



LESS IS MORE

Why are multi-disc sanding machines more popular now?

The trend in wood flooring for the last several years has been a natural surface appearance. Also the pressure on quality due to larger windows and better lighting increased the demand tremendously (fig. 1).



Fig. 1 Strip flooring sanded with the TRIO and oiled (natural).

This is where the **TRIO** a **REAL** multi-disc machine and **PST®** come into the game. Read below why ...

TIME NEEDED TO CREATE AN OILED SURFACE

Single-disc machines are **NOT** designed or intended for fine sanding. To achieve perfect surface quality a significantly longer amount of time is required. Due to the large sanding disc the pressure and abrasion are much less.

Manufacturers of single-disc machines recognized these problems and several of them started offering multi-disc plates as an optional attachment (fig. 2).

The attachments are not a real solution and the problem remains the same.



Fig. 2 Single-disc machine with a multi-disc attachment.

Comparison of different multi-disc concepts with up to 6 sanding discs

In a real world project we tested the differences between a converted single-disc machine and the **TRIO**, a **DEDICATED** multi-disc sanding machine.

We compared two machines from two different manufacturers with the TRIO in a real test according to our **PST®**-Method. The sanding tests were carried out on a 10 m² / 108 sq. ft. **PST®** training area.

The two single-disc machines in this project (machine A, B) were equipped with a four-disc attachment, in which the individual inflexible mounted sanding disc was driven by an outer gear ring. For each sanding operation (cut), the time required was recorded (fig. 3):

Grit, (LÄGLER® Zircon)	Machine A Time consumption of each cut in [min]	Machine B Time consumption of each cut in [min]	LÄGLER® TRIO Time consumption of each cut in [min]
60 Criss Cross Cut	14:21	15:15	11:45
60	06:34	07:31	06:18
80	08:08	09:27	08:25
100	13:33	09:11	08:13
120	14:06	10:09	07:41
Total	56:42	51:33	42:22

Fig. 3 Tests according to the **PST®**-Method with different machine concepts, performed with LÄGLER® abrasives.

Advantages of Flexible suspended sanding discs

As seen in the individual times in fig. 3 the machines of the other two manufacturers need significantly more time than the TRIO, especially during the fine sanding. Due to the flexibly suspended sanding discs the TRIO sands way more consistent and evenly as the other two machines.

With machine A, it was even necessary to sand some areas twice since traces of the previous sanding operations (cuts) were still visible. The inflexible suspended discs of the four-disc sanding attachments didn't adjust themselves to the floor.

Overall, the TRIO achieves a time savings of approximately **25%** compared to machine A and about **18%** compared to machine B (as seen in fig. 3, line "**Total**"). As an added feature, TRIO also produces a flat floor.

MEASURING ABRASION

To determine the amount of material removed, the wood dust was weighed after each sanding operation (cut, fig. 4). This was an easy process with the TRIO because of the integrated dust bag.

Since the multi-disc machines require an extra vacuum cleaner, the amount of wood dust inside the bag was weighed after removing it with substantial effort.

The 36 m² / 388 sq. ft. mosaic parquet testing area was specially designed for such tests. So the results can be compared, if necessary with multiple measurements.



Fig. 4 Weighing of the TRIO dust bag after sanding.

Comparison of abrasion rates

Even with abrasion rates that are lower than drum or belt sanders, these measurements show that even with coarse grits a large amount of material is removed. This confirms the **PST®** theory that the TRIO works well even with coarse grits.

Machine Abrasive Diameter	Machine type, disc suspension, performance	Grit	Removed material in total
Machine A, LÄGLER® Zircon, D = 150 mm / 6 inch	Single-disc machine with four-disc attachment, inflexible suspension, 1500 watts	40 / 60 / 80 / 100 / 120	2,94 kg / 6.48 lb
Machine B, LÄGLER® Zircon, D = 150 mm / 6 inch	Single-disc machine with four-disc attachment, inflexible suspension, 1800 watts	40 / 60 / 80 / 100 / 120	2,60 kg / 5.73 lb
LÄGLER® TRIO, LÄGLER®-Zircon, D = 203 mm / 8 inch	Three-disc machine, flexible suspension, 1800 watts	40 / 60 / 80 / 100 / 120	3,90 kg / 8.60 lb

Fig. 5 Sanding tests with multi-disc machines and LÄGLER® abrasives.

Increased abrasion with higher sanding pressure

In fig. 5 the results of testing. The TRIO reached very high material removal rates, **25%** higher than the competitors. LÄGLER® application engineers were not surprised at all by such a large difference, the higher weight ensures a higher sanding pressure along with the great performance and power of the TRIO results in high removal rates in comparison to the competition.

Furthermore, it is noticeable that the less powerful machine of manufacturer A was just a little more than machine B. Measurements showed that the sanding pressure of machine A was little higher than machine B.

COMPARING ABRASIVES

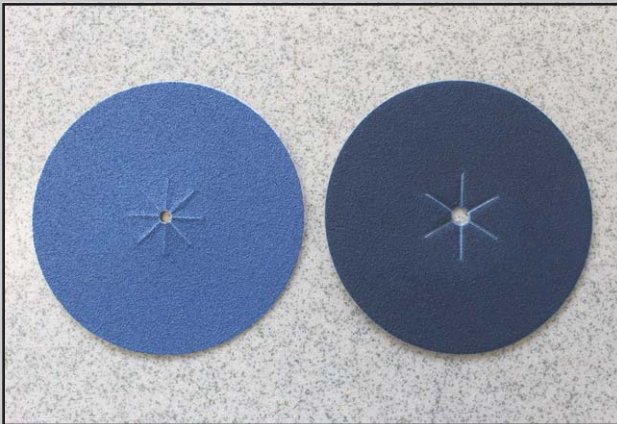


Fig. 6 The two different types of abrasives tested.

