

DESSO

The Floor is Yours



4208

DESSO AirMaster®

The carpet that cleans the air



2010:  
good industrial  
design

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# Clean air is of vital importance

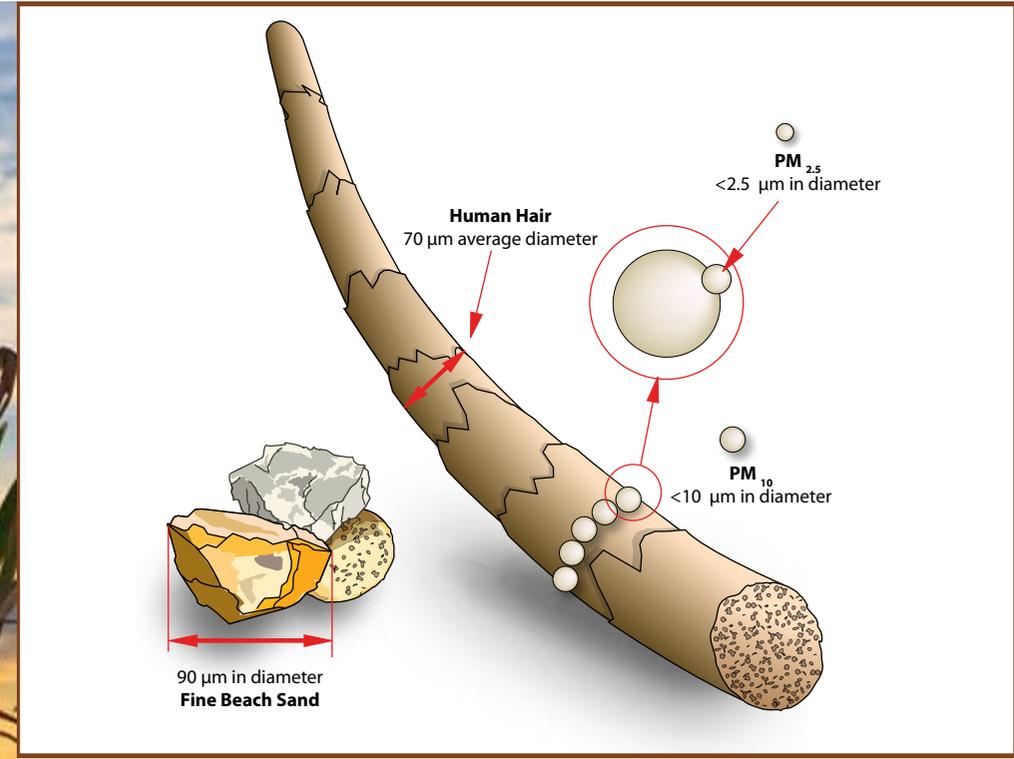


**The air that we breathe has a crucial effect on our health and well-being.** Since we spend on average more than 90% of our time indoors, the air quality inside is of utmost importance. The presence and size of particulate matter (PM) or fine dust is a determining factor in air quality and is directly linked to potential health problems. Once inhaled, these particles can contribute to the spread of microbial contaminants, such as mould, pollen and allergens. In addition, they can affect the heart and lungs and cause serious physiological problems (e.g. changes in lung function or inflammation markers).

The World Health Organization (WHO) has designed clear guidelines on air pollution from fine dust (indoor and outdoors), indicating that presence with an aerodynamic diameter of 10 µm or smaller (PM<sub>10</sub>) is damaging to your health. These small particles are invisible to the naked eye and do not necessarily produce a noticeable odour. Therefore a visibly clean room can have a considerable air quality issue. **Extensive evidence from WHO indicates that concentrations of fine dust currently found in most cities in developed countries around the world results in a serious health risk\*.**

\* Source: World Health Organization Air quality guidelines for particulate matter, global update 2005.

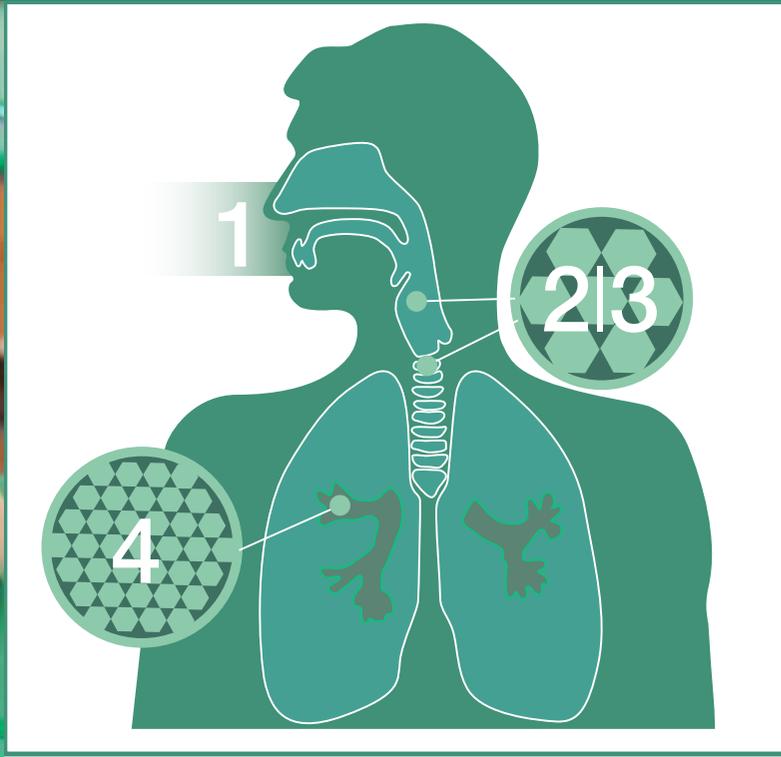
# What is particulate matter?



