

# Let's learn something about the adhesives for laying parquet.

## What is density and what is it for?

Franco Bulian

The adhesives for laying parquet are chemical products that are formulated by mixing together various substances which, all together, serve to confer the necessary properties to the adhesive itself whose function, let's remind it, is to join the parquet to the substrate.

The information on the characteristics of the adhesive and the instructions for its correct use are described in the technical data sheet, a very important document that is always associated with the purchased adhesive. Unfortunately, as often happens in other areas of our daily life (see for example the instructions of the new smartphone just bought) we forget or neglect to read, for haste or simple laziness.

This bad habit can however be a source of serious problems in relation to incorrect use of the product and spending a few minutes to read it and maybe to think about it can be very useful to avoid possible small and big problems.

In these brief notes we would like to deal in particular with the "density" (or volumetric mass) a technical datum almost always present in the tables of the technical sheets where the characteristics of the various adhesives are described. This value, a two-digit number with a comma in between, appears almost insignificant but has in fact serious influence on the use of the product and also on its direct and indirect cost, the last being clearly related to its yield.

First of all, we should remember what density is. Density is simply the ratio between weight and a volume of a certain substance. Water, for example, has a density of 1 because one liter of this substance weighs exactly 1 kilogram and is denser than oil as the latter floats on water (a liter of oil weighs less than a liter of water).

On the other side oil is more viscous, that is, it flows more slowly from the bottle when we pour it. Unfortunately, in common language we often confuse the term density with that of viscosity.

Having established what density is, being the weight of one liter of adhesive, let's see what values we can expect in the daily practice of laying parquet.

In the composition of these chemicals a fundamental role is played by the so-called "mineral fillers". The fillers, in granular form, are normally made of calcium carbonate being contained in considerable quantities (they also reach 70% of the total weight of the adhesive) and having substantially a filling and reinforcing function.

The fillers are very "heavy" and therefore greatly influence the density of a parquet adhesive that abundantly exceeds the unit. Which repercussions therefore has such a high density on the use of the adhesive?



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### DENSITY AND YIELD

Let's start with a practical consideration; the adhesive is purchased by weight but in practice it is applied by volume. Having this in mind, suppose you have to apply the adhesive in a 100 m<sup>2</sup> apartment using a spatula that determines the application of 1 l for each square meter of laying surface. The calculation is easy, on that floor we will ultimately spread 100 liters of adhesive.

If we use an adhesive that has a density of 1.3 kg/l it means that we have to use 130 kilograms (just multiply the density by the amount of adhesive 1.3 kg/l x 100l) which means we will have to buy 9 cans of 15 kg (9 cans x 15 kg = 135 kg).

What happens if, however, we choose a different adhesive (which maybe costs a little less) but that has a higher density,

for example equal to 1.8 kg/l?

If we read the technical data sheet and if we did a very simple calculation we would immediately realize that in this second case we will need 180 kg of adhesive that correspond to 12 cans of 15 kg.

Density therefore has a significant influence on the adhesive consumption (we have calculated that in the second case we need 50 kg more), on the costs of the operation and ... on the back of the installer who, because of this number, will have to bring in the yard 3 more adhesive cans!

### DENSITY AND MIXING

In addition to yield, another factor where density plays a key role is the mixing of adhesives. As we know, in fact, some adhesives used for laying parquet are two-component and to use them you must necessarily mix the contents of the two cans in the provided proportions. The proportions are expressed in terms of weight, so the ratio 9:1 basically means that we have to mix 9 kilograms of adhesive with 1 kilogram of hardener. The problem does not exist if we use all the adhesive as the manufacturer already prepares the two components in the right dose. The situation is different if we need only a part of the products contained in the cans and we must therefore prepare the correct proportions.

If we have a weight scale there is no problem. To prepare 1 kg of product we will take 0.9 kg of adhesive and 0.1 kg of hardener, keeping the required ratios correctly (9:1).

However, if we try to make the proportion by volume, perhaps trusting our infallible "expert eye", we risk making a very big mistake.

In this case, in fact, the possible risk is to mix 900 ml of adhesive with 100 ml of hardener since the estimate of the eye can only be volumetric. If the adhesive density is 1.8 kg/l and that of the hardener is 1 kg/l, it means that we are mixing 1.6 kg with 0.1 kg. At this point the ratio between the two components is completely wrong, since there is much less hardener (almost half) of what we would really need.

Therefore, we are seriously risking not producing a complete hardening of the adhesive that could remain semi-liquid without developing adequate adhesive and cohesive properties.

In any case, if we still want to proceed with a volume dosage perhaps using simple graduated containers, we should therefore do some calculations considering the density of the two components in order to obtain the correct mixing ratio.

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Perhaps, the use of a weight scale costing few euros is much simpler, more practical, faster and avoids above all calculations and concerns.

With these few lines we hope, in conclusion, to have tickled the curiosity and interest in these boring documents that are called technical data sheets.

Maybe a different title like “everything you wanted to know about adhesives and you never dared to ask” could be more attractive, but we believe that we will have to convince ourselves that reading and thinking on what we do is also “work” and it is not at all, time subtracted from the pose, really!

November 2018

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