

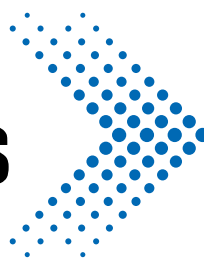


THE System  
for Solvent Safety

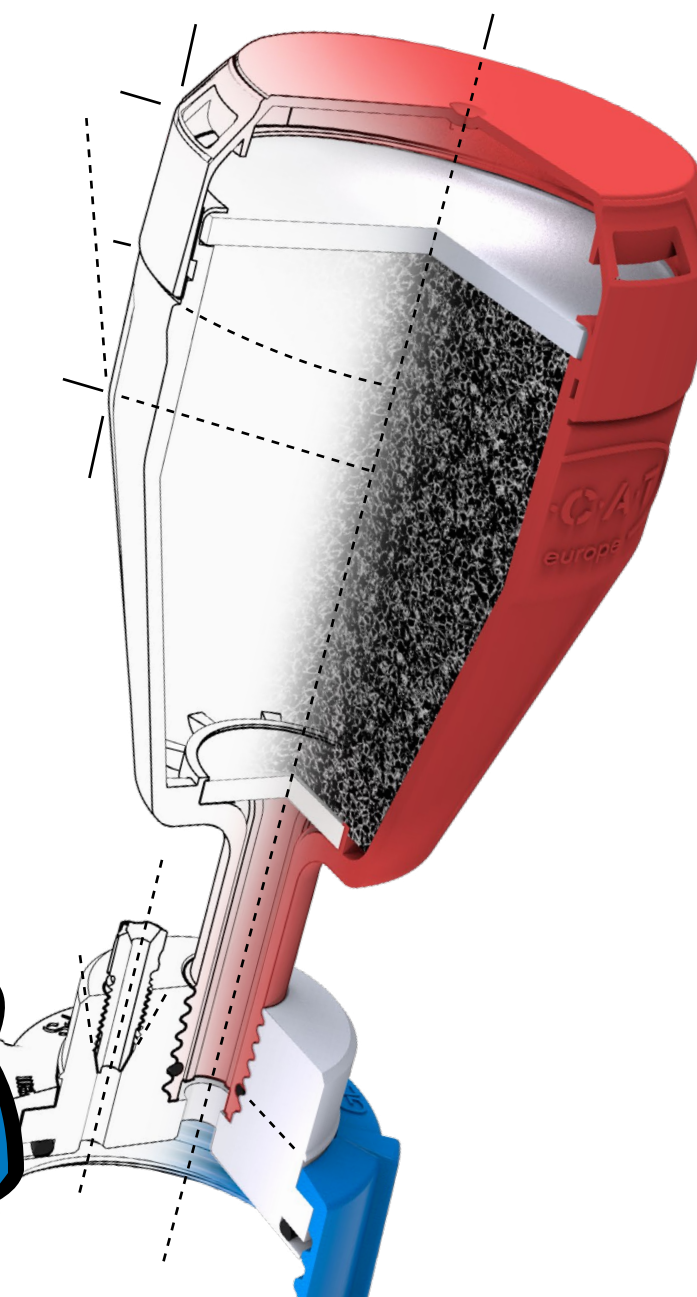
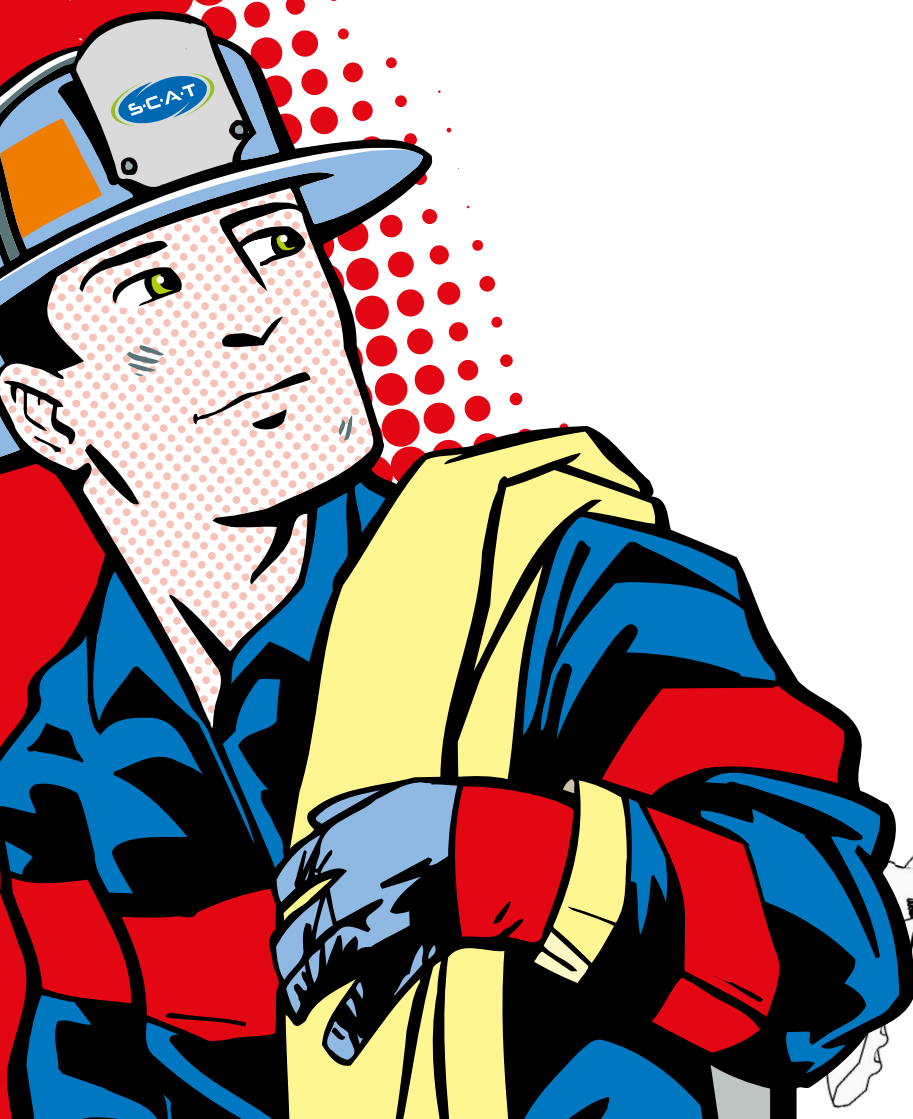
# The next Level!

