



GRANIT
QUALITY PARTS

SAW CHAINS

PRODUCT BENCHMARK

CUSTOMER INFORMATION

THE FOLLOWING PRODUCTS WERE COMPARED: SAW CHAINS 0.325"

The GRANIT saw chain with part number 55243264 was compared with comparable products from an original manufacturer, an original equipment manufacturer and three European competitors.

COMPARISON OF FEATURES

- » Material composition, hardening and chromium layer thickness on the saw teeth
- » Length of the saw teeth
- » Saw chain deflection and breaking force

TEST RESULTS

MATERIAL COMPOSITION, HARDENING AND CHROMIUM LAYER THICKNESS:

Selecting the right materials is crucial to ensuring the functionality and durability of saw chains. The finishing - which takes the form of hardening and application of a chromium layer - determines the performance and quality of a saw chain.

RESULTS:

For the most part, the material X96CrMoV12 is used for the saw chains. This is an alloyed stainless steel with wear-resistant properties that is well suited for saw chains. These saw chains, which also include the products from GRANIT, have a chromium content of over 11%.

The saw chains from the original equipment manufacturer are made of the wear-resistant stainless steel X100CrMoV5.1. However, they only have a chromium content of around 5%. That is about 50% less chromium than the other products. The lower chromium content has a negative impact on the service life of the saw chain.

The hardening of the saw teeth can be considered equivalent for all manufacturers - in line with the usual tolerances for hardness testers.

The chromium layers, which should be as thick as possible to increase the wear resistance of saw teeth, vary by more than 25% in some cases. With a thickness of 20 µm, GRANIT is in second place. The original equipment manufacturer is in last place.

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Steinbeis-Transferzentrum
Werkstoff- und Bauteil-
prüfung (WBP)

This product comparison was carried out on behalf of GRANIT PARTS by the Steinbeis Transfer Center laboratory.

Manufacturer	Saw tooth hardness values	Saw tooth chromium plating	Saw tooth material
Saw chain 0.325", 1.3 mm GRANIT Part no. 55243264	571HV1	Layer thickness 20 µm	X96CrMoV12 Material no. 1.2376
Saw chain 0.325", 1.3 mm OEM	581HV1	Layer thickness 18.6 µm	X100CrMoV5.1 Material no. 1.2373
Saw chain 0.325", 1.3 mm Original manufacturer	571HV1	Layer thickness 14.6 µm	X96CrMoV12 Material no. 1.2376
Saw chain 0.325", 1.3 mm Competitor I	591HV1	Layer thickness 16.6 µm	X96CrMoV12 Material no. 1.2376
Saw chain 0.325", 1.3 mm Competitor II	581HV1	Layer thickness 19.4 µm	X96CrMoV12 Material no. 1.2376
Saw chain 0.325", 1.3 mm Competitor III	591HV1	Layer thickness 23.1 µm	X96CrMoV12 Material no. 1.2376

Table 1: Hardening, chromium layer and material composition

DETERMINING THE LENGTH OF THE SAW TEETH:

During the tests, the lengths of the saw chain teeth were compared. Digital calipers were used to measure the teeth.

RESULTS:

A comparison of the length of the saw teeth shows that there are differences of up to 1.5 mm.

With a length of 9.2 mm, the original equipment manufacturer uses the longest saw teeth.

The idea that the length of a saw tooth affects the durability or quality of a saw chain is incorrect. The length of the saw teeth is simply a design choice. In fact, a longer saw tooth can heat up much more during operation, and will wear out more quickly as a result. The risk of a saw tooth burning out is increased, which can have negative consequences for the saw chain.

DETERMINING SAW CHAIN DEFLECTION AND BREAKING FORCE:

The deflection provides information about the manufacturing quality. When comparing the measurements on each side, a low difference in deflection values is ideal. If the deflection of a saw chain differs greatly from one side to the other, this is a sign of poor-quality riveting. Chains with this type of riveting can break after prolonged use as the tensile forces act at different levels on each side. The guide bar is also subjected to high levels of wear and tear with poor-quality riveting of this kind.



Image 1: Test setup for measuring saw chain deflection

The breaking force provides information about the durability of the chain in the event of sudden overloading, for example in the event that a saw chain jams. The higher the breaking force, the better.

RESULTS:

The saw chain from GRANIT achieved top results in the breaking force measurements. The products from the other manufacturers also achieved good results.

When it comes to deflection, the chains from GRANIT and the original equipment manufacturer boast the best riveting with a difference of just 2 mm between sides. The saw chains from GRANIT will be able to withstand very high breaking loads even after prolonged use.

The same applies to the guide bars.

On the other hand, differences of up to 17 mm were measured on the chains from the other manufacturers. With a difference of 13 mm, the chain from the original equipment manufacturer also has one of the worst results. Saw chains and guide bars from these manufacturers will have a much shorter service life.

Manufacturer	Breaking force	Saw chain deflection	Saw chain deflection, turned over	Difference in saw chain deflection
Saw chain 0.325", 1.3 mm GRANIT Part no. 55243264	Average: 8.3 kN	35 mm	33 mm	2 mm
Saw chain 0.325", 1.3 mm OEM	Average: 7.73 kN	45 mm	32 mm	13 mm
Saw chain 0.325", 1.3 mm Original manufacturer	Average: 7.4 kN	35 mm	33 mm	2 mm
Saw chain 0.325", 1.3 mm Competitor I	Average: 8.7 kN	47 mm	30 mm	17 mm
Saw chain 0.325", 1.3 mm Competitor II	Average: 8.2 kN	42 mm	32 mm	10 mm
Saw chain 0.325", 1.3 mm Competitor III	Average: 8.03 kN	35 mm	28 mm	7 mm

Table 2: Saw chain breaking force and deflection

CONCLUSION:

- GRANIT saw chains have emerged with top results across all relevant parameters. All other brands demonstrated significant quality differences during the tests.
- In addition to excellent quality (which will still be noticeable after a long period of use), GRANIT also achieved the best price-performance ratio.