

General cleaning and care recommendations for CONICA car park deck coatings

A. General

Car park deck and underground car park coatings - General requirements

Underground parking garages and parking deck-coating systems are subject to permanent exposure to chemical media as well as abrasion and wear caused by car, vans and increasingly heavy SUVs traffic.

Parking deck coating systems have the main purpose of protecting the safety-related concrete structure from the ingress of harmful media such as water, chlorides, oils and fuels or dilute inorganic and organic acids. For these reasons, many coating systems are constructed as a statically or dynamic crack-bridging system.

The various chemical media are grouped together in test groups against which a lasting or long-term stability must be demonstrated in the basic tests. An essential part of this is the freeze-thaw stress with additional de-icing salt load on the coating systems.

In addition, evidence of wear resistance must be provided when driving on the surfaces with vehicles. Frequently, in winter, litter such as grit and sand are used as a substitute for thawing agents such as de-icing salt, which have an extremely abrasive effect on the surfaces of the parking garage coatings due to the additional grinding effect. For the long-term preservation of the functionality of the surface protection should therefore be dispensed with the use of such abrasive media in parking garage operation and entrained scattering agents must be removed caused by the incoming vehicles as quickly as possible and regularly.

1) Care and cleaning for value retention

To clean and maintain the parking and driving surfaces, they should be freely accessible over the whole or part of the area in different sections for the duration of the cleaning.

The regular cleaning and care of the driving and parking areas supports their preservation of value and ensures a better protective function for the surface coating and thus for the building.

Parking areas are usually the "entrance" into an office building or a shopping centre and thus the first impression and the figurehead for the operator, clean and well-maintained areas indicate an appealing and user-friendly environment.

In the cold and humid season, the safety-relevant aspects such as the slip-resistant properties of the surface must also be ensured for the users.

Furthermore, care must also be taken to clean the floor drains and gutters, especially evaporation channels. Even pre-hung drainage channels have to be regularly checked for function and cleaned as sludge and dirt deposits promote plant growth and can result in damage.

Colours play an important role in the subjective perception of the degree of contamination. Therefore, it is advisable to choose bright and friendly shades on the driving surfaces, which also reflect the light better and can contribute to a friendly atmosphere, on the parking areas darker shades help to hide the daily accumulating dirt something.

As a rule, interspersed and sealed parking garage coatings can only be cleaned to a certain degree of firmly adhering impurities (chewing gum residues, tire marks, etc.), but special cleaning agents and methods are also available for this purpose. Only a professional, regular machine wet cleaning from the beginning can limit this tendency to fouling. The machines and equipment used should not be equipped with any abrasive hard pads or brushes and should be able to aspirate and pick up the cleaning fluid immediately after cleaning.

2) Car park deck coating systems

Car park coating systems from CONICA are based on epoxy and / or polyurethane resins, which are used in the various areas of underground garages, parking decks and ramps. For the production of elastic, crack-bridging coating, systems mainly elastic to tough hard polyurethane resins are used. Harder epoxy resins are applied to less cracked concrete surfaces such as e.g. ground contact concrete slabs in the basement and on ramps and spiral ramps (spindles).

To produce the required non-slip surfaces, fire-dried quartz sands or other hard materials, e.g. Granite, are scattered on the fresh intermediate layers in different grain sizes.

On ramp and spiral ramps (spindles) or on free exposed parking areas, coarser grits of Ø 0.6 - 1.2 mm are usually used, on ramps with a grain size of up to Ø 2 mm. The unavoidable higher tire abrasion caused by starting and braking as well as the brake dust usually leaves the impression that the surfaces are not easy to clean.

Especially light or matt surfaces reinforce this impression. The **interspersed and rough surfaces cannot be cleaned in a simple wiping process**. Here special machines with plate or roller brushes are required for optimal cleaning. However, **care must be taken** that the brush attachments do **not contain any additional wires or abrasives**, which have too high an abrasion behaviour. Overall, the principle applies the coarser and slip-resistant the surface is made of, the greater the cleaning effort. Since the coarser grain sizes are just used on the ramps and free exposed areas, the higher cleaning effort is limited to a few areas.

B. Cleaning and care

1) Cleaning intervals and frequency

The **number and intensity of the cleaning and care intervals depends** strongly on the **frequency** of the car changes in the parking areas, the **season** and the **location** of the parking garages and parking areas. Depending on the use and local conditions, it must be **determined flexibly and object-specifically** whether a daily, weekly, monthly or annual cleaning should be carried out by simple sweeping or wet cleaning. Basically, an optimal cleaning plan can be created and set.

2) Winter operation and cleaning

Especially in the **winter months**, car park coating surfaces are exposed to **extreme chemical and mechanical stress**. Chlorides from de-icing salts, which are brought in by snow and cars or by the direct use of de-icing salt on the coating are concentrating in standing water laugh of a high concentration reach. These chloride enrichments can lead to mat surfaces of the coatings on prolonged exposure, even if the coatings are resistant.

Also **grit and sand** in the coarse tire profiles and entered from street have a particularly **aggressive effect** on the coating during driving and when manoeuvring under the tires. This effect is particularly noticeable in the entry and exit areas.

