Stains on light-coloured quartzite: What to do?

Quartzite as kitchen countertops?

Quartzites are more stain-resistant in relation to granites and are therefore increasingly used as kitchen countertops. While these stones are rarely used in kitchens in Europe, quartzite kitchen countertops from Brazilian quarries (White Macaubas, Himachal White, etc.) are very popular in the USA. In the past, however, edge staining could be observed on light-coloured, already installed countertops after a short time (approx. six to 24 months). These phenomena and possible stain sources were investigated in more detail by AKEMI's application technology department by means of elaborate test series with numerous quartzite types.

Properties of quartzites

Moisture gets into the countertops through various cutting and drilling processes (e. g. water jet cutting). Normally, thanks to their porous structures, natural stones dry by allowing the penetrated moisture to rise vertically and horizontally to the stone surface and then to evaporate. Only when the stones are absolutely dry, a subsequent protective treatment can be started. However, quartzites behave differently. Due to their very dense, finely developed pore system in the stone layers, moisture often only penetrates via the cut edges, resulting in a visible darkening of the edge surfaces (see Fig. 1).

Fig. 1: Edge staining caused by absorption of moisture after water jet cutting

The absorbed water can hardly rise up vertically to the stone surface due to the strong capillary forces caused by the fine pores. Basically, the smaller the pore size, the more pronounced the capillary force is. In addition, many quartzites are resin coated on the surface already on the factory, which complicates the process described above even more. The moisture can therefore only leave the stone very slowly in the direction of the cut edge. As a result, quartzites require a comparatively higher drying effort (e. g. through active drying in drying ovens or hot air drying), which can also last longer (several days or even weeks).

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The problem of edge staining

Kitchen countertops and bathroom vanity tops that had already been installed showed a similar appearance, but only after about six to 24 months (see Fig. 2 and 3).

Fig. 2: Stain pattern at the cut surfaces in the sink area

Fig. 3: Edge staining occurring after a few months

The tests showed that the darkened edges were most likely caused by regular cleaning. Wiping cloths soaked in detergent and dissolved cooking oils (kitchen) / cosmetic oils (bathroom) are often used to clean the surfaces and edges. While the surfaces of quartzites are usually resin-coated and thus almost impermeable to water, moisture and dissolved fat components can penetrate the stone at the untreated edges. With each cleaning process, small amounts of a water/oil/surfactant mixture penetrate into the stone and accumulate there. If a critical quantity of this so-called emulsion is reached, edge staining occurs. The series of tests carried out by the application technology department with numerous cleaners showed that these stains can hardly be removed chemically, which means that they must be classified as permanent at the present time. Although in some cases the stains could be removed by heating with a burner flame, this method involves high risks regarding the formation of cracks or discolouration on the stone surface (especially for the resin-treated stones).

Another part of the test series dealt with the prevention of this type of staining. For this purpose, several months of use of the quartzite countertops were simulated by storing them in a water/oil/surfactant mixture. Parts of the slabs were previously treated with trusted impregnations, including Stain-Repellent Nano-Effect and Pearl Impregnator. The formation of stains was then examined. The above impregnations offer relatively good protection against edge staining. The Transformer MAX achieved by far the best effect with regard to this problem. Due to its special combination of active ingredients, the product was able to significantly reduce stain formation in the trials and, in the best case, even prevent it (see Fig. 4).

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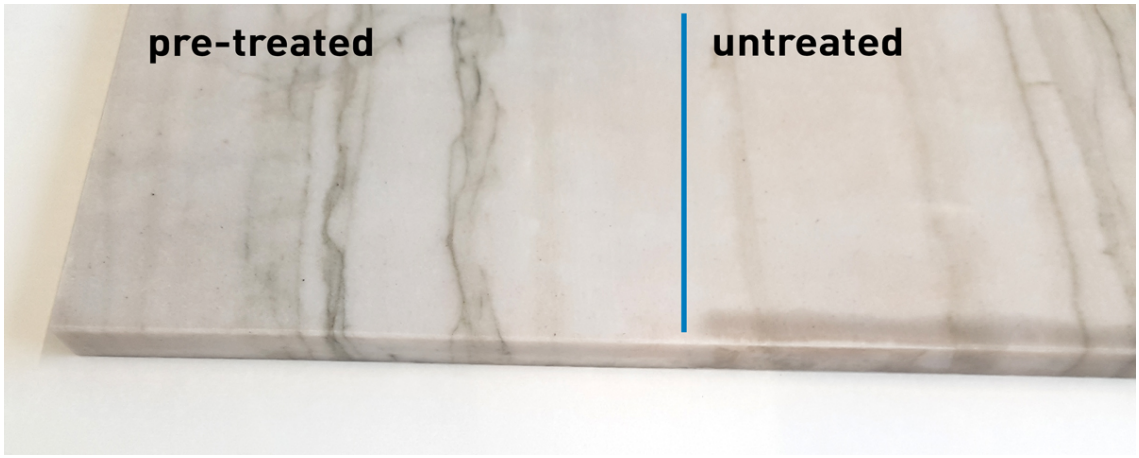

Fig. 4: Comparison of staining of the edge pre-treated with Transformer Max vs. untreated edge

Application recommendation

Despite the pleasing test results, it must be emphasised that impregnations do not offer 100 % protection against the problem of edge staining. Before protective treatment, it is important to dry the stone thoroughly, such as with the methods already described in the above section. In addition, the impregnation should be repeated regularly (approx. once a year) on the surfaces and edges to achieve the best protective effect and to minimise the risk of edge staining as far as possible.

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