User Manual

The dosage of DUST-AWAY, when being used as a dust suppressor, is highly dependent on the type of the surface.

On hard surfaces the whole surface should be covered.

On porous surfaces (e.g. loose gravel or ride way), the entire loose layer must be moistened, so that dry material will not appear when walking or driving on it.

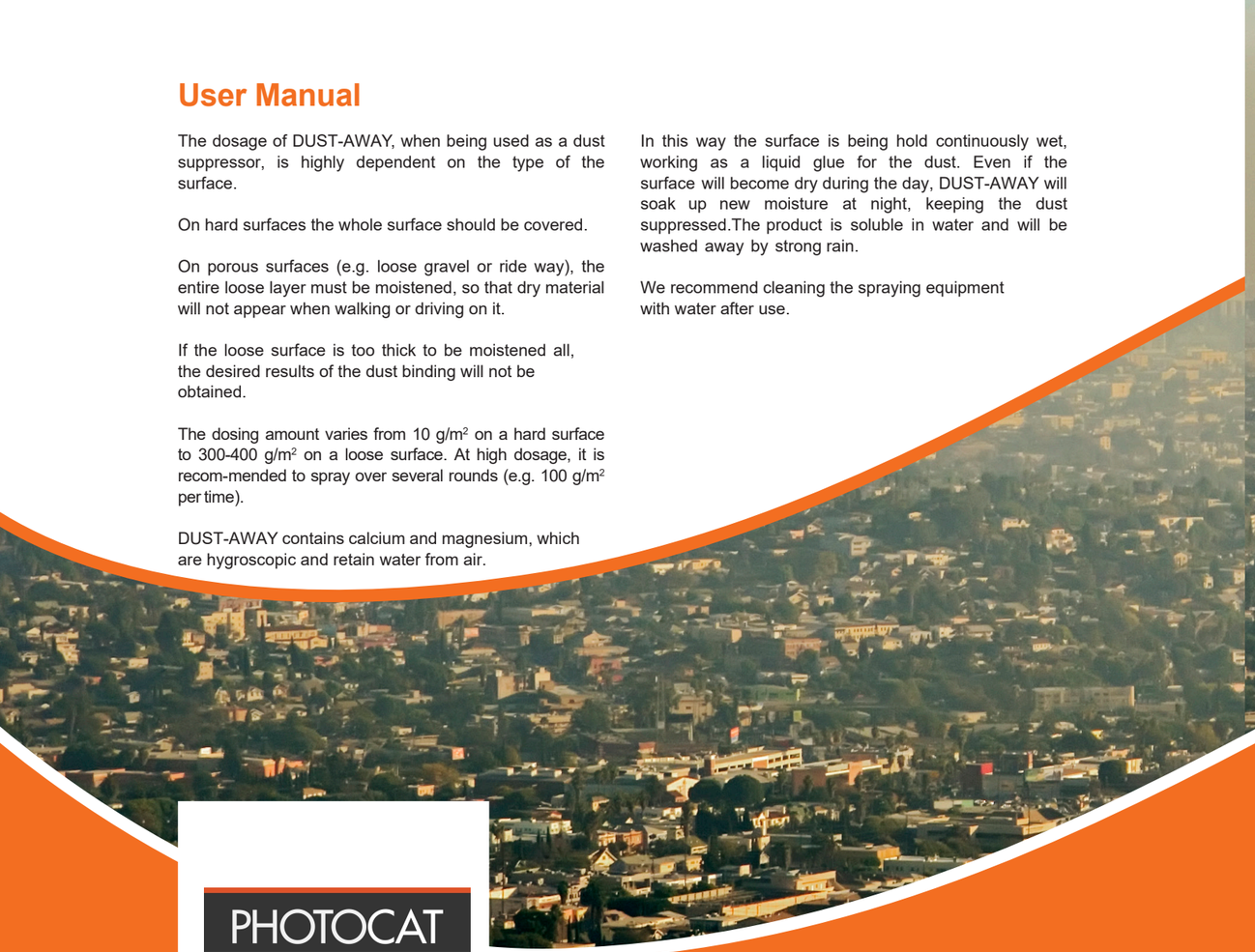
If the loose surface is too thick to be moistened all, the desired results of the dust binding will not be obtained.