## SafetyWasteCaps

Collect HPLC / UHPLC Waste safely



# 2.0



# SafetyWasteCaps 2.0

## The next Level!



**THE System  
for Solvent Safety**



### NEW: Exhaust Filter available in 2 versions:



#### NEW: With label

Fill in the date of expiry by hand



#### With change indicator

Press the button to activate the countdown for the service life.



#### NEW: PFA Fittings

Improved design for easy tubing connection  
Excellent chemical resistance  
Flammability classification V-0 (UL-94)

#### NEW: Medical Grade PTFE

Excellent chemical resistance  
Food safe  
FDA compliant  
Flammability classification V-0 (UL-94)

#### NEW: Insertion Label

Mark your bottles with individual descriptions



#### NEW: PPS Screw Cap

Autoclavable / sterilisable up to 200 °C  
Flammability classification V-0 (UL-94)

#### NEW: Ergonomic Design

Enhanced stability and construction  
Improved handling  
Easy installation  
Smart exchange



### Fire Protection / Flammability Classification according to UL-94

In case of fire, each second counts. Flame resistant materials can save lives and provide rescue teams with more time to react in case of an emergency.

UL-94 is an international standard to classify the flammability of plastics. UL-94 can also be found in IEC/DIN EN 60695-11-10 and -20.

