



IMPROVE ANY SPACE BY STARTING WITH THE FLOOR

The benefits
of carpet

THE BENEFITS OF CARPET

FACT

Carpet is the best selling floor covering in Europe, at 835 million square kilometres per year.

Forty-five percent of all floors sold in Europe are carpet. Yet not everyone is completely positive about this flooring. This white paper gives an insight into the benefits of textile floor coverings, while also dealing with a number of stubborn preconceptions regarding this type of flooring.





AESTHETICS

FACT Carpet reinforces the identity of an organisation and contributes to the right atmosphere in a room.

Aesthetics is one of the basic needs of mankind and is timeless. In fact, according to psychologist Abraham Maslow (1908-1970), aesthetics plays an important role along with the primary basic needs such as food, shelter and safety. It is also very important in determining the degree of satisfaction we feel regarding our lives. People not only enjoy surrounding themselves with beautiful objects, but also use them as a form of self-expression.

Aesthetics is equally important in the business community. The design and layout of an office is an essential component of the so-called corporate identity, which speaks volumes about the values, norms, standard of quality and atmosphere within the company. A pleasant working environment not only

evokes confidence among potential customers but also increases employee productivity.

When it comes to the floor, carpet would seem to be a logical choice, as no other flooring offers so many possibilities in terms of texture, colour and design when looking to express your personality or identity. Carpet also adds atmosphere and a sense of warmth and comfort, while combining easily with wood, vinyl, linoleum or stone. The result is an attractive mix of floors. Warm 'cosy' carpeted areas for meeting up or relaxing. And more businesslike and functional parts of the building with hard floors, such as a hall, kitchen or exhibition space.



ACOUSTICS

FACT Carpet absorbs more sound than hard floor products.

Noise disturbance is a major problem in the Western world, in terms of noise caused by neighbours, for example. In fact, 23% of all adult Dutch people struggle with noise from neighbours. (Source: Dutch foundation for noise annoyance – Nederlandse Stichting Geluidshinder – 2004). Of all German people, only 10% doesn't hear their neighbours (Source: German Federal Environmental Agency, UBA), while noisy neighbours account for 75% of all complaints received by councils

in the United Kingdom. A further source of noise pollution comes from traffic and construction work, with one in four adult Dutch people hindered by traffic noise. (Source: Dutch foundation for noise annoyance – Nederlandse Stichting Geluidshinder – 2004). In France, this is even one in two people. It results in great annoyance. More than 80% of the German people feel angry when something disturbs their peace. (Source: German Federal Environmental Agency, UBA).



Carpet provides excellent insulation.

Noise hindrance from neighbouring houses can result in all kinds of annoying and harmful consequences. Due to the noise not being controllable, people feel less at ease in their home environment. The effect this has on health and welfare varies per person and will depend on their sensitivity, health profile and degree of control of the noise problem, for example. Non-auditive effects of this kind of noise include sleep disorders, stress, activity disturbance, lack of concentration, annoyance, emotional reactions and other health problems. (Source: Noise and health in the urban environment Stansfield SA, Haines MM, Brown B – 2000). A Berlin based study has shown the chance of heart failure to be 30% higher when people live on a busy street. (Source: UBA, Press Release 19/2004). Background noise and noise nuisance also decreases productivity at work while disturbing concentration, and at high levels can even cause physical pain and hearing loss.

Such problems can be prevented to a certain extent through the right choice of flooring. Carpet is the most effective insulator and absorbs much more sound than hard flooring. On top of that, the contact sound is considerably lower and the so-called reverberation time is half that of hard floors. Carpet reduces contact sound by 25 to 34 dB. In comparison: laminate does so by only 1 to 6 dB. And that can make the difference between noise hindrance and peace and quiet.

Sound transmission takes place in various ways, though nearly 60% of all complaints about noise are due to the sound of people walking. Textile flooring absorbs more noise caused by neighbours or colleagues than any type of hard floor, and carpet also reduces the noise produced at home and in the office, and absorbs reflective noise from walls and furniture. Carpet therefore creates an atmosphere for easy talking, listening, working and relaxation.