Particulate matter, also known as particle pollution or PM, is a mixture of extremely small particles. The size of particles is directly linked to their potential for causing health problems. The smaller these particles are, the more hazardous they are to your health. Particulate matter can be grouped into two categories:

PM<sub>10</sub> Inhalable particles, with an aerodynamic diameter of up to 10 µm (all smaller particles are included). Particles of this size cause health problems, because these are the particles that generally pass through the throat and enter the lungs.

PM<sub>2.5</sub> Fine particles with an aerodynamic diameter smaller than 2.5 µm. Particles of this size or smaller can have effects to the respiratory and cardiovascular system.



# How particulate matter enters your body

- 1 Particulate matter enters our respiratory (lung) system through the nose and throat.
- 2|3 The larger particulate matter is eliminated through coughing, sneezing and swallowing.
- 4 Smaller particulate matter can penetrate deep into the lungs. It can travel all the way to the alveoli, causing lung and heart problems and delivering harmful chemicals to the blood system.

# The essential role of DESSO AirMaster®



According to a study performed by the German Allergy and Asthma Association (DAAB)\*, it is proven that the burden from fine dust is dramatically reduced when using carpet, as opposed to hard flooring.

With the introduction of DESSO AirMaster® this functionality is taken to the next level. Its patented\*\* technology has been specially developed to capture and retain hazardous particulate matter. In fact, DESSO AirMaster® is **8 times more effective** in capturing and retaining fine dust than hard flooring and **4 times more effective** than standard carpet solutions (PM<sub>10</sub>)\*\*\*, making it **the most effective flooring solution to capture fine dust from the air**.

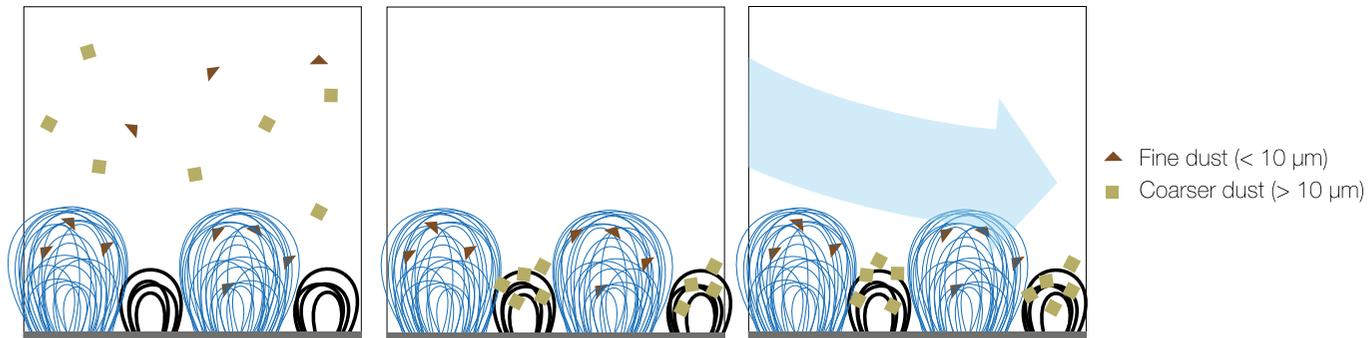
\* Source: Study performed by Deutscher Allergie- und Asthmabund e.V. in 2005.

\*\* Patent pending: NL 2002808.

\*\*\* Based on tests performed by GUI, with DESSO AirMaster® versus standard PVC hardfloor and versus standard structured loop pile carpet.

## How does it work?

Enlarged profile of DESSO AirMaster®



Very fine dust is captured and retained in the fine yarns of the DESSO AirFilters™.

Coarser fine dust is captured in the thicker yarns of the DESSO DustCollectors™.

The unique structure of DESSO AirMaster® prevents the dust from becoming airborne again.



# DESSO AirMaster®

Capturing fine dust  
using patented\*  
technology

The Desso engineered product is able to capture fine dust, without the use of chemical additives. It is the carpet's structure that delivers a mechanical solution, making this functionality permanent and without side effects. The high pile consists of ultra fine yarn filaments (DESSO AirFilters™), capturing and retaining the smallest particulate matter (< 10 μm).

The coarser dust is captured in the thicker yarns of the lower pile (DESSO DustCollectors™). The open product structure ensures that dust is easily released during cleaning, to ensure maximum regeneration\*\* of the carpet's filtering functionality.

\* Patent pending: NL 2002808.