V-0 is the highest classification with the following requirements to the plastic material:

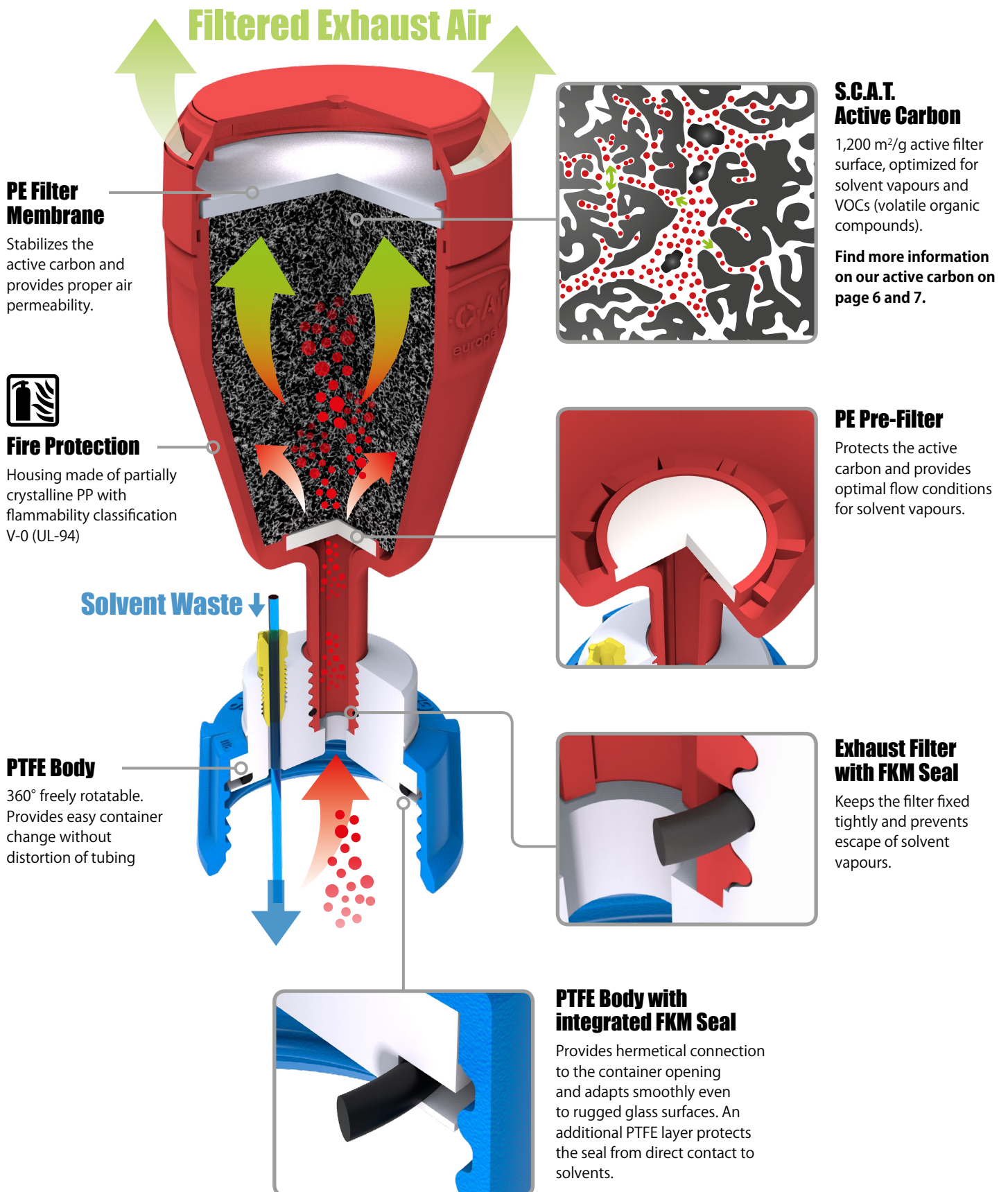
- Burning stops within 10 seconds on a vertically fixed specimen.
- No drips of inflamed particles allowed.
- Maximum afterglow of 30 seconds.