THERMAL COMFORT

FACT In order that we feel comfortable, the temperature difference between our heads and feet must be maximum 2.5 °C.

Thermal comfort is the term used to express the comfort of a building, and actually refers to the perception of the temperature rather than to the temperature itself. People tend to feel comfortable when they have warm feet, for example. Studies have also shown that a 'comfortable temperature' varies strongly from person to person and depends on factors such as heat loss, acclimatisation capability, the colour of our surroundings, noise and the possibility of prevention of that noise.

Carpet improves the physiological and psychological perception of thermal comfort. It does in itself feel warm, and the surface temperature of carpet is indeed considerably higher than that of a hard floor, due to the reduced heat discharge. And of course carpet gives a soft, friendly and cosy atmosphere, a more comfortable option on which to work or relax.





AIR QUALITY

FACT Healthy air boosts productivity and reduces absenteeism through illness.

Improved insulation of buildings offers many advantages in terms of sustainability, but unfortunately it often also means that there is less fresh air inside. The concentration of pollutants in the building therefore increases, and is problematic because people are spending more and more time indoors.

Interior air pollution is a complex mixture of fibres, tiny particles, radon gas, microbiological substances, chemicals, allergens, cigarette smoke and combustion products. Further,

many buildings suffer from excess formaldehyde gas and Volatile Organic Components (VOCs). These are extremely volatile and strongly smelling substances used in paints and glues for example, but also in floors and furniture, which are released following their installation.

They can result in all kinds of problems, such as nasal, sinus and airway problems, including asthma and other respiratory issues.



Luckily, people can influence their home environment and (to a lesser extent) their working environment, and can therefore make conscious choices. Carpet traps dust, so that less of these particles and pollution are left in the air. Mould growth – which is another part of the problem influencing air quality – can be easily kept under control by regular cleaning. Carpet has extremely low VOC emissions. In recent years, all members of the GUT (Association of the European Carpets Industry for Health and Environment) have considerably reduced the use of substances which produce VOC emissions. GUT members comply with the most stringent European norms such as the German AgBB.

To conclude, we must note that the dust entrapment qualities of carpet vary according to the type of carpet, though the differences are marginal. Of course, the carpet which traps most dirt will also retain the most after vacuuming.

ALLERGIES

FACT

One in four people in the EU has an allergy.

Asthma and allergies have been on the up over the past 50 years, mainly because we spend more and more of our lives indoors, where we have much more contact with allergens than outdoors. This results in asthma and asthma related problems, especially among young children playing on the floor.

An allergy is a hyper-reaction of our immune system to foreign substances. Although many people regard an allergy to be caused by synthetic chemicals, it is actually more often a reaction to natural substances. These are mainly pollen proteins, foods or bee stings, while cat, dog and horse hair can also contain allergens.

We are as yet unsure what actually causes an allergy, and new scientific work suggests that allergies are more complex than ever imagined. Recent studies resulted in the following hypotheses on the development of allergies and asthma: excessive hygiene, changes in the use of antibiotics, diets, housing, air pollution, genetics and exposure to allergens. (Source: Royal Society of Edinburgh – 2003).



Stubborn preconception

Textile floorings are often cited in relation to allergies. However, all the negative arguments used against carpet had been proven to be incorrect. A Swedish study, for example, shows the total number of allergies to have tripled between 1975 and 1995, despite 70% of carpets having been removed from bedrooms and replaced by hard floors in that same period. (Source: Swedish Institute for Fibre and Polymer Research).

HOUSE DUST MITE

FACT

An average mattress is home to approximately 2 million house dust mites.

The house dust mite, and particularly its minute faeces, is held responsible for certain allergies and asthma. Once again, textile floorings are said to be partly to blame: carpet is apparently an effective breeding ground for the house dust mite.

As mentioned above, recent studies have suggested that allergies and asthma are complex illnesses, and the house dust mite is but one of the possible causes. Moreover, it is not the house dust mite itself but its faeces which cause asthma or allergies when inhaled.