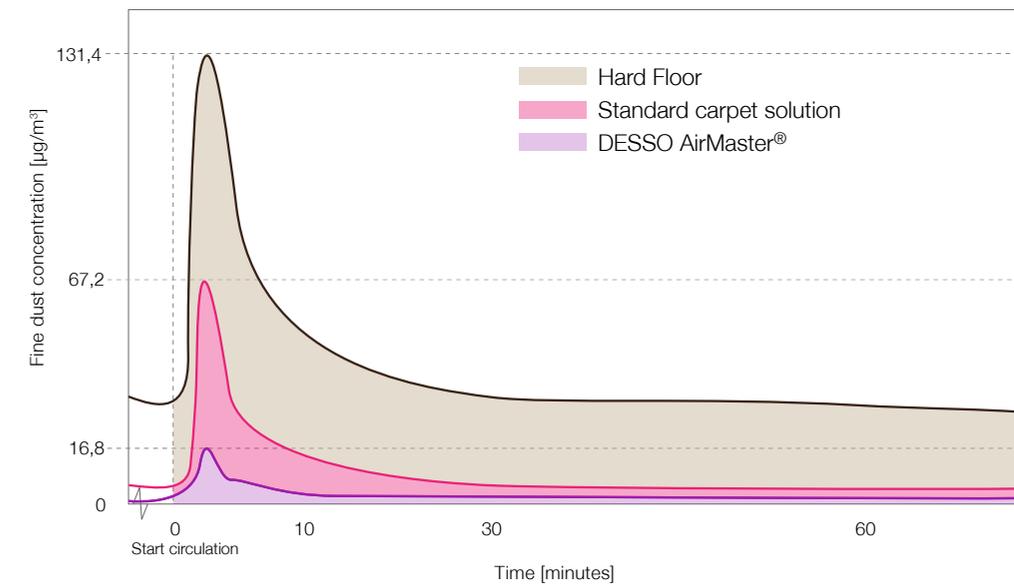
\*\* See Section: DESSO AirMaster® Continuous air filtering capacity.

# DESSO AirMaster®

Proven effectiveness in cleaning air



## DESSO AirMaster® laboratory test - particulate matter 10 (PM<sub>10</sub>)



With DESSO AirMaster® the amount of airborne particulate matter is 8 x lower than hard floors

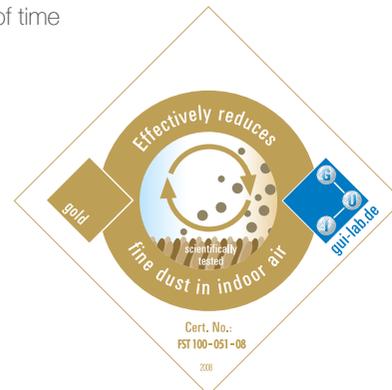
With DESSO AirMaster® the concentration of particulate matter drops significantly faster than with hard floors

With hard flooring the amount of airborne particulate matter stays consistently higher than the peak level of DESSO AirMaster®

Measurements are carried out at a height of 80 and 110 cm (breathing zone)

DESSO AirMaster® tests are performed in the laboratory of the independent German test institute GUI, which specializes in the analysis of indoor and outdoor air quality. During the tests a specific amount of fine dust is blown into a room simulation with a certain flooring solution (hard floor, standard carpet or DESSO AirMaster®) on the floor. The room simulation is then left to allow the fine dust to settle on the floor. After a certain period of time the air in the room is circulated again, which simulates a person walking in a room or a door opening. The reduction of fine dust concentration is then measured.

Based on these test results DESSO AirMaster® is the only existing product in the world that is certified with a GUI Gold logo\*



\* GUI Gold logo is awarded when fine dust retention efficiency > 80% (PM<sub>10</sub>)

With DESSO AirMaster® the fine dust concentration in the air is 8 times lower than with **hard flooring solutions (PM<sub>10</sub>)\***

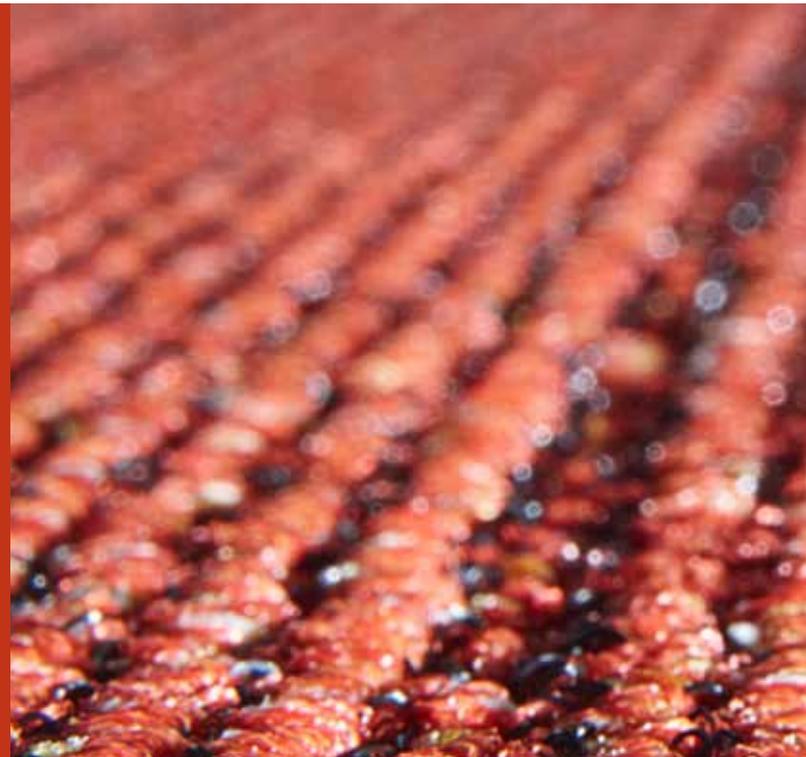
With DESSO AirMaster® the fine dust concentration in the air is 4 times lower than with **standard carpet solutions (PM<sub>10</sub>)\*\***

\* Based on tests performed by GUI, with DESSO AirMaster® versus standard PVC hardfloor.

\*\* Based on tests performed by GUI, with DESSO AirMaster® versus standard structured loop pile carpet.