# SafetyWasteCaps 2.0

## The next Level!



**THE System**  
for Solvent Safety



# SafetyWasteCaps 2.0

## GL 45 Thread



**THE System  
for Solvent Safety**



Standard connections for HPLC tubing with 2.3 and 3.2 mm outer diameter.

**Each cap comes with fittings for both tubing sizes.**



Connections for larger tubing with 6.4 - 9 mm inner diameter. The tube connector is included in delivery.



Thread size of the screw caps: GL45 is the most common thread for solvent supply and waste bottles in laboratories. Find adapters for other thread sizes at:

[www.scat-europe.com](http://www.scat-europe.com)



| Fig.     | Part No. | Description  | Thread size | Connections for Ø 2.3 / 3.2 mm OD tubing | Connections for Ø 6.4 - 9 mm ID tubing | Blind plugs for tubing connection | Service life (in months) | Unit |
|----------|----------|--|-------------|--|--|-----------------------------------|--------------------------|------|
| <b>A</b> | 307 912  | SafetyWasteCap GL 45, V2.0   | GL 45       | <b>3 x</b>                               | -                                      | 1 x                               | -                        | 1    |
| <b>B</b> | 307 923  | SafetyWasteCap GL 45, V2.0   | GL 45       | <b>2 x</b>                               | 1 x                                    | 2 x                               | -                        | 1    |
| <b>C</b> | 308 921  | SafetyWasteCap GL 45, V2.0   | GL 45       | <b>4 x</b>                               | 1 x                                    | 2 x                               | -                        | 1    |
| <b>D</b> | 307 982  | Exhaust filter size M, V2.0, with splash protection and label                                      | GL 14       | -  | -                                      |                                   | 6                        | 1    |
| <b>E</b> | 390 914  | Exhaust filter size M, V2.0, with splash protection and label<br><b>Economy package</b>            | GL 14       | -  | -                                      |                                   | 2x 6                     | 2    |
| <b>F</b> | 310 535  | Exhaust filter size M, V2.0, with splash protection and change indicator                           | GL 14       | -  | -                                      |                                   | 6                        | 1    |
| <b>G</b> | 390 336  | Exhaust filter size M, V2.0, with splash protection and change indicator<br><b>Economy package</b> | GL 14       | -  | -                                      |                                   | 2x 6                     | 2    |



# SafetyWasteCaps 2.0 Exhaust Filters



**THE System  
for Solvent Safety**



Recommended service life when using LC-typical organic solvents and solvent mixtures.

