

Steel Tracks and Rubber Tracks: Material Analysis for Different Construction Applications

Introduction

Tracks

are an integral part of heavy construction machinery and vehicles used across various industries for their functionality and ability to traverse diverse terrains effectively. Traditionally, steel tracks have been the preferred choice for their durability. However, with technological advancement, rubber tracks have emerged as a viable alternative. Let's analyze some key properties and performance characteristics of steel and rubber tracks.

Steel

tracks and Rubber Tracks Material

Properties

Steel tracks are made of hardened alloy steel and have a rigid interlocked construction for strength and carrying heavy loads over varied surfaces. They can withstand high pressure and impacts. However, steel is susceptible to corrosion if not properly maintained. On the other hand, rubber tracks are composed of reinforced rubber compounds and flexible belting systems.

They

offer greater shock absorption and are corrosion resistant. But rubber has lower load bearing capacity compared to steel.

Steel Tracks and Rubber Tracks: Traction and Flotation

The edge lug design of steel tracks provides excellent traction and flotation for moving heavy loads in muddy, soft soil conditions. Their solid surface maintains constant ground contact for optimal power transfer. Conversely, the wider and low ground pressure footprints of rubber tracks increase flotation and reduce ground compaction. Their enhanced contact patches result in better traction even in loose rock or debris.

Comfort and Noise Levels

Steel tracks transmit mechanical vibrations directly, making them noisy and inducing whole body fatigue over long operations. Vibration dampening properties of rubber reduce noise levels significantly, imparting better ride comfort. The elastic nature of rubber tracks also eases stress on machine structures and components compared to steel counterparts.

Maintenance and Lifecycle Costs

Though steel tracks have higher upfront costs, they require less frequent replacement compared to rubber and can last longer with proper maintenance like regular cleaning, lubrication and track tension adjustments. On the flip side, rubber tracks involve lower maintenance and have reduced lifecycle expenses due to less wear and infrequent replacement needs.

Steel Tracks and Rubber Tracks: Operational