# DESSO AirMaster®

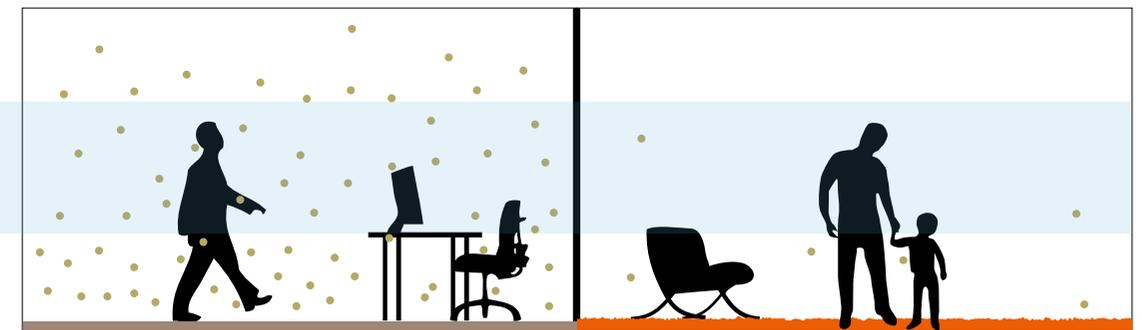
Reducing  
fine dust in  
the breathing zone



Hard floor

DESSO AirMaster®

Breathing zone



Measurements are carried out at a height of 80 and 110 cm (breathing zone)

As mentioned, the size of particulate matter is directly linked to its potential for causing health problems. Particles with an aerodynamic diameter of  $10\ \mu\text{m}$  or smaller ( $\text{PM}_{10}$ ) can enter the lungs and particles smaller than  $2.5\ \mu\text{m}$  ( $\text{PM}_{2.5}$ ) can even enter the cardiovascular system, resulting in serious health effects\*. The size of the particles also determines the time they spend in the atmosphere. Particles of  $\text{PM}_{10}$  remain airborne for hours. Smaller particles can remain airborne even longer, depending on air circulation\*\*.

When applying DESSO AirMaster® fine dust is captured and retained, which helps creating a cleaner breathing zone\*\*\*.

\* Source: United States Environmental Protection Agency (US EPA).

\*\* Source: World Health Organization, Europe fact sheet EURO/04/05

\*\*\* Measurements are carried out in the breathing zone ( $\text{PM}_{10}$ ).

# DESSO AirMaster®

## Continuous air filtering capacity

8412



A regular and thorough cleaning and maintenance programme is important for every flooring solution. For DESSO AirMaster® it ensures a maximum regeneration of performance potential to capture and retain fine dust from the air.

The ribbed structure and the open spaces between the thick and fine yarns create optimal air circulation by vacuum cleaners. Tests indicate that over 80% of the dust is released by the carpet during vacuum cleaning. This is a 16% improvement compared to standard carpet\*. Additional tests indicate that during vacuum cleaning the airspeed at the core of the carpet structure is 55% higher compared to standard carpet\*\*, resulting in an improved dust release.

\* Source: tests performed by Philips Floorcare, applying 350W of airpower and a tri-active nozzle (tested acc. 60312).

\*\* Source: tests performed by BOND Textile Research.

Desso advises to apply a brush roller nozzle for professional use.

Tests performed with DESSO AirMaster® versus standard structured loop pile carpet.

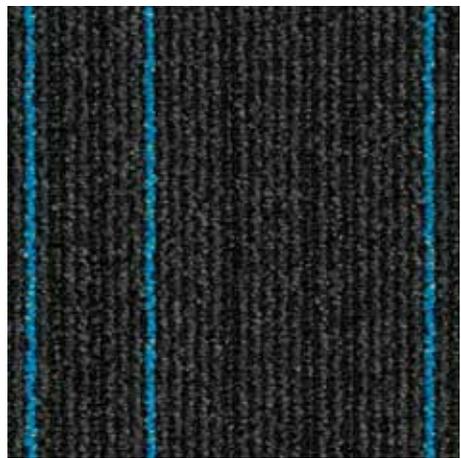
Optimal cleaning performance when vacuuming in the pile direction.

**PHILIPS**

**BOND**  
TEXTILE RESEARCH

# DESSO AirMaster®

Eighteen  
atmospheric  
colours



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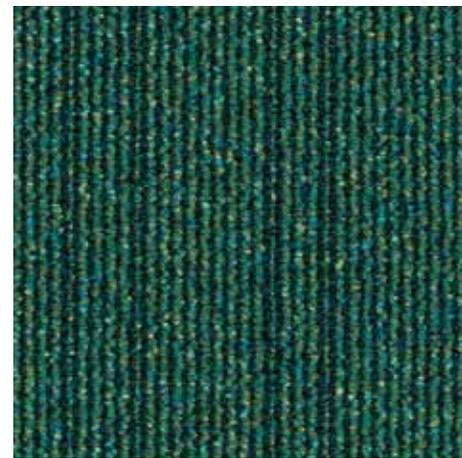
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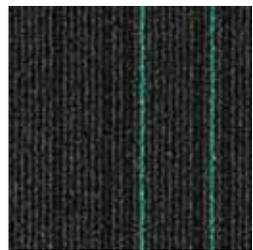
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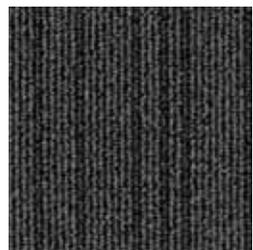
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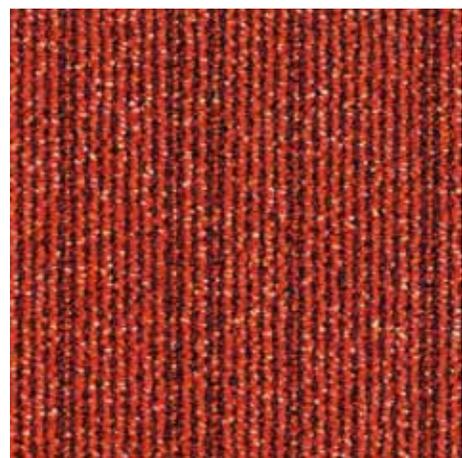
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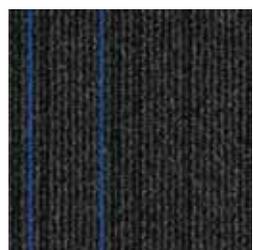
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3118



8501



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Colours and pattern designs define the look and character of a building or a room. DESSO AirMaster® comes in 18 colours, offering you a range of possibilities. Combinations of colour and structure create exciting design variations and can be used to define specific areas or zones in a room or a building.

