

Activated Carbons  
*for* Industrial,  
Military *and* Nuclear  
Protection



**Jacobi**  
THE CARBON COMPANY



# The Proactive Company



**SAFEGUARDING HEALTH AND PROTECTING** people from hazards caused by airborne chemical contaminants is a significant consideration in modern society. Prevention and control of disease and workplace related illnesses are a challenge for any responsible company or organization.

It is becoming increasingly more difficult to comply with a growing number of stringent regulations from government authorities like NIOSH and CEN, and complex standards like OSHA and REACH. These standards outline the necessary requirements for maintaining a safe workplace, as well as protecting the environment. As an industry partner, Jacobi Carbons accepts these challenges and finds suitable production methods to help our customers comply with these increasing demands.

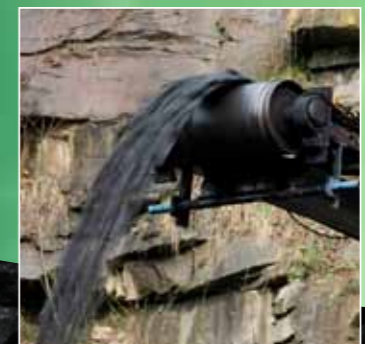
Jacobi Carbons has extensive knowledge of regulation standards in the Personal Protection sector and deep insight into the complex markets in which our customers operate. No matter the sector – industrial, military or nuclear – we are equipped with the activated carbons to support our customer's needs. Our highly specialized products are often tailor-made for unique applications and designed to meet the most exacting conditions.

Jacobi has developed and maintains a portfolio of over 100 impregnated carbon products. A number of these are chromium-free and able to combat non-standard gases such as formaldehyde, while offering optimal cost benefit performance. Our R&D lab will find a solution for any particular application. Consistent quality and availability is vital, and our focus on our customer's success is second to none.

Our tailor-made products, superior know-how and reliable deliveries are added values that provide our customers with effective solutions while meeting their personal and environmental responsibilities.



With over 100 impregnated carbon product grades tailored for use in personal protection we have a solution to fit your application needs.







**IT IS IMPORTANT FOR US** us to be more than a supplier of high quality activated carbon products. We also strive to be a close partner that provides unique solutions for our customers. Our R&D department, as well as our technical experts, have extensive knowledge of all applicable procedures and can provide assistance, performance testing and product handling issues to assist in production of protective devices.

Jacobi Carbons' laboratories are equipped to perform a range of performance and characterisation tests. These include nitrogen and argon adsorption surface area determination; toxic bench gas testing, thermogravimetric (TGA) evaluation amongst many others. Our equipment also measures and controls the physical properties of activated carbons, allowing us to provide detailed and customer-specific reporting on all aspects of product quality and performance. And we normally also provide our customers with detailed reports and recommendations.

Jacobi Carbons has mastered the complex process of manufacturing specialized activated carbons of superior quality derived from a careful selection of high quality coconut shell raw material ensures harder products of high density (higher volume activity) and less liable to dusting during handling. This represents significant benefits to both the manufacturer and user of respiratory and collective protection products.

Our production base is the most diverse in the industry. Manufacturing plants are located in France, Germany, USA, Sri Lanka, India, Vietnam and the Philippines. Products are stocked at our own warehouses or with our distribution partners, which ensures first rate supply worldwide.

# The Inventive Company

Our team of application experts provides assistance on all aspects of personal protection including reports and recommendations.



Coconut shells are harder, more microporous and higher in density than coal-based raw materials. Benefits include lower attrition, less dust and a more efficient activated carbon end product.







Throughout all tiers of industry, the use of activated carbon in protection of individuals from contact with potential harmful chemicals is accepted as the easiest, most flexible method available.

The use of high activity adsorptive carbons in group protection filtration systems is increasingly important in the workplace.



# The Protection Company



**THE POTENTIAL OF EXPOSURE** to chemical, biological and radiological materials are potentially harmful to workers' health. As the health effects of contact with industrial chemicals and gases encountered by civil emergency services is understood, there is a growing need for protection of individuals in roles where exposure is inevitable.

