited to this environment: low running noise protects the acoustic quality of the venue; corrosion resistance handles the humidity and temperature variation typical of stage structures; long service life reduces the disruption and cost of component replacement in hard-to-access rig positions.

Typical Components for Stage Applications

Deflection pulleys	for fly system lines and counterweight rigging — low noise, rope-protective groove geometry
Guide rollers	for scenery track systems and motorised flying rigs
Slide elements	for lighting positioning guides and adjustable pipe grid systems
Connector bushings	for rotation and pivot points in lighting adjustment hardware — absorb torsional vibration

Key Properties for Stage Use

Low noise	elastic material absorbs rope and cable impact; critical for acoustic environments
Long service life	minimises access requirements in overhead rig positions
Corrosion resistance	suitable for outdoor stages and high-humidity venues
Lightweight	relevant for weight-critical fly system counterbalance calculations



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Elevator Wheel

Comco-Cast Nylon drive sheaves and idler wheels for elevator systems deliver measurable performance advantages over the cast iron and steel components they replace. The material is widely specified by elevator manufacturers worldwide — for traction sheaves, deflection pulleys, governor sheaves, and door guidance rollers.

Why Cast Nylon for Elevator Sheaves?

Weight is the first argument. A cast nylon sheave weighs approximately one-seventh of an equivalent steel component. Lower sheave mass means lower rotational inertia — the drive motor reaches operating speed faster, stopping distance is shorter, and positioning accuracy improves. Counterbalance calculations are simplified. For modernisation of existing installations, replacing heavy sheave sets with cast nylon components can enable motor downsizing.

The rope interface is the second argument. Cast nylon groove surfaces generate lower contact pressure against the traction rope than steel. This is not a marginal effect — rope service life in cast nylon-sheave installations is consistently 2 to 3 times longer than in equivalent steel-sheave systems. For building owners and facility managers, rope replacement is a significant recurring cost and a source of elevator downtime. This single factor drives adoption in commercial building and high-rise residential applications.

Noise is the third argument. The elastic material structure absorbs rope impact vibration. Elevators running on cast nylon sheaves are quieter — relevant for residential buildings, hotels, and office environments where elevator noise affects tenant experience.

Specific Advantages for Elevator Applications

Rotational inertia	low mass › shorter stopping distances › improved position accuracy
Rope service life	2–3× longer than equivalent steel-sheave installations
Running noise	significantly reduced — relevant for residential and hospitality buildings
No balancing	homogeneous cast structure provides inherent dynamic balance — no balancing required
Corrosion resistance	suitable for machine rooms with humidity variation; no surface treatment
Drive efficiency	lower friction coefficient on rope interface contributes to reduced drive energy

Delivery Programme — Elevator Wheel

Elevator wheels and sheaves are manufactured according to the required elevator speed, number of grooves, rope diameter, bore, hub, and flange geometry. Standard versions serve as reference; final execution follows customer specification. Wheel diameter: ø320, ø400, ø520, ø640. Special dimensions available on request.

Technical Note

The suitability of Comco-Cast Nylon for a specific application depends on load case, component geometry, environment, speed, temperature, media contact, mating material, and maintenance concept. The material properties and performance data stated in this catalogue are general material and application guidance only, and do not replace project-specific design or approval by the manufacturer or operator. All components are manufactured to drawing, sample, or project-specific specification. For safety-relevant applications, design, material approval, and standards compliance must be reviewed by the equipment manufacturer or operator.



COMCOEPP

Engineering Plastic Products

COMCO EPP is a European manufacturer and global supplier of engineering plastic semi-finished products and CNC-machined precision components. With more than 50 years of European plastics processing heritage, COMCO EPP serves industrial machinery, crane and lifting technology, elevator systems, construction equipment, aerospace, and advanced manufacturing sectors.

Our Core Materials

- PA6 Cast (Schleuderguss / centrifugal cast)
- POM
- PA6 FR (flame retardant)
- PEEK and modified PEEK compounds
- PEI
- PPSU
- PE UHMW
- PSU
- ETFE
- PVDF
- PI

Our Capabilities

- Semi-finished stock shapes (rods, plates, tubes)
- Centrifugal cast billets and near-net-shape components
- CNC-machined finished parts to drawing
- Application engineering support
- Custom material modification and project-specific design support

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