**307 982**

**D**



**6 months**

With label



**390 914**

**E**



**Economy package  
2x 6 months**



**310 535**

**F**



**6 months**

With change indicator



**390 336**

**G**



**Economy package  
2x 6 months**

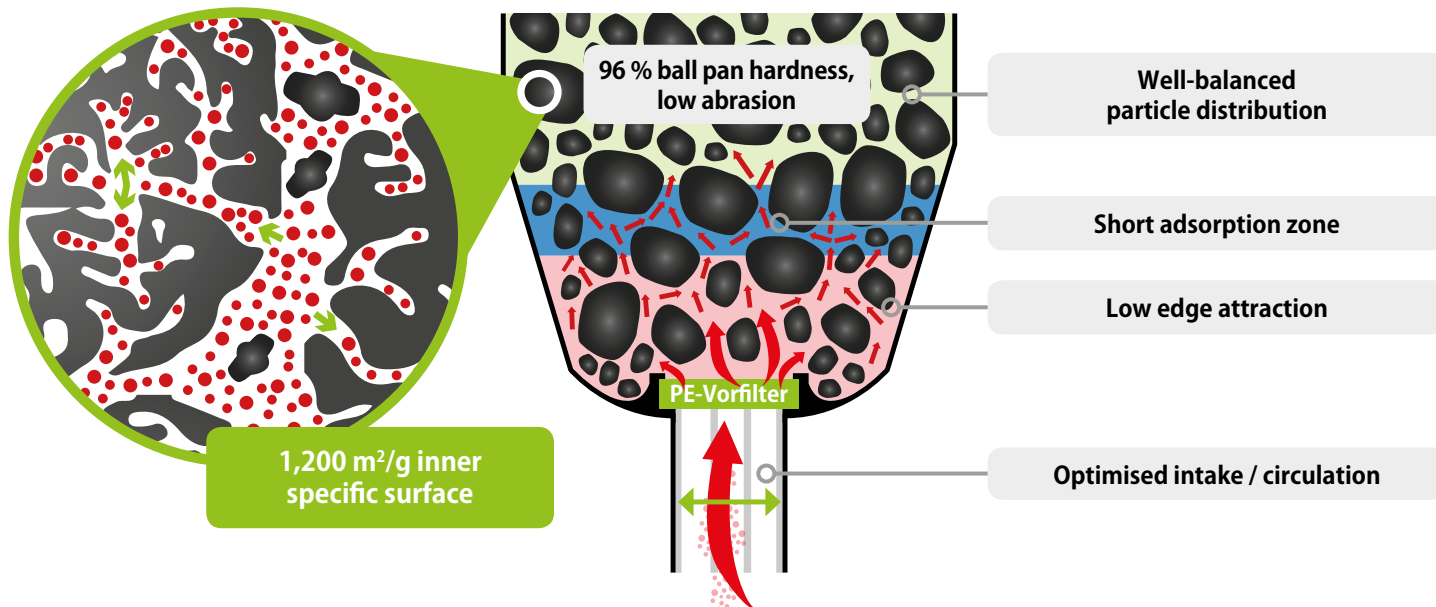


# Active Carbon Important Facts



**THE System  
for Solvent Safety**

(Schematic view - not true to scale)



## Specifications

S.C.A.T. active carbon is a steam-activated, cylindrically shaped charcoal, based on mineral coal, with excellent hardness and mechanical abrasion resistance. It provides a particular pore structure and can be regenerated with steam or hot gas. It is usually applied for solvent recovery and exhaust air purification for the separation of organic substances.

## Edge attraction and bulk density

Due to their flow behaviour, solvent vapours and gases take the line of the least resistance when passing the filter. Active carbon with undersized particles (e.g. powder) or inappropriate density would lead to improperly high resistance.

Clumping and agglutination of improper active carbon particles causes gaps between filter housing and active carbon filling, resulting in unfiltered escape of vapours. This is commonly described as edge attraction.

Particle size, density and particle distribution of S.C.A.T. active carbon provide the best possible flow characteristics for solvent vapours, and minimize edge attraction as well as risks of air pollution. The filter design supports optimal vapour distribution for maximum filter performance.

## Inner specific surface

The inner specific surface is one of the most important indicators for active carbon filter performance. Higher inner specific surface means more available space and performance for adsorption of solvent vapours.