Carpet tile 50x50 cm  
Structured loop pile  
18 Colours  
Brick / Checkerboard

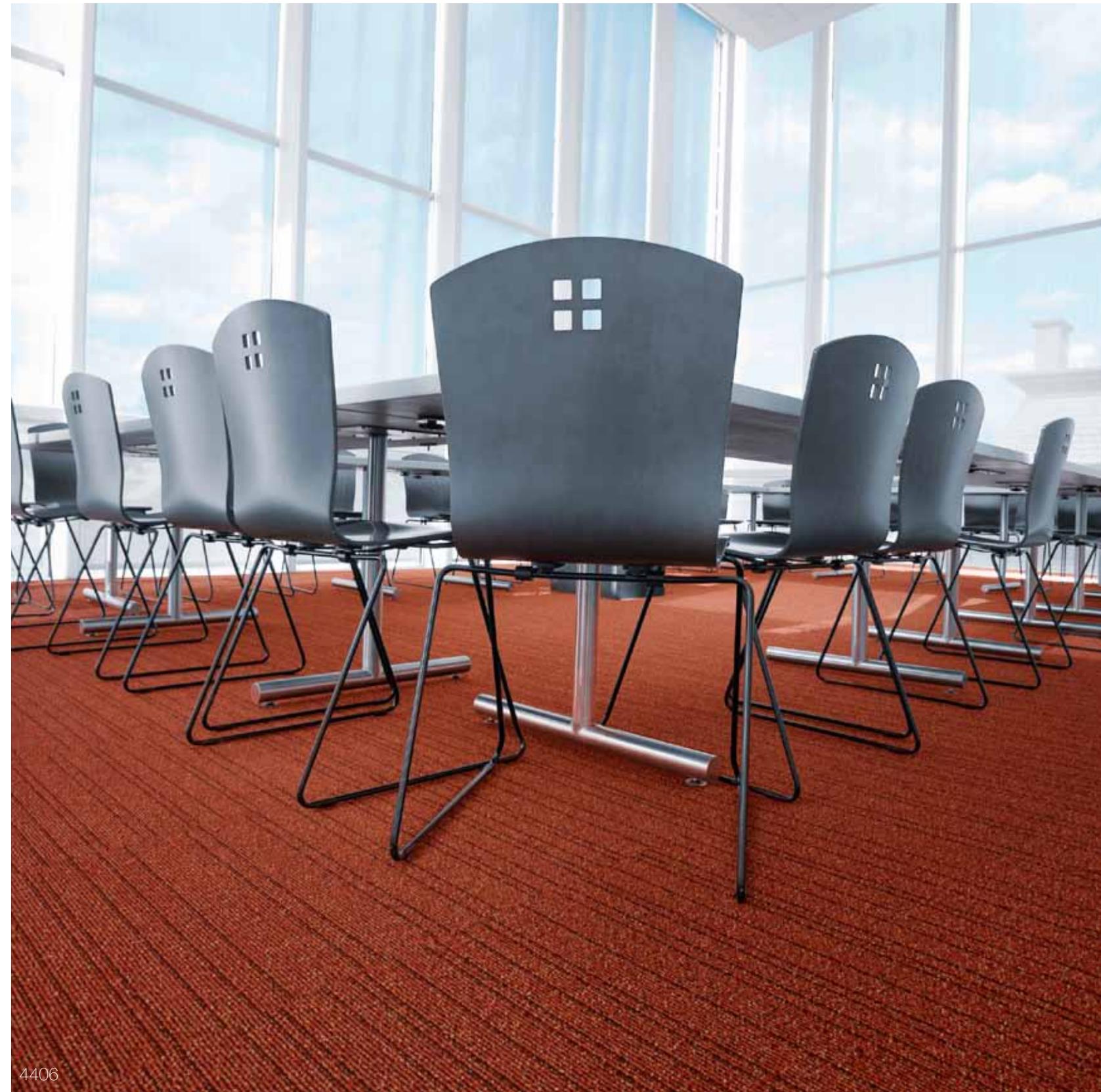
# Contributing to a better office environment