Due to the extreme and abrasive abrasion behaviour, it is recommended in the parking garage sector to **refrain from the use of solid grit**. The split and sand entered by the vehicles must be removed regularly. It should be ensured that the tools and equipment used are metal-free, if possible use plastic blades on snow shovels and pushers or metal shovels with a **hard rubber lip**.

This is especially true for machine-operated snow removal equipment, which is often used on free exposed parking levels.

Here it must be ensured that **only light machines** are used and the shovel plates are **equipped with rubber protection strips** and they are to be maintained regularly. Otherwise, the surfaces can be damaged.

All CONICA parking deck coatings are also tested for resistance to de-icing salt during the chemical resistance test, therefore a de-icing salt spread on parking areas does not damage and must preferably be used. Metal-containing built-in parts and structures (columns, pillars, railings, etc.) are corrosion-prone components and must be protected when using de-icing salts, stainless steel should therefore be used.

We recommend at least one annual complete cleaning of the parking garage coatings after the winter. Drain channels and inlets are to be considered here. Salt deposits on the steel structure and the coating must be washed off with cold-water pressure cleaning. **Too high pressure and extreme punctual loads are to be avoided**. Cleaning agents are therefore also available for industrial floors, which can be used to better remove dirt deposits. Basically, it is recommended to check the compatibility in an inconspicuous place and to consider the environmental compatibility.

After cleaning, inspect the surfaces for any mechanical damage that is noted and put into effect within the maintenance plan. Existing joints must be checked for functionality.

3) Maintenance cleaning

The prolonged exposure to overly high concentrated cleaning agents and drying cleaning mixtures and consequent concentration must **generally be avoided** on coatings. Rinsing and neutralizing with clean water is important here. Otherwise, this can lead to dull surfaces, increased dirt deposits, discolouration or tire marks. Dry cleaning with hard circular brushes must be avoided, just using softer brushes. If necessary, it is advisable to carry out a trial cleaning at an inconspicuous place. For the different requirements and conditions of the individual objects, individual tests of the machines, processes and chemicals used are recommended for their suitability.

C. Notes on maintenance and upkeep

We recommend car park operators and owners, to involve for a cleaning concept and for upkeep and care of parking deck coatings suitable and qualified cleaning companies.

In the cold season there is a risk of slipperiness due to freezing wet even on the with quartz sand scattered surfaces, when puddles occur and water cannot drain. If in these cases, the use of de-icing salt cannot remedy the situation, the parking areas must be temporarily closed for safety reasons. This applies to free exposed parking areas but especially free exposed ramp and spindle surfaces since there is the greatest risk of accidents.

In some parking garages, small clearing vehicles with chain drive are used. Car park deck coatings should generally not be driven with tracked vehicles.

This also applies to cars with snow chains or in some countries and regions for spike tires. Dynamic Crack-bridging coating structures are more critical for chain driven vehicles than rigid epoxy coatings.

For adhering chewing gum, special cleaning procedures are available through short-term icing. When using this method, care must be taken to ensure that no simultaneous cleaning and mechanical stress takes place, since damage to the synthetic resin coating may otherwise be caused by short-term embrittlement. After a short time, the surface is back to ambient temperature and can be cleaned as described.

In multi-storey car parks, also discolorations often occur e.g., due to leaking battery acid (usually yellowish discolorations) and urine cannot be removed as a rule. Residual fuel (especially diesel), oils and brake fluids must be removed regularly, at longer exposure times; staining and discoloration of the top coat cannot be completely removed.

If trees stand near the parking structures or if wind leaves are deposited on the parking areas, the foliage must also be removed as quickly as possible because the dyes and especially tannins (e.g. oak leaves) can cause discoloration.

These aforementioned measures contribute to a long service life and to the preservation of the coating surfaces.

If you have any questions, please contact our technical service or one of the following named manufacturers of cleaning and care products.

Suppliers and advice for cleaning and care products

Germany:

Diversey Deutschland
GmbH & Co. OHG
Mallaustraße 50-56
68219 Mannheim
Germany
Telephone: 00 49 (0) 62 18757 - 0
Telefax: 0049 (0) 62 18757-8266
www.diverseysolutions.com/de
<http://diverseysolutions.com/>

Germany:

WETROK GmbH Deutschland
Maybachstraße 35
51381 Leverkusen
Germany
Telephone: 0049 (0)2171 398 - 0
Telefax: 0049 (0)2171 398 – 100
www.wetrok.de
www.wetrok.ch

Germany:

Johannes Kiehl KG
Robert-Bosch-Str. 9
85235 Odelzhausen
Germany
Telephone: 0049 (0)8134 9305-0
Telefax: 0049 (0)8134 6466
www.kiehl-group.com
www.kiehl-group.com/index.php?lang=EN

Note

It is advisable to develop a cleaning concept adapted to the load with cleaning agent manufacturers (for example with the companies in the list above). In case of doubt, preliminary tests should be carried out on an inconspicuous place or in secondary areas.

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