Personal protective equipment like APR's, PAPR's and CBRN clothing that contain activated carbon readily adsorbs airborne contaminants. As inorganic compound vapors are difficult to adsorb onto base activated carbon due to their chemical properties, our superior range of impregnated activated carbons are designed specifically to remove these compounds.

Jacobi Carbon's products are also highly effective for collective protection and filtration systems used on ships, vehicles, aircraft and civilian shelters in municipal, as well as industrial places. We provide high quality and cost effective activated carbon for a wide array of applications. The portfolio also includes a range of chromium-free products to comply with existing and future legislation in certain markets. Our R&D laboratories constantly work on finding new and more effective solutions to deal with the ever-changing landscape facing our customers.



No longer is concern over respiratory protection restricted to industrial processes; it affects everyone exposed to hazards and even ambient polluted atmospheres.

## STANDARD PRODUCT RANGE EN14387 - INDUSTRIAL

Protection Against	Filter Type EN14387 (EU)	Recommended Carbon Grades	Main Benefits
Organic Vapours >65°C (Test Gas: C <sub>6</sub> H <sub>12</sub> )	A	AddSorb GA	Very high activity +85% CTC
		AddSorb GA1	High activity, +80% CTC
		AddSorb GA2	Standard activity, +75% CTC
Organic Vapours <65°C (Test Gases: Dimethyl Ether, Isobutane)	AX	AddSorb G-AX	Effective against low boiling point OV's
Inorganic Vapours (Test Gases: Cl <sub>2</sub> , H <sub>2</sub> S, HCN)	B	PicaTox 84MK	Removal of Inorganic Vapours. Cr impregnated
		PicaTox BCC	Removal of Inorganic Vapours. Cr free
Acid Gases (Test Gas: SO <sub>2</sub> )	E	AddSorb GE	Enhanced acid gas performance
		PicaTox TAGA	Cost effective standard acid gas performance
Ammonia & Amines (Test Gas: NH <sub>3</sub> )	K	AddSorb GK	Minimal corrosion effect on Al canisters
		AddSorb AM80	High Performance, plastic canisters
General Protection	A, B, E	PicaTox BCC	Chromium Free
		AddSorb 84MK	High performance, Cr impregnated
General Protection	A, B, E, K	AddSorb MGR	Cr Free with Formaldehyde performance
		AddSorb MGCFz	Cost effective Cr free, Hg removal
		AddSorb MGC-3M	High performance, Cr impregnated

## STANDARD PRODUCT RANGE NIOSH - INDUSTRIAL

NIOSH Filter Classes (USA)	Recommended Carbon Grades	Properties
Organic Vapor (OV) (Cyclohexane or Carbon Tetrachloride)	AddSorb NFC	Very high activity +100 CTC, granular coconut base
	AddSorb NFB	High activity, +95 CTC granular coconut base
	AddSorb GA	High activity, coconut based +85 CTC
	AddSorb GA1	Standard Activity granular coconut based +80 CTC
Acid Gas (AG) (SO <sub>2</sub> , H <sub>2</sub> S, HF, ClO <sub>2</sub> , HCL, CL <sub>2</sub> )	PicaTox AG	Standard acid gas adsorbent
	PicaTox AG-F	Acid gas removal with added formaldehyde capability
Ammonia & Amines (Test Gas: NH <sub>3</sub> , NH <sub>3</sub> CH <sub>3</sub> )	AddSorb GK	Minimal corrosion effect on Al canisters
	AddSorb AM80	High Performance, plastic canisters
Mercury (Test Gas: Hg)	PicaTox	High efficient product for Mercury Removal
Multi-gas (OV, Acid Gas, Methylamine & NH <sub>3</sub> )	AddSorb MGR 20	Multi-gas adsorbent with sufficient OV performance as classified by NIOSH for multigas cartridges



