



GRANIT
QUALITY PARTS



TAIL HOOK BALLS PRODUCT BENCHMARK

CUSTOMER INFORMATION

TOP AND LOWER LINK BALLS CAT. 3, HEAVY DUTY

The GRANIT top link ball with part number 200120030 and the GRANIT lower link ball with part number 200120037 were compared with comparable top and lower link balls from the market-leading original manufacturer.

COMPARISON OF FEATURES

- Analysis of the material composition
- Structure analysis
- Hardness test

TEST RESULTS

ANALYSIS OF THE MATERIAL COMPOSITION

Tail hook balls are exposed to extreme loads. Wear resistance and load capacity are properties that are fundamentally affected by the choice of material (especially with tail hook balls).

GRANIT uses the same steel as the original manufacturer as the basic material for their tail hook balls.

100Cr6, 1.3505 steel is a high-quality engineering steel that is also used for bearing balls.

This steel is well suited to heat treatment, and boasts extremely high compressive strength and wear resistance.

STRUCTURE ANALYSIS

All of the tail hook balls analysed are heat-treated. The heat treatment has a positive effect on the metallic structure, and results in extreme hardness, very high toughness and durability. There are many potential sources of error when carrying out heat treatment. Incorrect heat treatment can result in metallic structures that break even when subjected to low loads.

- The analysis of the balls revealed that the tail hook balls from both the original manufacturer and GRANIT have a martensitic tempering structure.
- This type of structure is ideally suited to the intended use of the tail hook balls.
- A martensitic structure is extremely hard, tough and durable.
- The heat treatment achieves a very good result for both the GRANIT parts and those from the original manufacturer.

TEST REPORT NO. 2020-01/1219



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

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

HARDNESS TEST

Tail hook balls must be extremely hard as they are exposed to very high point loads. The sheer size and weight of the mounted machinery, and the loads to which the tail hook balls are subjected, mean that the hardening has to be perfect.

- The hardness values of the tail hook balls from both manufacturers were identical (averaged over several tests).
- With values of 571 HV (Vickers hardness), GRANIT and the original manufacturer have proven themselves to be top brands.
- In previous investigations, products from other manufacturers only achieved half the hardness value of these parts.
- As these Heavy Duty tail hook balls are fully hardened, they have a significantly higher compressive strength and wear resistance than surface hardened balls.

SUMMARY OF THE TEST RESULTS

Supplier	Material	Hardness	Comment
Tail hook ball Original manufacturer Identifier: 1	100Cr6 Material no. 1.3505	571HV1	The edge and centre of the ball have the same hardness. The material is fully hardened.
Tail hook ball Original manufacturer Identifier: 2	100Cr6 Material no. 1.3505	571HV1	The edge and centre of the ball have the same hardness. The material is fully hardened.
Tail hook ball GRANIT Identifier: 3	100Cr6 Material no. 1.3505	571HV1	The edge and centre of the ball have the same hardness. The material is fully hardened.
Tail hook ball GRANIT Identifier: 4	100Cr6 Material no. 1.3505	571HV1	The edge and centre of the ball have the same hardness. The material is fully hardened.

CONCLUSION

- GRANIT Heavy Duty tail hook balls are premium products.
- The professional cooperation between the product management team, the quality control laboratory and the supplier pays off for our customers.
- GRANIT offers the highest quality (normally only achieved by established premium manufacturers) at fantastic prices.
- The GRANIT range includes a Heavy Duty version of the top and lower link balls of Cat. 1-4, meaning that everything can be obtained from a single source.