Ventilation helps

In order to thrive, house dust mites require a certain temperature and humidity. They grow optimally at temperatures between 21.1 and 26.6 degrees C and a relative humidity of 65 to 75%. Other conditions can result in a reduction of mite growth, however. Relative humidity of 40 to 50% is normal and comfortable for people but is too dry and uncomfortable for mite. Extremely well insulated houses and reduced ventilation tend to create very favourable conditions for the house dust mite's development. The problem can be quickly solved by ventilating well, and particularly in the bedroom where sweating in bed results in high humidity.

A German study has shown that the conditions in Northern Europe are actually extremely unsuitable for the house dust mite, yet it is here that carpet is labelled as being the cause of the problem. In Southern Europe, where the mite can even survive on hard floors and tiles, no problems are ever reported. (Source: Bronswijk J.E.M.H. bestelwagen, Schober G. Geoklimatische Verteilung von Innenraumallergenen. In: Jorde W., Schata M., eds. Mönchengladbacher Allergieseminar Band 5. Innenraumallergene. Dusteri-Verlag, München-Deisenhofen. 1993: 69-84).

Carpet reduces inhalation

Carpet is not the ideal habitat for house dust mites. In fact, the house dust mite can easily be kept under control in textile flooring if there is regular ventilation and effective cleaning. Carpet holds on to the allergen until it can be vacuumed, thus keeping the particles from being inhaled. And so carpet actually improves the quality of life of anyone with allergies. On hard surfaces on the other hand, the allergens are easily launched into the air as soon as there is a draught or someone walks across the floor.

House dust mites are hardly ever found in offices. A comparative French study of textile flooring in 27 randomly selected offices and 30 bedrooms showed that exposure to house dust mites in offices is not likely to form a risk for employees. (Source: V. Freund, F. Lieutier-Colas, M. Ott, A.Vérot, G. Pauli, F. De Blay – Hôpitaux Universitaires de Strasbourg, France – 2002).



PARTICULATE POLLUTION AND ENDOTOXINS

FACT Carpet ensures that people inhale less dust particulates.

Particulate pollution is a major problem for people suffering from allergies, as its inhalation causes irritation, especially in people with weak lungs. Moreover, other pollutants such as allergens and endotoxins become attached to the particulate pollution and can penetrate deeply into the lungs. Endotoxins are bacterial toxins which in turn can result in allergic reactions.

Particulate pollution can cause illness and diseases. The inhalation of floating particles can thicken the blood, for example, and increase the risk of a heart attack. (Source: Deutschen Allergie- und Asthmabundes e.V. (DAAB) and Gesellschaft für Umwelt- und Innenraumanalytik (GUI Mönchengladbach) – Dr. Dipl.-Ing. Andreas Winkens).

Less dust particles

When compared with other flooring products, carpet has the benefit that it holds on to the dust so that less particulates can be inhaled. Thorough and regular vacuuming will ensure removal of the particulate pollution. Deutschen Allergie- und Asthmabundes e.V. (DAAB) and the Gesellschaft für Umwelt und Innen raumanalytik have conducted a study in 100 houses. Their main conclusion was that the risk of large volumes of fine dust particulates in the air increased in rooms containing hard surfaces, and decreased in interiors fitted with carpet.

(Source: Deutschen Allergie- und Asthmabundes e.V. (DAAB) and Gesellschaft für Umwelt- und Innenraumanalytik (GUI Mönchengladbach) – Dr. Dipl.-Ing. Andreas Winkens).

VOCS

FACT Carpet only emits an extremely small and harmless amount of VOCs in the first few weeks.

Volatile Organic Components (VOCs) are a collection of hydrocarbon compounds which evaporate easily. Well-known examples are fuels and solvents such as hexane, styrene, toluene, as well as softening agents and fire retarding agents. Some VOCs are toxic and are detrimental to human health.

There have been regular reports of incidents in recent years, whereby health problems have been attributed to VOCs: at home, in the office or in other buildings. These cases have been defined as Sick Building Syndrome (SBS) or a Building Related Illness (BRI). Studies have shown the materials used in the building to play an important role in the occurrence of SBS or BRI. Carpet covers a relatively large surface area of a room, and some chemicals used in the production process can be released into the air. The best ways of minimising the VOC volume of a carpet are to monitor and reduce the harmful and volatile chemical substances.