STANDARD PRODUCT RANGE MILITARY

Application	Protection Against	Recommended Carbon Grades	Properties
Respirators	Chemical Warfare Agents, CWA - e.g. AC (HCN), CK (Cyanogen Chloride), PS (Chloropicrin)	PicaTox MFAT 1101	Very high efficiency, (including Cr), UK-Def.Stan.68/133 iss.3
		Addsorb M	High efficiency, (non Cr)
		PicaTox 56S	Good cost performance ratio French Standard SA 6122/6121
		PicaTox MFA1-S	French standard 6122
Collective Protection (Shelters, Vehicle...)	CK (Cyanogen Chloride) DMMP	AddSorb MGB-S	Israeli Standard, SI 4570
		Addsorb MGL-S	Israeli Standard, SI 4570
	CWA	PicaTox 56S	French Standard SA 6121/6122
		PicaTox B4M	French Standard SA6121
		PicaTox TA 8311	
		PicaTox MFAT 1101	Stanag 4447 Shipboard Filters
	CK (Cyanogen Chloride), PS (Chloropicrin) Chlorine Sulphur Dioxide Ammonia	PicaTox MT	

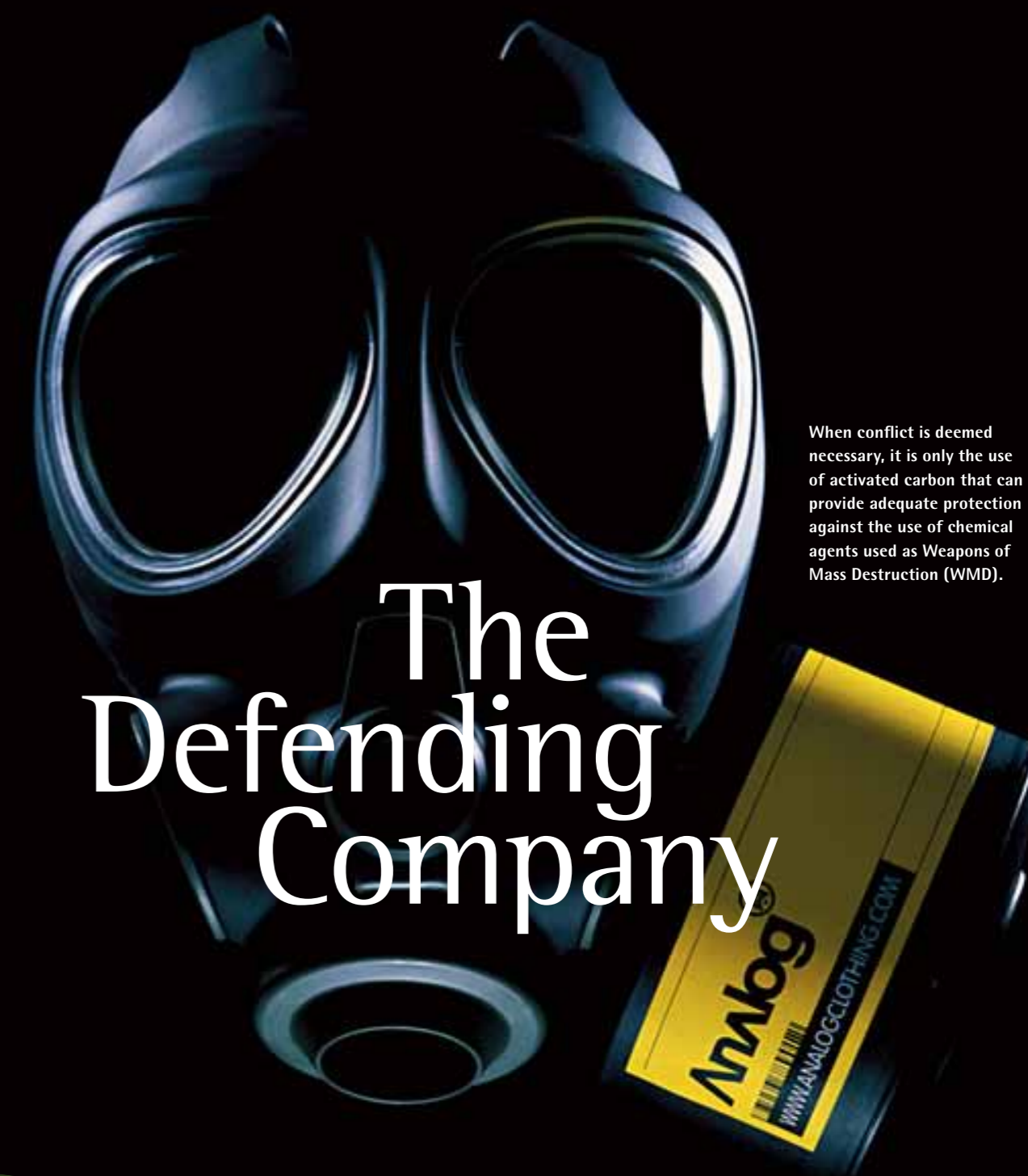


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**ACTIVATED CARBON IS** the principal means of providing protection against various chemical warfare agents and toxic industrial gases due to its adsorptive properties. Impregnating activated carbon with specialized chemicals further enhances this capability. Our impregnation technology, utilizing various organic and inorganic salts, is designed for development of products which are in full compliance with current military regulations.