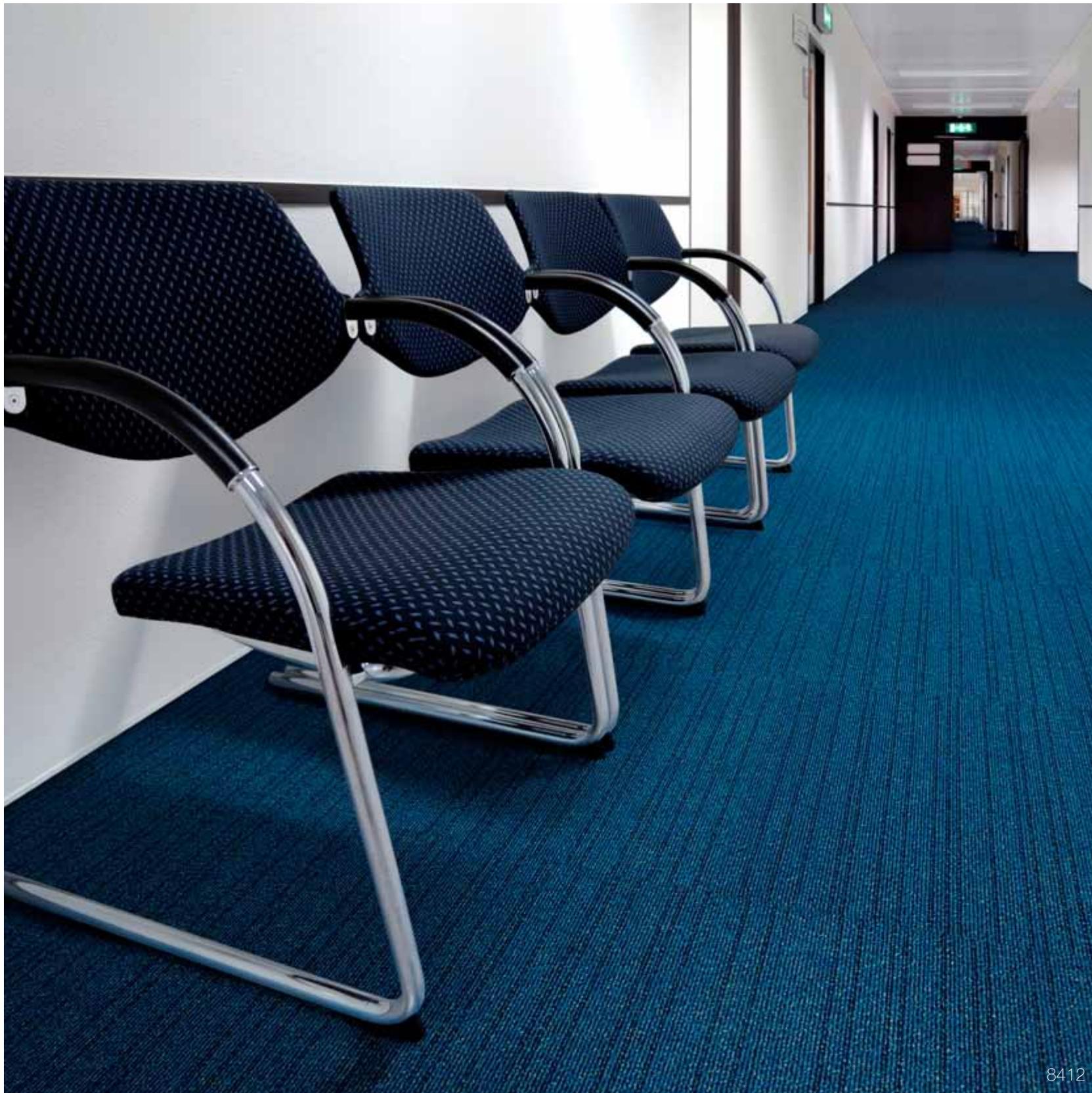


The average employee spends as much as 1880 hours a year (over 21% of his/her time) in the office environment. It is therefore obvious that the indoor air quality at work has a major effect on the health and wellness of employees. In fact the US Environmental Protection Agency (EPA) calls indoor air quality one of the top five environmental health risks of our time. Researchers also found that the financial benefits of improving office climates (e.g. less absence due to illness) can be 8 to 17 times greater than the costs of making those improvements\*.

Cleaner air is beneficial to a healthy office environment. DESSO AirMaster® captures harmful fine dust from the air more effectively than any other flooring solution.

\* William J. Fisk and Arthur H. Rosenfeld of the Lawrence Berkeley National Laboratory in Berkeley, in California, United States.





## Improving air quality in healthcare situations

The benefits of carpet in a healthcare environment have been substantiated by several studies and are increasingly acknowledged by key decision makers. Carpet contributes to a higher standard of comfort, making patients feel at home in a quiet and pleasant environment, which is likely to result in a better night's rest and a shorter recovery period. Furthermore the rigid surface of carpets causes fewer accidents. If a patient should fall, the chance of injuries is much lower when compared to hard floors (1,5% instead of 4%)\*.

With the introduction of DESSO AirMaster® the benefit of carpet solutions is raised to a new level. Research from the World Health Organization shows that particulate matter smaller than 10 µm can lead to acute health effects, such as: inflammatory reactions in the lungs, respiratory symptoms, adverse effects on the cardiovascular system and increase in medication use. Long-term exposure results in a substantial reduction in life expectancy.

DESSO AirMaster® is capable of filtering fine dust from the air, dramatically reducing the risk of inhaling these particles\*\*.

\* 4 mm loop pile carper (source: Booth et al., 1996, BR Orth. Res. Soc. Proc., Sept.)

\*\* Source: test performed by independent German test institute GUI.