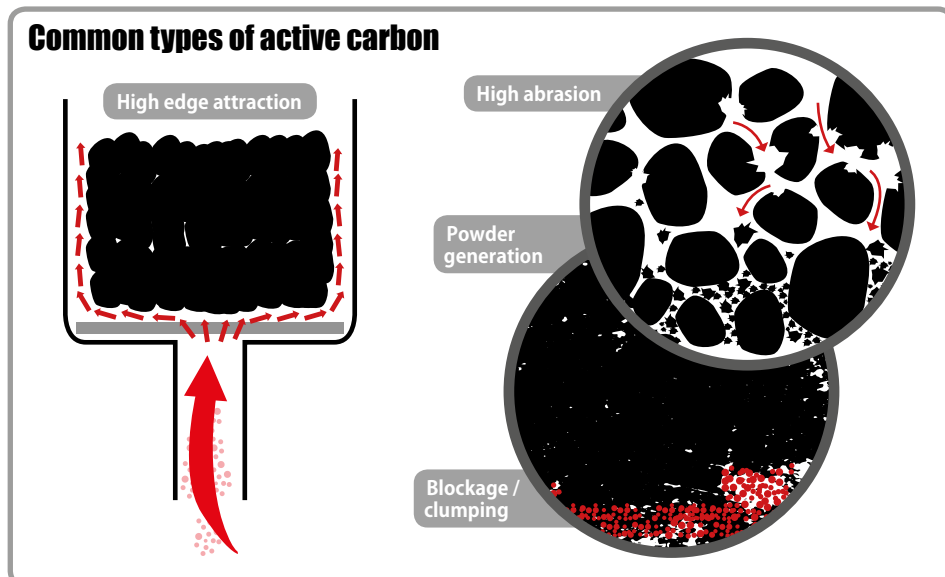
Common types of active carbon (e.g. powder) provide an inner specific surface of 500 - 600 m<sup>2</sup>/g. S.C.A.T. active carbon provides 1,200 m<sup>2</sup>/g and sets the benchmark for filtration of organic solvent vapours in the field of instrumental analytics.

## Abrasion and ballpan hardness

External motion impact (e.g. during transport) causes pressure and friction of active carbon particles to each other. This leads to abrasion and precipitation of smallest particles (powder).

Higher abrasion leads to blockage and clumping, resulting in lower filter performance and high edge attraction of solvent vapours.

Particles with high ballpan hardness provide higher resistance to abrasion, and ensure constant filter performance.



# Active Carbon Important Facts



**THE System  
for Solvent Safety**

|   |                            | Test method  |
|---|----------------------------|--------------|
| Bulk density  | 410 ± 30 kg/m <sup>3</sup> | ASTM D 2854  |
| Specific humidity (% of weight)   | < 5 %                      | ASTM D 2867  |
| Benzene adsorption (% of weight) out of air at 20 °C<br><small>* p/p<sub>s</sub> = relative saturation<br/>(Saturation concentration at 20 °C, 320 g/m<sup>3</sup>)</small> | <b>p/p<sub>s</sub>*</b>    | <b>Value</b> |
|   | 0.9                        | 45 ± 2 %     |
|   | 0.1                        | 36 ± 2 %     |
|   | 0.01                       | 28 ± 2 %     |
|   | 0.001                      | 17 ± 2 %     |
| Inner specific surface  | 1,200 m <sup>2</sup> /g    | DIN ISO 9277 |
| Particle diameter   | 2 - 4 mm                   | ASTM D 2862  |
| Ash content (% of weight)   | < 10 %                     | ASTM D 2866  |
| CCl <sub>4</sub> -adsorption (% of weight)  | 70 %                       | ASTM D 5742  |
| Ball pan hardness (% of weight)   | 98 - 99 %                  | ASTM D 3802  |



The specifications are based on the active carbon in its original condition. Test methods according to ASTM standards have been applied and are available on demand

## Adsorption zone

Adsorption of solvent vapours starts at the filter's bottom (intake), the area of the first contact to the active carbon filling. After the particles in this area have become saturated, the vapours push along through the filter, until they meet unsaturated particles to adsorb them.

The area between saturated and unsaturated particles is commonly described as adsorption zone. A short adsorption zone protects the particles in the upper filter part from early saturation. Therefore, it takes longer time to filter breakthrough and unfiltered escape of solvent vapours.

## Particle Diameter / Grain Size

In addition to its other characteristics, an appropriate particle size of the active carbon provides better flow and adsorption of solvent vapours.

Undersized particles interfere the vapour flow and cause filter blockage. Oversized particles lead to gaps, permitting solvent vapours to escape without being adsorbed.

S.C.A.T. active carbon particles are perfectly balanced for low flow resistance and high filter performance.