Collective protection filtration systems for warships, fighter aircraft, armored and other ground vehicles as well as military shelters are also part of our portfolio. Jacobi Carbons manufactures chromium-free products for the adsorption of chemical warfare agents (CWA) as well as (TIC) for both acid and alkaline gases. The R&D department is proud of its unique ability to provide tailor made solutions for a wide variety of challenges.



# The Defending Company

When conflict is deemed necessary, it is only the use of activated carbon that can provide adequate protection against the use of chemical agents used as Weapons of Mass Destruction (WMD).

In theatre, combat troops must be afforded optimum protection by highly efficient, high capacity adsorption devices. Such devices use premium activated carbons from Jacobi, allowing soldiers to perform their duty with minimal restriction or impairment.





NUCLEAR PRODUCT RANGE

Protection Against	Carbon Type	Property
Radio active isotopes (Capture of Radioactive Methyl Iodide and Iodine by chemisorption and isotopic exchange and delay of Noble Gas emissions)	PicaTom TA5T	High capacity in low CO <sub>2</sub> environment
	PicaTom TA3IK	High capacity in high CO <sub>2</sub> environment
	PicaTom RI32	For use in CO <sub>2</sub> unknown environment
	AddSorb RC1	Ultra high isotopic exchange in CO <sub>2</sub> rich environment
	PicaTom RI	For passive capture filters
	EcoSorb CH	Noble gas removal

Application:

- Containment zones of nuclear power stations.
- Impregnated with non-radioactive iodine and/or other organic substances promoting an isotopic exchange.
- The porosity also adsorb other contaminated gases.
- The impregnation is adapted to various levels of relative humidity.

# The Containment Company

**NUCLEAR POWER GENERATION** is considered among the most efficient and environmentally considerate ways to generate energy. However, the extreme toxicity of the process means that should an accident occur, there is a high risk of effect on significant population numbers, including clean-up personnel and operators at the power station. Since the inception of nuclear power, activated carbon has been the most accepted way to provide respiratory protection against radioactive iodine compounds or other rare gases thanks to its ability to effectively adsorb these agents.

Today there is a need for new and more sophisticated activated carbons that can absorb and neutralize an array of contaminants. The high porosity of our coconut shell based activated carbons also adsorb other contaminated gases. When impregnated with non-radioactive iodine and/or other organic substances it results in a radioactive isotopic exchange that is adapted to various levels of relative humidity.

Jacobi Carbons' high quality, cost effective, and reliable activated carbons offer a proven safety record regarding radioactive gas containment. These inherent properties of our carbons provide customers with the performance they need.

At our laboratory, we are constantly researching the present and future requirements of the nuclear industry. Our R&D technicians are focused on the advancement of nuclear emission control and comprehensive testing and evaluation of activated carbons for the nuclear industry.



Throughout the nuclear industry, whether in research or production, activated carbons from Jacobi provide protection in everyday and emergency situations.





Jacobi Carbons has developed the most diverse production base in the industry with manufacturing plants, reactivation plants and sales offices located in 19 countries around the world.

# The Global Company



All markets served by our global network of agents and official distributors.

#### MANUFACTURING PLANTS

China	United Kingdom
France	United States
Germany	Vietnam
India	
Italy	
Sri Lanka	
The Philippines	

#### SELECTED PRODUCT DISTRIBUTORS

Algeria	Ecuador	Peru
Argentina	Indonesia	Saudi Arabia
Australia	Kazakhstan	Russia
Brazil	Mexico	South Africa
Canada	Myanmar	Turkey
Colombia	New Zealand	United States
Ghana	Papua New Guinea	Uzbekistan

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**PICA**



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