Testing the machines is one part of the equation. The sanding machine is important for the surface finish, while the abrasive material determines the actual removal rate.

Therefore LÄGLER® abrasives were compared with one of the other machine manufacturers (fig. 6). The abrasive experiments were performed with the previously tested single-disc machines.

The test area was again a 36 m² / 388 sq. ft. oak mosaic floor exactly the same that was used for the machines. The difference between the abrasive types was mainly the composition of the abrasive grain mixture.

Grit	LÄGLER® Zircon Machine A	ZirconMix Machine A	LÄGLER® Zircon Machine B	ZirconMix Machine B
40	1,16 kg / 2.56 lb	1,02 kg / 2.25 lb	1,16 kg / 2.56 lb	0,96 kg / 2.12 lb
60	1,26 kg / 2.78 lb	1,04 kg / 2.29 lb	1,16 kg / 2.56 lb	0,86 kg / 1.90 lb
80	0,98 kg / 2.16 lb	0,64 kg / 1.41 lb	0,78 kg / 1.72 lb	0,48 kg / 1.06 lb
100	0,40 kg / 0.88 lb	0,44 kg / 0.97 lb	0,40 kg / 0.88 lb	0,40 kg / 0.88 lb
120	0,30 kg / 0.66 lb	0,30 kg / 0.66 lb	0,26 kg / 0.57 lb	0,28 kg / 0.62 lb
Gesamt	4,10 kg / 9.04 lb	3,44 kg / 7.58 lb	3,76 kg / 8.29 lb	2,98 kg / 6.57 lb

Fig. 7 Abrasive comparison with foreign machines.

Performance of different abrasive types

Due to the very high zirconium content LÄGLER® abrasives achieved up to **20%** more material removal than the zircon mix of manufacturer A, depending on grit size and machine (see fig. 7). The differences remained the same when sanding with the single-disc machine from manufacturer B.

This shows the important role of abrasives in the removal rates. **20%** more material removed using higher quality abrasives with corresponding time savings.

Learn more about our abrasive tests, check out **LÄGLER® DIREKT 12 / 2012:**

Abrasive tests by LÄGLER®

CONCLUSION

Keep it real! Go with the original!

With high expectations regarding wood floors these days and especially with the increasing demand for oiled floors, a single-disc machine cannot keep up with the TRIO a pure and real multi-disc machine.

Especially with regard to the higher removal rate of the TRIO in comparison to the competition.

Modified single-disc machines don't compare.



Fig. 8 Change of abrasive at TRIO.

High quality abrasives

The project shows that abrasives play an important role in removal rates. Same grit sizes run on the same machine at a nearly equal sanding pattern, but removal rates differ greatly depending on the abrasive composition.

With the high zirconium content in the grain mixture of LÄGLER® abrasives, up to **20%** more material is removed depending on the machine.

DUE TO RECENT EVENTS!

LÄGLER® naturally does a lot of sanding during **PST**® training or during the testing of machines in different projects. Great care is taken to comply with the local regulations in regards to wood dust safety. How important this is was recently apparent in an incident at the **PST**® Training Center.



Fig. 9 Closed waste containers used for wood dust disposal.

Better safe than sorry

PST® trainings result in a lot of sanding dust that is collected in garbage bags that are sealed airtight, then disposed in the outdoor area in front of the **PST**® Training Center in approved containers (fig. 9). During **PST**® training on October 6th, 2015 oiled and stained surfaces were sanded.

The next morning around 06:30 a.m. a LÄGLER® staff member noticed a small cloud of smoke coming from the area where the waste container was (fig. 10).

The cause was determined to be that the stain and oil mixed with the wood dust combusted spontaneously. The plastic container for the storage of sanding waste melted down during the night.



ADVENT, ADVENT THE CONTAINER MELTS!

The most important lesson from this incident

Wood dust and any other waste that may catch fire **always** should be stored outside in a safe area in a closed non-combustible container in case of fire.

Never leave the dust bag on the machine!

Even at LÄGLER® things like this can happen. It is important to be prepared and to comply with applicable regulations.



Fig. 10 Remains of the molten container in the outdoor area.

Exhibitions

DOMOTEX 2016 will be held from January 16th - 19th, in Hanover. Visit our booth B43/1 in hall 7.
Phone: 0049-(0)7135-9890-0

DOMOTEX

The internationally significant exhibition **NWFA Wood Flooring Expo** takes place April 27th - 30th, 2016 in Charlotte / North Carolina, USA.
LÄGLER® is like every year on the pitch.



MERRY X-MAS AND A HAPPY NEW YEAR 2016!

For the wonderful cooperation and trust placed in us, we would like to thank all of you very much and we are looking forward to our ongoing beneficial partnership in the New Year.

We wish you and your family Merry Christmas, relaxing holidays. For 2016 health, happiness and many successes in business and family life.

Karl Lägler
with family and staff

AMNESTY
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Donation to Amnesty International

Every year instead of gifts we support the charitable work of the human rights activities of Amnesty International Germany.

