

Quartzel[®] PCO

Air Purification
by Photocatalysis

UV Activated

Applications

Indoor Air Quality

(Health, Comfort, Energy)

→ Buildings and Dwelling

- Residential
- Office buildings
- Public areas and healthcare facilities

→ Transportation

- Automotive
- Aircraft cabin
- Subway, Railways

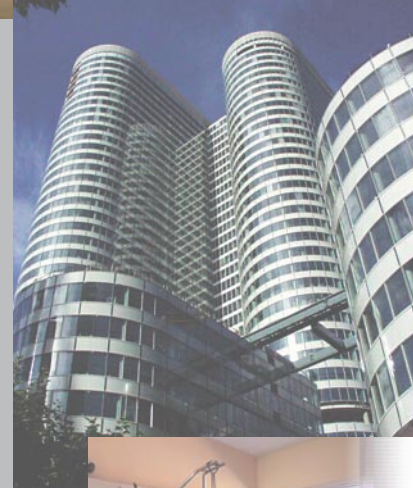
Industrial and Agricultural Emissions

→ Chemical Emissions Treatment & Regulations

→ Odor Reduction

Professional Exposure to Chemical Nuisances

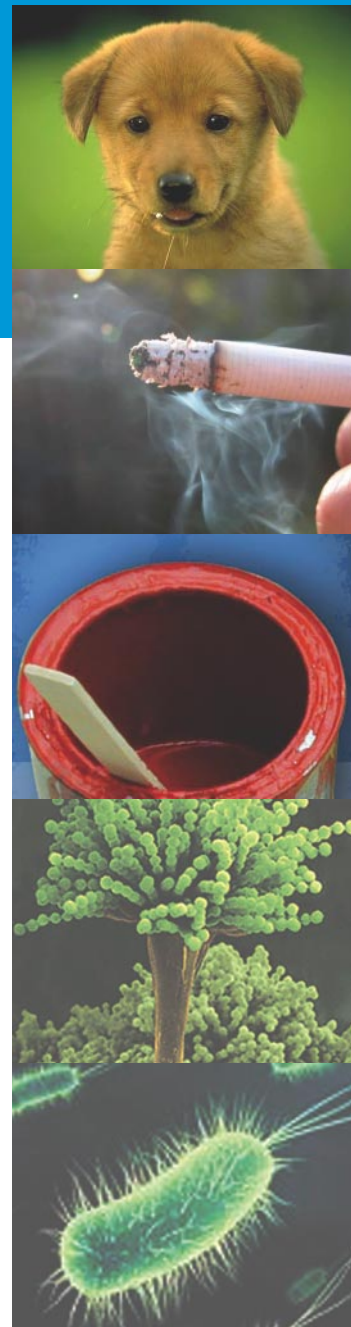
→ Abatement of VOCs Emissions



The improvement of the quality of the air that we breathe, indoor and outdoor, has become a major public health concern. Much has been presented on health related illnesses caused by pollutants (allergic sensitizing, asthma, respiratory infections, carcinogenic effects...).

These air pollutants whether of natural or human origin can be classified in three main categories:

- Physical pollutants: dust and particles,
- Chemical or gas pollutants (NO_x, SO_x, VOC, odors...),
- Microbiological pollutants (bacteria, molds, virus).



Benefits

→ Quartzel® PCO by its active principle presents a **broad spectrum of action** on the air pollutants. It is an excellent complement of the traditional dust filters since it allows:

- **Treatment of a broad range of gaseous pollutants**
 - Volatile Organic Compounds (VOC)
 - Odors (sulfide, nitrogenated compounds and certain VOCs)
 - Secondary pollutants such as ozone

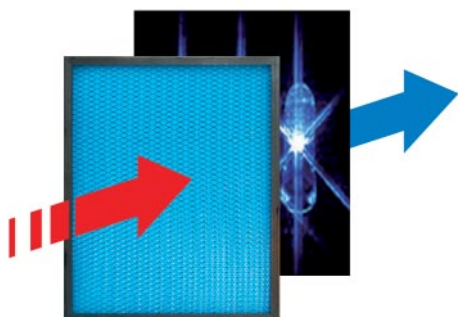
associated with

- **Abatement of the microbiological pollutants of the air**
 - Bacteria, molds

→ Quartzel® PCO presents an increased lifetime compared to the absorbents like activated charcoal: the pollutants do not saturate the media, they are transformed primarily into volatile products.

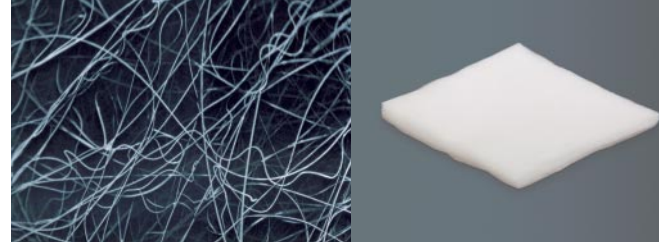
Principle

→ Quartzel® PCO media is intended for use with equipment functioning on the principle of **photocatalysis**, in licking or crossing mode. It must be associated with a UV source.



Photocatalysis is an oxidation process at ambient temperature involving a catalyst (TiO₂) activated by a UV radiation. The process leads to the mineralization of the organic pollutants or the organic components of the biological cells, i.e. mainly with their transformation into inert compounds such as water and carbon dioxide.