## Ash content

The ash content is an indicator for the purity of active carbon. It specifies the content of foreign substances or elements, remaining in residual amounts after production of the active carbon.

This does not affect the basic function of the active carbon, although higher ash content can affect filter performance.

## Water content

Active carbon also adsorbs moisture besides solvent vapours. The water content significantly depends on environmental conditions, such as air humidity, temperature, air circulation etc.

S.C.A.T. active carbon holds a water content of less than 5% in its original condition.

## CCl<sub>4</sub> Adsorption / Butane Activity

The carbon tetrachloride activity specifies the active carbon's charge with CCl<sub>4</sub> per cent by weight. It is an indicator of the pore volume.

Due to toxicity and hazardousness of CCl<sub>4</sub> to human health and environment, the carbon tetrachloride activity has been replaced by the butane activity. Butane activity is a derivative of the CCl<sub>4</sub> activity, and can be converted as follows:

$$\text{Butane activity} = \text{CCl}_4 \text{ activity} / 2.55$$





**THE System  
for Solvent Safety**

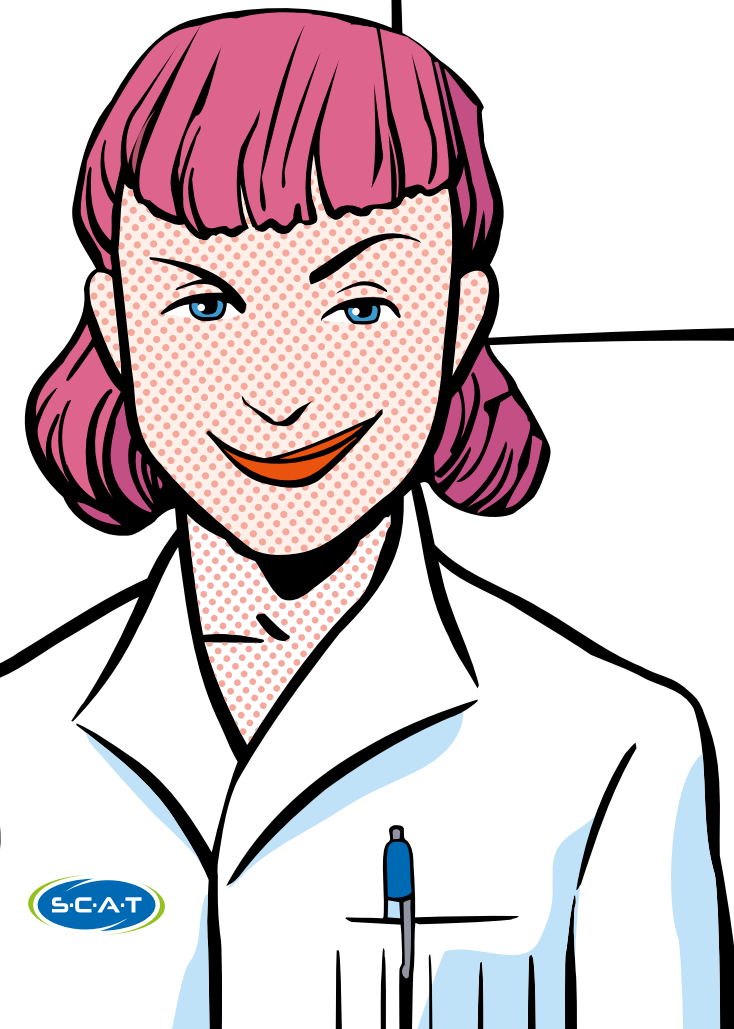
S.C.A.T. Europe GmbH  
Opelstrasse 3  
64546 Mörfelden-Walldorf  
Germany

 **Phone: +49 (0) 61 05 / 30 55 86 - 0**

 **e-Mail: [info@scat-europe.com](mailto:info@scat-europe.com)**

 **Internet: [www.scat-europe.com](http://www.scat-europe.com)**

Your official S.C.A.T. Partner:



#200131 / 23082019