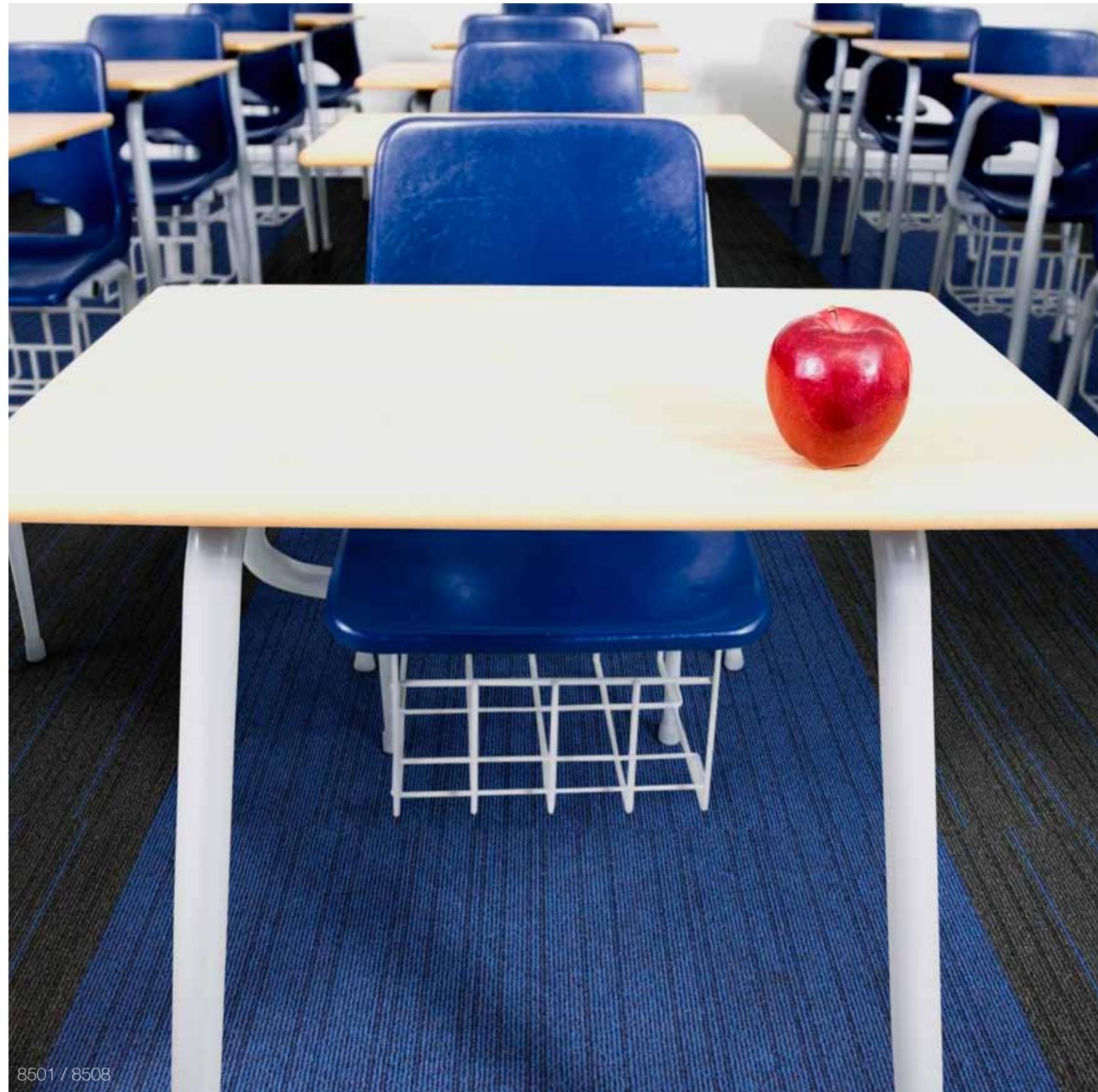
# Fresh air in classrooms



Desso carpet helps to contribute towards an improved atmosphere for learning. In addition to helping to create an aesthetically pleasing school environment where teachers want to teach and students want to learn, carpet also creates a safer environment for children. Carpet is less slippery than hard surfaces and more forgiving in the event of a fall. Carpet also offers a significant improvement in acoustic performance, a feature which is increasingly sought in schools. It helps create a more productive learning environment, making the classroom a comfortable and quieter place to study.

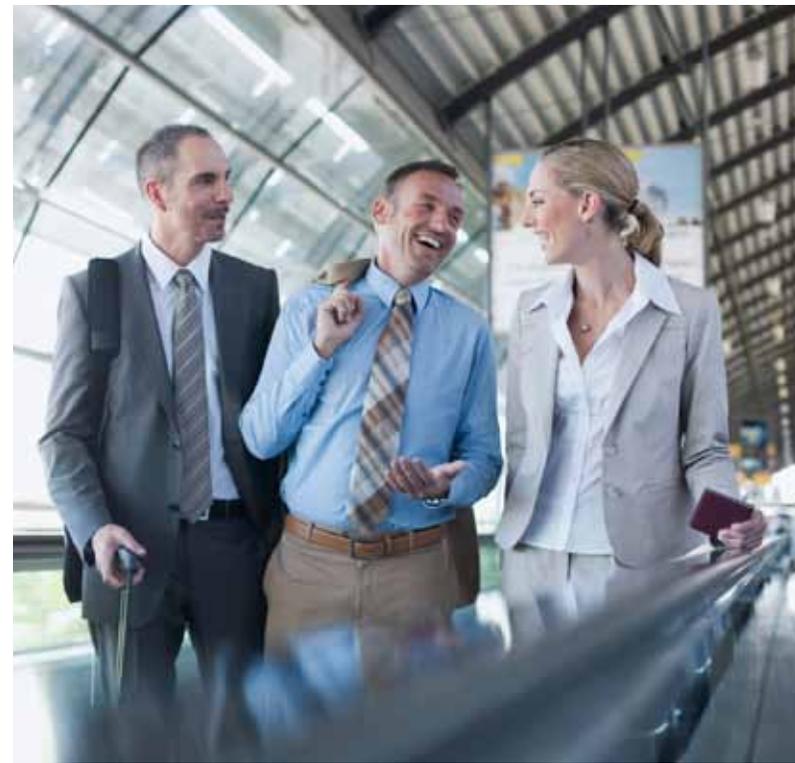
It is known that poor indoor air quality in classrooms can have a major impact on the comfort and health of students, which, in turn, can affect concentration, attendance and student performance, as well as long-term problems like asthma. The effect of poor air quality on smaller children is likely to be even more serious, as they are physically more active, contributing to a constant process of recirculation of particulate matter. The same effect can occur to classes with high numbers of pupils.