No air pollution by carpet

Over the past 15 years, carpet producers united in the GUT (Gemeinschaft umweltfreundlicher Teppichboden e.V) have therefore consistently reduced the VOC content and systematically analysed VOC emissions. Textile floorings produced nowadays must



comply with the strictest GUT testing criteria, and do not contribute to air pollution in any way. Carpet only actually emits an extremely small and harmless amount of VOCs during the first weeks of being laid. This then stops completely. All the data and specifications can be found at www.gut.eu, as well as a list of the substances now forbidden by the GUT for use in carpet.

INSTALLATION, CLEANING AND MAINTENANCE

FACT 86% of the life cycle costs of a floor lies in its maintenance.

All floors require regular cleaning, and carpet is no exception. Although the costs of carpet maintenance seem to be significant, textile flooring is actually more easily cleaned in practice when using the right brush and vacuum system, so that it is quicker to maintain than other types of flooring. Hard floors require brushing, mopping, polishing, stripping and waxing. Carpet also requires less chemicals for cleaning and maintenance. Daily vacuuming and removal of any stains is essential of course, along with maintenance and thorough cleaning from time to time. When it comes to maintenance and cleaning hours, carpet is clearly the most economical choice. Check out this study by www.james.nl, for example: 'Maintenance of occupied area floor coverings'.

Flexibility

The installation of new flooring requires investment, and carpet is no exception. However, carpet does have its advantages, especially in terms of flexibility. It is easy to cut, lay and combine with other types of floors. What's more, there are a number of different laying methods in various price categories, while it is easily laid either loose or using tape or Velcro. Damaged tiles can be easily replaced when using such simple fixation methods.

Energy saving

Energy prices are increasing and will probably continue to do so in the future. Carpet is a first class thermal insulator and helps keep fuel bills down, with textile flooring preventing a great deal of heat being lost through the floor. The insulation value of carpet is 10 times higher compared to a hard flooring, and varies per type of fibre and pile height.

(Source: www.milieucentraal.nl/onderwerp/set?onderwerp=Vloerbedekking&onderdeel=Tapijt#Tapij).

Carpet not only feels warm but its very low conductor value means it stays warm for longer. The surface temperature of walls and floors is one of the factors which influences our temperature perception. At a surface temperature of 16 degrees Celsius, a room temperature of 23 degrees Celsius is required in order to enjoy thermal comfort. This room temperature can be reduced to 21 degrees Celsius if the surface temperature is increased to 18 degrees Celsius, without the users perceiving a change in temperature.



SUSTAINABILITY

FACT The carpet industry of the GUT members is becoming increasingly sustainable.

Sustainability is the norm by now and is an important issue in society, politics and the corporate community. It encompasses a complete range of principles of course, such as environmental protection and sustainable use of natural resources. A driving force for institutional and innovative reforms, it has changed the attitudes of entrepreneurs and consumers for good.

The carpet industry is also contributing to a healthy planet, and GUT manufacturers have made great progress over the past 15 years. The factories tackled the air pollution problem in the early 1990s, while compliance with the strict GUT criteria for the production of textile flooring has also ensured maximum protection of end users' health and has rendered the product itself more sustainable. Recycling programmes have proven valuable,



such as that of fishing nets for Econyl fibres. Furthermore, GUT members comply with all the (strict) European requirements for the sustainable use of natural resources and efficient waste management. The Recam project in particular, which involved the recycling of carpet materials, was a great learning process for the carpet industry, and is a good example of its contribution to sustainable consumption and waste management.

The Life Cycle Assessment project is even more important, certainly with a view to the future. This project not only looks at the production process but also at the use and removal of carpet. The GUT has produced a material flow analysis tool for example: an extensive report which evaluates all raw materials required to produce textile floor coverings. And so the carpet industry has all the instruments at its disposal to sustainably optimise products and processes. (Source: Stoffströme der Chemie in der INDUSTRIEGESSELLSCHAFT, Textile Bodenbeläge-Stoffflussanalyse und Bewertung. ISBN 3-897-46-059-9, Herausgeber: Gemeinschaftsausschuss von DECHEMA und GdCh unter Mitarbeit von Gut und TFI

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