THE VAN RACKING SPECIALISTS

VAN INTERIOR EQUIPMENT IN HIGH-STRENGTH STEEL AND ALUMINUM

Two key priorities guide the production of Syncro System van interior components:

STRENGTH - Van equipment must handle heavy loads while dealing with movement, torsion, impacts and vibration inside a commercial vehicle cargo area. Long service life and dependable performance are essential.

LIGHTWEIGHT DESIGN - Keeping the upfit weight low helps preserve payload capacity, reduce fuel consumption, improve vehicle handling and reduce stress on the vehicle's mechanical systems.

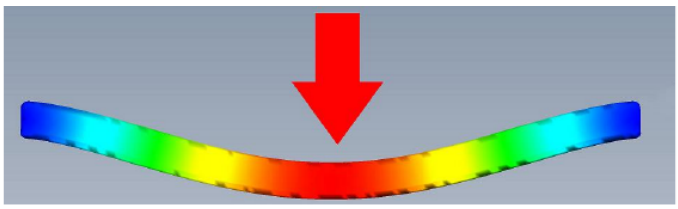
To support both strength and low weight, Syncro System uses two categories of metal:

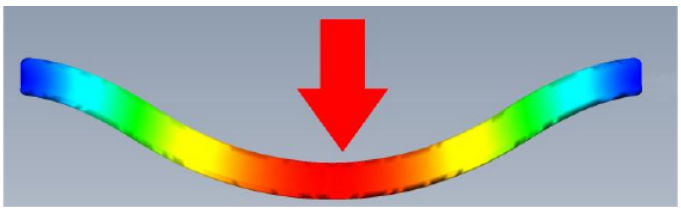
ALLOY ALUMINUM - Used for drawer and shelf dividers and other non-load-bearing components such as cabinet doors and lower wheel-arch cover corners.

HIGH-STRENGTH STEEL - Used for structural and load-bearing components. Compared with traditional steel, modern high-strength steel provides excellent workability and weldability while delivering much higher mechanical resistance.

PERFORMANCE OF HIGH-STRENGTH STEEL

The simulation images show how, under the same applied force, a high-strength steel component undergoes much less deformation than the same component made from standard steel.





Key takeaway: Syncro combines high-strength steel for loaded structural components with aluminum where weight can be reduced without compromising the purpose of the part.

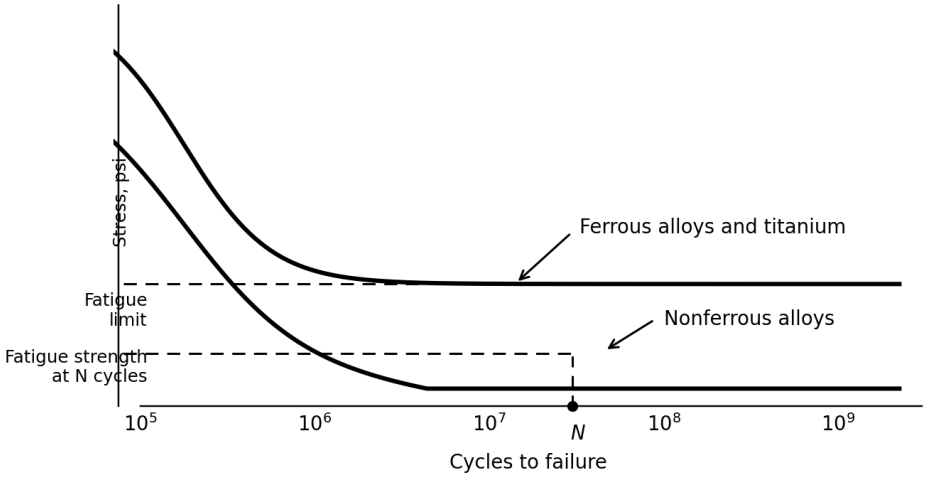
DIFFERENCES BETWEEN MATERIALS

The comparison below shows three materials used or considered in van equipment manufacturing: Peraluman aluminum, standard steel and high-strength HC420LA steel. The yield point indicates the force required to deform the material; the breaking point indicates the force required to rupture it.

	Yield point		**Breaking point**	
Peraluman aluminum	130	-61.54%	220	-54.55%
Standard steel	210		340	
High-strength steel HC420LA	470	123.81%	530	55.88%

STEEL AND ALUMINUM OVER TIME

Material fatigue describes how repeated stress cycles can eventually lead to failure. Ferrous metals such as steel behave differently from non-ferrous metals such as aluminum. Steel can reach a fatigue limit: below that level, repeated cycles do not continue to reduce durability in the same way. Aluminum does not show the same flattening behavior, so avoiding fatigue-related failure often requires larger dimensions and additional weight.



For these reasons, Syncro uses steel for components exposed to loads, vibration and stress, and aluminum for parts such as dividers that do not carry significant loads.

Where possible, Syncro also uses weight-reducing cutouts to remove unnecessary material from selected components, lowering weight while preserving the function and strength required for commercial van use.

This material strategy supports high performance, long-term durability and reduced total weight in commercial van storage systems.