The dosing amount varies from 10 g/m^2 on a hard surface to 300-400 g/m^2 on a loose surface. At high dosage, it is recom-mended to spray over several rounds (e.g. 100 g/m^2 per time).

DUST-AWAY contains calcium and magnesium, which are hygroscopic and retain water from air.

In this way the surface is being hold continuously wet, working as a liquid glue for the dust. Even if the surface will become dry during the day, DUST-AWAY will soak up new moisture at night, keeping the dust suppressed.The product is soluble in water and will be washed away by strong rain.

We recommend cleaning the spraying equipment with water after use.



PHOTOCAT

Photocat is a Danish green technology company founded in 2009.

We are located outside Copenhagen, where we have research, development and production of products based on photocatalytic technology.

Our solutions break down air pollutants when exposed to light and apply to building materials and urban fixtures.

ICE & DUST AWAY is also one of our strategic products we offer in the effort to provide cleaner air and less damage on our earth.

We want to improve the quality of life and help reduce the enormous resources spent on health costs in communities due to air pollution.

Photocat A/S
Langebjerg 4
4000 Roskilde
Denmark

Contact & Support

Telephone: +45 7022 5055
Email: cma@photocat.net

or visit our website
www.icedustaway.com



DUST-AWAY

- reliable, efficient, eco-friendly dust suppressor for reduction of Particulate Air Pollution

PHOTOCAT



DUST-AWAY

- reliable, efficient, eco-friendly dust suppressor for reduction of Particulate Air Pollution

ECO friendly and efficient Dust-suppressor with excellent de-icing properties!

DUST-AWAY is an eco-friendly product with double use, based on Calcium Magnesium Acetate and Potas-sium Formate, designed for reduction of Particulate Air Pollution (PM) and reliable winter maintenance.

THE NUMEROUS ADVANTAGES OF DUST-AWAY

- **Reliable and efficient dust suppressor – up to 35% reduction in the daily PM10 average**
- **Long bonding to roads with effect up to three months***
- **Non-corrosive to any surfaces or any metals**
- **Prolongs life time of equipment and machinery used at construction, mining, demolition etc.**
- **Easily biodegradable**
- **Non-hazardous to ground water**
- **Non-aggressive towards plants and trees**
- **Non-toxic for animals and pets**
- **Excellent de-icing properties**
- **Comes in a "ready to use" liquid form, clings to roads and does not blow away**

* Depends on the surface and dose, as well as weather conditions

Air pollution, which kills more than 6 million people every year, is the biggest environmental health risk of our time

Clean air is considered to be a basic requirement of human health and well-being. However, air pollution continues to pose a significant threat to health worldwide. Airborne pollutants are responsible for about one third of deaths from stroke, chronic respiratory disease, lung cancer, as well as one quarter of deaths from heart attack. Air pollution is also fundamentally altering our climate, with profound im-pacts on the health of the planet.

Only 12 per cent of cities worldwide have air quality measures that meet WHO standards.*
One of the most dangerous air pollutants is dust - Particulate Matter (PM) with particles, smaller than 10 µm in diameter (PM10) and particles smaller than 2,5 µm in diameter (PM 2,5).

The main anthropogenic sources of PM include domestic fuel combustion (individual stoves, wood-fired heating systems and open fireplaces), industry, district heating power plants, agricul-ture, bulk handling, road traffic (abrasion from tyres, brakes, as-phalt, exhaust emissions such as diesel soot) as well as rail and air transport. According to the EU directive (2015/1480) the daily averages of PM10 should not exceed 50 µg/m^3 for more than 35 days during each year. Yearly average should not exceed 40 µg/m^3. The yearly average for PM 2,5 should not exceed 20 µg/m^3.

DUST-AWAY has a proven track record of suppressing/ binding both PM10 and PM 2,5 and thus contributing to reduction of air pollution.

Double effect by using DUST-AWAY

DUST AWAY is not only a measure to reduce Particulate Air Pollution (PM), but also a very efficient and environmentally friendly product to substitute aggressive conventional road salts. The product for de-icing is marketed Ecolabel.

