

THE SPROCKET HAS EVOLVED.

Introducing Continental Thunderbolt SilentSync[®] composite sprockets

This innovative material-driven solution will revolutionize the power transmission industry by reducing the barrier to entry when converting drives to SilentSync[™] belt technology. It will provide multiple operational value solutions, including weight reduction, corrosion resistance and customization.

Properties

Torque Capacity

Composite sprockets can be manufactured with helical offset (SilentSync) or straight (Conti[®] Synchrochain Carbon/Falcon teeth. Any SilentSync or Falcon drive with a service factor greater than 2.0 or Synchrochain Carbon drive with a service factor greater than 2.3 is a possible candidate for composite sprockets. Testing has been performed at twice the power capacity of Synchroforce Supreme belts. Sprocket life-prediction analysis is available given application details.

Weight Reduction Compared to Metal

Composite sprockets, with a density 1/7th of steel, offer an 85% weight reduction for metal parts of equivalent volume. For example, a 50-kilogram steel part would weigh only 7-kilogram. The lower inertia and weight of composite sprockets results in decreased energy requirements for acceleration and deceleration. Installation of heavy components is made safer and easier particularly on vertical shaft applications. Less overhung weight will also result in increased bearing life, shaft integrity and longevity. These weight savings not only ease installation but also lead to reduced costs in shipping, storage, and handling due to the lighter load.

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Material

Composite sprockets are constructed from a patented lightweight engineered material with a carbon fiber reinforcement. Tailored to meet the rigorous strength and wear standards of sprockets, the material boasts a hardness of 82 Shore D. (Patent numbers 10865868, 10989293, 11015694)

Temperature Exposure

Composite sprockets perform best in ambient temperatures between -20°F to 140°F (-28°C to 60°C). They can handle temperatures up to 200°F, with surface temperatures reaching 250°F intermittently, but this may lead to increased wear and decreased durability. For optimal results, avoid using them in temperatures exceeding 140°F (60°C).

Corrosion Resistance

Composite sprockets boast corrosion and rust resistance, making them ideal for wet environments and suitable for food processing equipment, including areas subject to frequent washdowns, but direct food contact isn't recommended. Their durability against moisture and various chemicals is noteworthy, yet it's essential to evaluate the corrosion resistance of any metal inserts or hubs utilized alongside them.

Testing & Durability

Composite sprockets have been put through rigorous lab tests with over 200,000 hours of combined test time, with individual parts eclipsing 30,000 hours of run time. Sprockets have been in operation in real-world applications for over five years in diverse industrial applications, including HVAC, conveyor drives and industrial machinery.

Common recommended practice is to replace metal sprockets after three belt lifetimes. The recommendation for composite sprockets is the same.

Composite sprockets can withstand the demands of high-power synchronous belts with minimal wear. During the first 100 hours of operation, a slight change in groove profile is normal. After this wear-in period, the sprocket running surface should develop a smooth glossy appearance and continue to operate with little wear for the life of the sprocket. Continental composite sprockets are specifically designed for operation with our trademark synchronous belts: SilentSync, Synchrochain and Falcon. These composite sprockets should not be used with any other belt types as we cannot guarantee the performance against other tooth wear surfaces.

For extreme applications in harsh environments, contact the Continental application engineering team, but for most applications, composite sprockets provide exceptional value and weight savings when replacing metal sprockets.

Dimensional Tolerances

Composite sprockets are molded with low shrinkage material that allows for dimensional stability. Though the molding process is not capable of the high precision that's possible with machining, it maintains adequate dimensional tolerances for most power transmission applications.

Rotational Inertia

Given the low weight of composite sprockets, the energy required to start or stop a drive, known as rotational inertia, can be reduced. The reduction amount will depend on the exact design of the sprockets. For applications with frequent starting and stopping, reduced power consumption can be expected.

High Speeds & Balancing

Composite sprockets are ideal for high-speed belt drives because of their impressive strength-to-weight ratio. Sprockets with symmetrical designs do not need balancing. However, for extremely high-rim-speed applications, dynamic balancing of both the sprocket and mounting hardware could enhance performance.

Static Conductivity

Composite sprockets are not static conductive. They should not be used on drives that rely on the belt drive to ground equipment or where explosion-proof equipment is required.

Ozone & UV Resistance

Composite sprockets are appropriate for outdoor usage in sunlight-exposed environments and require no special precautions under typical exposure conditions. For non-black sprockets, prolonged UV exposure can cause some cosmetic discoloration that does not affect sprocket performance.

Applications

With their reduced weight, corrosion resistance and the ability to be customized, composite sprockets are designed for a variety of customer applications including air handling and HVAC systems, conveying and material handling or any other similar situation. They're also ideal for environments with conditions that can corrode metal, such as food and beverage applications.

Thunderbolt SilentSync® Composite Sprocket Recap

- › Our patented composite sprockets offer up to an 85% weight reduction compared to traditional metal
- › Ideal for applications requiring lower-weight and cost-effective solutions while maintaining exceptional torque capacity and wear resistance
- › End users can utilize the benefits of Continental's revolutionary SilentSync timing belt line at a lower total drive system cost
- › Get significant advantages in weight reduction, corrosion resistance and customization potential

Our application engineering team is standing by to convert your problem drives and answer any questions about this exciting new material-driven solution.