Characteristics



Quartzel® PCO ensures optimal effectiveness because of these unique characteristics

- **Totally mineral fibrous material** made up of long, continuous amorphous silica fibers (SiO_2), for **perfect stability under UV-A or UV-C**. These **fibers are non respirable so the media is safe**.
- Fibers coated with a layer containing Titanium dioxide (TiO_2) with high **specific surface area** that favors pollutants adsorption and high photocatalytic activity (Saint-Gobain Technology).
- Unique texture leading to a **low pressure drop**, extremely advantageous for many air treatment applications.
- The **optical properties** of silica ensure an excellent UV transmission on all the thickness of the media for an optimal effectiveness.
- The **thickness of the media** guarantees a prolonged residence time of the pollutant in the catalytic reactor.

→ Technical data (nominal values)

| Fibers diameter | Areal weight | Specific surface area | Thickness | Pressure drop |
|-----------------|----------------------|-----------------------|----------------------------|--|
| 9 μ | 100 g/m ² | 120 m ² /g | 15-20 mm (0.6-0.8 inch) | 100 Pa at 2m/s (0.4 inch WG at 400 fpm) |

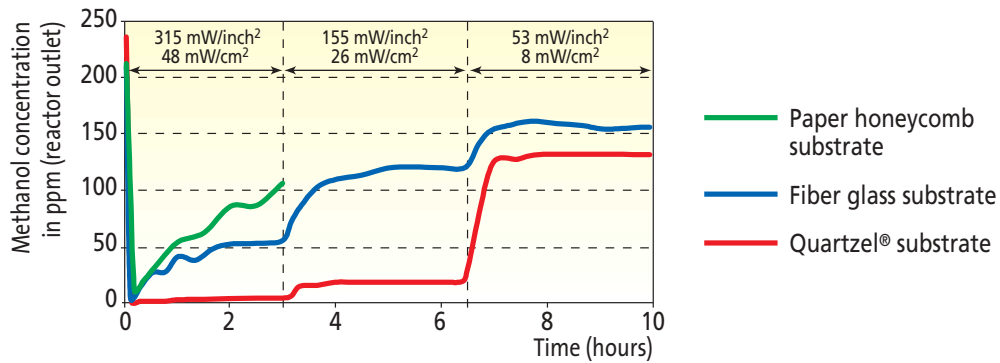
→ Dimensions

- Quartzel® PCO is available in rolls (3.5 x 1 m – 11.5 x 3.3 Ft) or in precut sheets.
- Quartzel® PCO is also available in cartridge form for air-cleaning (standard filters, pleated, cylindrical...)

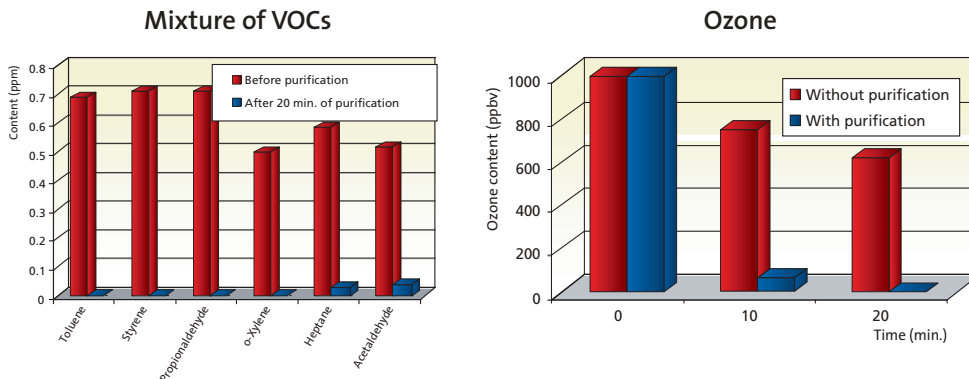
A proven effectiveness

→ Laboratory tests on VOC

1/ Comparison of the abatement by Quartzel® PCO of a continuous flow of polluted air with 250 ppm of methanol (flow 64 ml/min – 2.10^{-3} CFM), compared to other media and for decreasing conditions of UV irradiation.

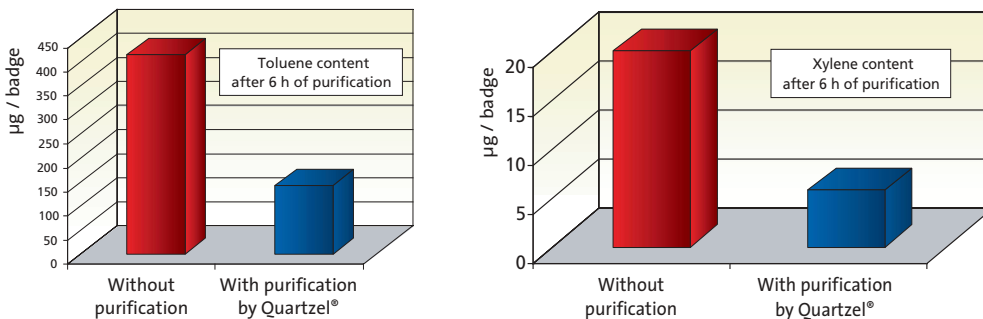


2/ Abatement of a mixture of VOCs and of Ozone in an enclosed box of 1 m³ (35 Ft³) by a purification system equipped with Quartzel® PCO.



→ On site tests in partnership with various equipment suppliers

Example: Hystopathology laboratory with problems of VOC emissions (Toluene, Xylene).



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