Product	Freezing Point
ICE & DUST-AWAY	-14 °C
ICE & DUST-AWAY +25	-19 °C
ICE & DUST-AWAY +50	-23 °C
ICE & DUST-AWAY +75	-31,5 °C

*Source: UN Environment 2018 Annual Report, March 2019

Many application possibilities of DUST-AWAY

Municipal road maintenance/winter maintenance

In Northern and Central Europe many cities have exceeded the EU daily limit value for PM10. In colder regions with significant snowfall, studded tyres are frequently used together with trac-tion control and de-icing materials.
These sources all add to the road dust, which accumulates in the winter months when the road surface is generally wet. In the spring, as the road surface dries, the dust is released into the atmosphere, giving rise to significant increases in PM10 concentrations. Various estimates suggest, that road dust can contribute a similar amount as direct exhaust emissions to traf-fic related emissions of particulate matter, but in some northern EU countries, where studded tyres are used, it can be much higher.

In other EU countries the high levels of PM during winter pe-riod are connected to overall dependence on fossil fuels and geographical locations, which prevent winds and air circulation (near mountain areas, valleys etc).

In southern European cities the re-suspension of road dust is more critical factor due to higher temperatures and lower rainfall.

DUST-AWAY is a reliable and efficient solution for reduction of PM levels, as it works as a liquid glue for road dust, preventing it from being further re-suspended into the air by traffic.

"The continuous use of DUST AWAY by Stockholm Munici-pality during winter seasons on approximately 35 streets has resulted in an average reduction of around 35% in the daily PM10 averages."

Industrial sites, mining, construction and demolition sites

DUST-AWAY is an efficient solution for reduction of PM levels on industrial, construction, mining and demolition sites, where road surfaces, which lead to the sites are often locations of high dust levels.
Most sites have a watering program in place, but this can lead to waste of water and resources. Adding DUST-AWAY dramat-ically improves results. PM particles are physically bound and prevented from becoming airborne. This can be easily applied using the equipment that is typically already on site.

Gravel pits, gravel roads

Neighbors to gravel pits and gravel roads are often bothered by mitigating dust. DUST-AWAY applied in correct dosage will be a reliable, long lasting solution, safe for people, plants and groundwater.

Riding facilities – indoor and outdoor

Horses and riders can be very bothered by dust and develop allergies. Cloride based dust binders cause irritation on horse's hooves. Therefore, it is good and safe to use DUST-AWAY. Dust suppression in indoor riding halls will last up to three months.

Open air concerts and festival areas

Everyone wants dry weather when outdoor events are held, but if it takes place on unpaved or gravel areas, dust and air borne pollution can become a problem. DUST-AWAY is a very helpful environmentally friendly measure.

References and Cases:

London: The Mayor of London's Air Quality Strategy includes a series of measures to reduce PM10 emissions across London in addition to local measures to tackle PM10 concentrations in priority locations. The application of dust suppressants to road surfaces in priority areas is one of the local measures.

DUST-AWAY was selected as the suppressant by TfL (Traffic for London) on the basis of experience from the European Un-ion (EU) Life funded project CMA+.

DUST-AWAY was applied along Victoria Embankment between Waterloo Bridge and Byward Street. An overall reduction in 24-hour PM10 curbside concentrations was identified. The level of improvement during this period has been calculated to be approximately 14%.

Stockholm: DUST-AWAY has been tested in Stockholm since 2004 and used continuously for dust control since 2013. The results were published in Atmospheric Environment (2006) in the article "*Studies of some measures to reduce road dust emissions from paved roads in Scandinavia*" by Michael Nor-man and Christer Johansson. The average reduction in the daily average PM10 concentration was 35% (statistically signif-icant at 95% confidence interval).

Beijing: DUST-AWAY was tested on NongDaNan Road in Bei-jing in November 2015. The first 900 meters was used for test – the last 600 meters was reference road. 13 g/m^2 DUST-AWAY was spread on the road twice a day (5 am and 2 pm). Dust par-ticles was collected on filters and analysed by a local institute (Beijing Municipal Institute of Environmental Protection). The results showed 11% reduction in PM 2.5 and 16% in PM 10 in average, which was significantly better than expected.

Direct financial benefits come from the fact, that DUST-AWAY has long and secure bonding to roads, which reduces transportation and cost of spreading the suppressant.

Indirect financial benefits include reduction of health problems from airborne particles, prevention of costly accidents from poor visibility, reduction of maintenance costs from equipment sensible to dust or corrosion, reduction of the costs of park & city vegetation maintenance.

**Source: Studies of some measures to reduce road dust emissions from paved roads in Scandinavia.
Michael Norman, Christer Johansson, A Stockholm Environment and Health Administration