



GRANIT
QUALITY PARTS



THICKET MULCHING BLADES

PRODUCT BENCHMARK

CUSTOMER INFORMATION

THE FOLLOWING WERE COMPARED: 2-TOOTH THICKET MULCHING BLADES

The GRANIT thicket mulching blade with part number 13271334 was compared with a comparable product from an original equipment manufacturer.

COMPARISON OF FEATURES

- » Material analysis
- » Hardness test
- » Bending test according to ISO 5718/2002

TEST REPORT NO. 2020-01/1281



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

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

TEST RESULTS

TOPIC 1: MATERIAL ANALYSIS

The material analysis determines whether the correct material has been used for the product's intended purpose. It is carried out by means of optical emission spectroscopy, which determines the amount of individual elements such as carbon and manganese and their concentration as a percentage. This analysis can then be assigned to a corresponding material.

RESULTS OF THE MATERIAL ANALYSIS:

The GRANIT thicket mulching blade is made of 30Mn4 steel with material number 1.1146. The original equipment manufacturer uses 34CrNiMo6 quenched and tempered steel with material number 1.6582. Both materials are suitable for manufacturing mulching blades thanks to their high strength and toughness.

TOPIC 2: HARDNESS TEST

The hardness test should indirectly provide information about the expected wear behaviour. The Rockwell test method (HRC) was used here. Overall, a good brittleness to toughness ratio should be aimed for. This is because parts that are too hard will be more brittle.

RESULTS OF THE HARDNESS TEST:

The following hardnesses were determined:

GRANIT: 42.5 HRC

Original equipment manufacturer: 54.1 HRC

According to ISO 5718/2002, a hardness of at least 38 HRC should be achieved, although no maximum values are specified. Both mulching blades have a hardness well above this minimum value. The relationship between brittleness and hardness is illustrated by the following bending test.

BENDING TEST ACCORDING TO ISO 5718/2002:

During this test, the blade is bent by means of a mandrel between two support points at a defined distance from one another. Depending on the thickness of the material, a defined bending angle must be achieved at which no cracks are visible in the material. In this case 45° must be achieved.

RESULTS OF THE BENDING TEST:

The three mulching blade samples from GRANIT show no cracks at a bending angle of 45°, and therefore pass the test without any problems.



Figure 1: Side view of the three GRANIT samples after the bending test. No cracks visible.



Figure 2: Front view of the three GRANIT samples after the bending test. No cracks visible.

All three sample blades from the original equipment manufacturer show cracks at a bending angle of less than 45°. It must be assumed that the blades are too brittle as a result of the high hardness value.

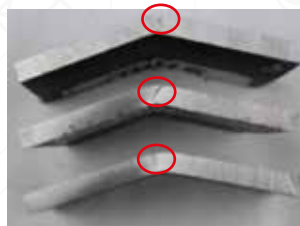


Figure 3: Side view of the three samples from the original equipment manufacturer after the bending test. Cracks visible on all samples.



Figure 4: Front view of the three samples from the original equipment manufacturer after the bending test. Cracks visible on all samples.

CONCLUSION:

Both GRANIT and the original equipment manufacturer use a material that is suitable for the production of thicker mulching blades. However, the hardness test shows that the manufacturers aimed for different hardness values when tempering. GRANIT focuses on greater toughness here, which had a positive impact on the bending test results.

In practice this also means a significantly lower risk for the user as the shearing-off that can occur on contact with solid objects, for example, is reduced. The trade press regularly draws attention to the greater risks associated with using accessories of insufficient quality.

GRANIT thicker mulching blades are therefore safer and much more stable, making them the right choice for garden and forestry applications.