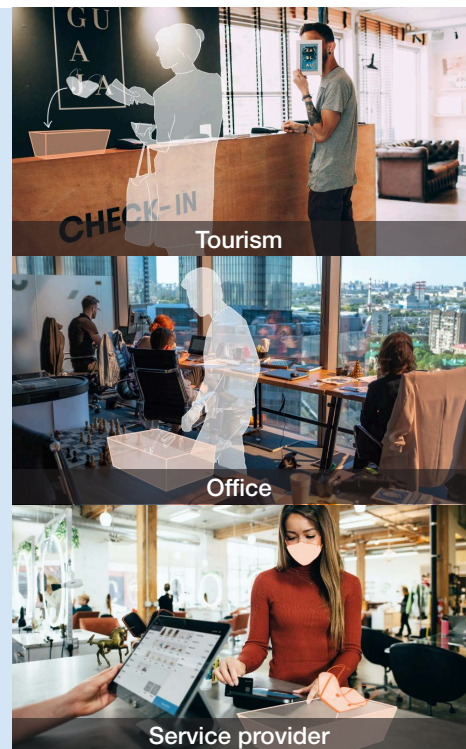


Technical Guide 2021

CeraPlas Explore Kit

Material Compatibility of Ozone Treatment



CeraPlas Explore Kit

The „CeraPlas® Explore Kit“ is intended to use in a virus infected world to interrupt the chain of infection by using your daily items as smart phones, masks, keys, identity cards or similar things which are getting in different hands over the day.

A fast, efficacious and especially dry disinfection process is introduced by this development kit. The internally built-in “CeraPlas® element” undertakes here the part of providing the process media – ozone. Ozone is commonly used for cleaning processes in cars, water decontamination or in laundry stations. These applications need a very high amount of ozone concentration and a relatively long exposure time for gaining a long term effect. By downsizing the source and making the technology affordable for everyone a compact and safe

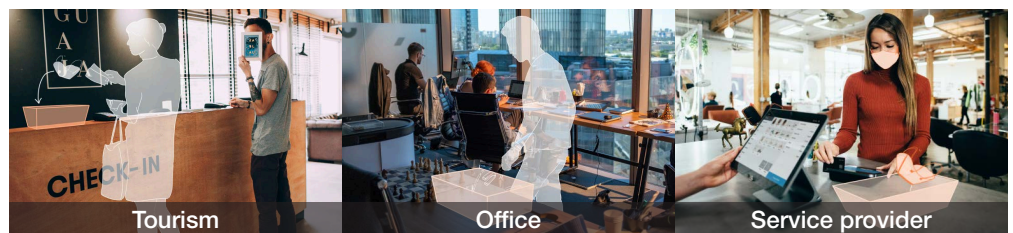
demonstration unit is grown. Although the amount of ozone is much smaller, not only the virus reacts in this environment the materials inside, too. Thus, TDK undertakes material compatibility investigations to examine the lifespan of common material groups.

The investigations were done by the company Transfocenter für Kunststoffe GmbH (TCKT), a test and research centre specialized in plastic characterisation and is located in Wells, Upper Austria. The most common material groups were taken under consideration and listed in the table below. Next to optical inspection, infrared spectroscopy was used for getting information of chemical modification or mechanical fatigue. With accelerated tests an ozone load of six months in operation was investigated and reviewed afterwards.

List of materials and its long-term compatibility

Material	Material compatibility	Remark
CP	Compatible	Unaffected
CA	Compatible	Unaffected
Silicone	Partly compatible	No mechanical modification, yellowing
PVC	Compatible	Discoloration
Polyester	Compatible	Unaffected
PET	Compatible	Unaffected
SLA	Compatible	Unaffected
PBT	Compatible	Unaffected
PLA	Compatible	Unaffected
TPU	Partly compatible	No mechanical modification, yellowing
PU	Partly compatible	No mechanical modification, oxidation process starts
PU-Foam	Partly compatible	No mechanical modification, oxidation process starts
Onyx	Compatible	Unaffected

Most of the materials, which were investigated, are compatible in the scope of daily usage for half a year. Especially foams and materials with a certain elasticity will change their mechanical properties after usage longer than 6 months. This list is not completed and will be adapted continuously. If a special material is not on the list, manufacturers of plastic or rubber materials have often more detailed information about how their products withstand process gases like ozone.



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