DESSO AirMaster® can improve indoor air quality, providing a cleaner and safer learning environment for our children.





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## Bringing healthy air to high traffic locations

High traffic locations, such as retail outlets or airports, see hundreds or even thousands of visitors every day. Not only does carpet improve comfort, sound absorption and acoustic performance at these locations, it also contributes to cleaner air.

DESSO AirMaster® captures and retains fine dust, resulting in a significant reduction to the spread of microbial contaminants (e.g. mould, pollen and allergens) amongst visitors, passengers and staff.

# DESSO AirMaster®

The carpet  
that cleans  
the air



An assessment carried out by the WHO indicates that an increasing range of adverse health effects can be linked to airborne particulate matter\*. Desso aims to contribute to improved indoor air quality, resulting in better health, wellness and well-being of people.

Whether it is in the office, the classroom, retail outlets, airport lounges or healthcare environments, DESSO AirMaster® offers an outstanding flooring solution to drastically improve indoor air quality. With DESSO AirMaster® you can rely on the proven solution that captures and retains harmful fine dust.

\*Source: World Health Organization Air quality guidelines for particulate matter, global update 2005.

# Innovation to improve the quality of everyday life

At Desso, we are always asking ourselves how our carpet solutions can do more for people in their daily lives. The development of products that make a difference is at the heart of our business.

Desso is committed to delivering superior products and developing pioneering solutions through continuous innovation. Our innovation strategy is concentrated in 3 key areas:

- Creativity** Spearheaded by Desso's design philosophy CARPETECTURE®
- Functionality** Pioneering solutions that make a difference, such as SoundMaster®
- Cradle to Cradle®** Developing products and processes that will contribute toward a better environment and indoor quality

Our carpet solutions already contribute to providing outstanding performance qualities for enhanced human wellbeing. However, we keep looking for improvements to go one step further.

DESSO AirMaster® is a key example of a pioneering innovative solution that takes design and functionality to the next level. It contributes to better well-being of people in offices, schools, care centres and other commercial environments.

## Project partners



GUI (Gesellschaft für Umwelt- und Innenraumanalytik GmbH) is an independent German analysis organisation that provides microbiological, immunological and chemical studies for individual households as well as complete project handling in the scientific and industrial field.



Royal Philips Electronics of the Netherlands is a diversified Health and Well-being company, focused on improving people's lives through timely innovations. As a world leader in healthcare, lifestyle and lighting, Philips integrates technologies and design into people-centric solutions, based on fundamental customer insights and the brand promise of "sense and simplicity".



Bond Textile Research is an organization that was established to deliver solutions to problems in home textiles flooring solutions. Bond Textile Research provides knowledge about characteristics and maintenance of hard-soft floors and home textiles.

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The Floor is Yours

## About DESSO®

Today, Desso can look back on almost 80 years of proven performance, having built a reputation as a leading manufacturer of high quality carpet tiles and broadloom. Desso has four factories in Europe, two major distribution centres as well as specialist customer service centres throughout Europe, in America, Asia, Latin America, Africa, the Middle East and Australasia. Desso products are specifically designed for both commercial and domestic applications. Its commercial product offering can be found in offices, banks, retail units, public buildings, schools, universities and care centres. Clients include Allianz, Canon, EDF, HSBC, Porsche, Procter & Gamble, SNCF, Nestlé and many more. Desso Consumer Carpets is represented by three strong brands; Parade, Bonaparte and Desso. All with a rich history in manufacturing high-end consumer carpets where products are available through specialist retail traders, plus selected carpet stores and home furnishing shops. In addition, Parade is the only truly European high end consumer carpet brand with sales in Benelux, Germany, France, Switzerland and Austria.

Desso's creative carpet design and service oriented approach means that it has become a market leader in developing solutions for the Hospitality, Marine and Aviation (HMA) markets. Desso's HMA division works with companies such as Hilton, Intercontinental, Maritime, KLM, Virgin, Royal Caribbean Cruise Lines and Holland America Line.

DESSO Sports Systems leads the market in the provision of artificial turf for sports fields and reinforced natural grass systems that provide the perfect surface at every level of sport. Our product range includes DESSO GrassMaster®, a sports field of 100% natural grass reinforced with Desso synthetic grass fibres.

Desso's innovation strategy is concentrated in 3 key areas: **Creativity, Functionality and Cradle to Cradle®**. For Desso, creativity is synonymous with CARPETECTURE®, which is a powerful example of Desso's commitment to creative carpet design and its dedication to meet the needs of architects, interior designers, building owners and end users. In the field of functionality, Desso develops pioneering solutions that make a difference for health, wellness and well-being.

## Cradle to Cradle®

In signing a partnership agreement with the Hamburg-based Environmental Protection Encouragement Agency (EPEA), Desso has become the first carpet manufacturer in EMEA to adopt the Cradle to Cradle® design. It marks Desso's radical decision to move beyond 'mere' sustainability in producing its carpets and artificial grass. In the Cradle to Cradle® principles, products are made from pure components that are easy to disassemble, in order to create new products (= up-cycling) in both the biological and technical cycles.

For more information visit [www.desso.com](http://www.desso.com)