

SPOTLIGHT

Activated Carbon

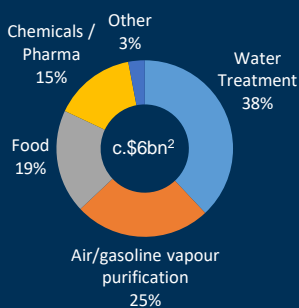
- Sector overview
- Mega-trends
- Deal activity



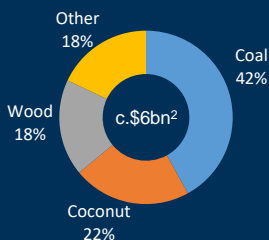


The activated carbon sector is a **c.\$6bn¹ high growth market** (CAGR of c.11% for 2021-26E) driven by tightening regulation and an invigorated focus on purification (water, air, food and beverage)

By application²



By raw materials²



Stifel chemicals team members have deep knowledge of the activated carbon market and served as financial advisor to AAC on the sale of DESOTEC to EQT Partners in 2017³.



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Introduction

Activated carbon, a porous form of carbon, is produced from wood, coconut shell, coal, lignite or petroleum pitch and is extensively used for the removal of contaminants in liquid, gas purification, and color & odour control for food and beverages.

The market is estimated to be c.\$6bn¹ in 2021 and grow to \$10bn¹ in 2026 (CAGR of c.11%).

This growth will be driven by increasingly stringent regulations on emissions, emerging end-uses (e.g. energy storage) and broadening value-added services (e.g. recycling, reactivation and portable filtration solutions).

The impact of COVID-19 on the activated carbon market has been varied depending on end-market.

Industrial uses such as flue gas mercury removal saw reduced demand. However, water treatment and food and beverage applications remained resilient.

- ▲ PE owned
- Privately owned
- Listed entity / Listed parent company

Landscape

The activated carbon landscape is diverse with Calgon Carbon, Ingevity, Cabot⁵ and Jacobi Carbons among the largest players.

The strategic position of the participants is broadly defined by:

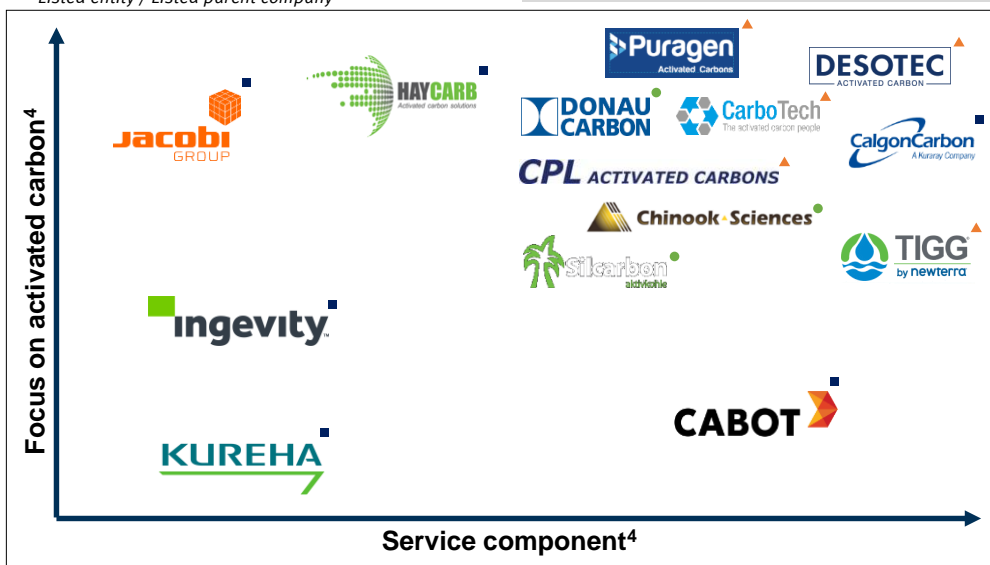
- Raw Material (coal, coconut etc.)
- Market (automotive, food etc.)
- Services (level / nature)

Some listed players include:

- Calgon Carbon (part of listed Kuraray) provides reactivation, equipment services, leasing, field services and logistics
- Ingevity offers carbon solutions for automotive applications

PE owned companies (tend to have high services component) include:

- CPL (Vision Capital) – mobile filters, engineering, reactivation
- Desotec (Blackstone / EQT⁶) – mobile filters, reactivation
- TIGG (Frontenac) – filter and absorber rental, environmental remediation



Source: Company data;
 (1) Stifel view based on various research reports; (2) Based on IHS Markit Chemical Economics Handbook: Activated Carbon; Nov.2020; rev. Feb. 2021, Source: Ingevity investor presentation; (3) Deal executed by Stifel Chemicals Team members as part of prior employer; (4) Based on estimated % of revenues from activated carbon and/or services as a % of total revenue; (5) Cabot announced it has entered an agreement to sell its Purification Solutions business to One Equity Partners on 26 Nov 21; Source: Cabot website; (6) EQT retained a 15% stake in DESOTEC after sale to Blackstone in May 2021



Key trends

Sustainability

- Tightening regulations on emissions, water disposal etc. to drive demand
- Sustainable, plant based raw materials e.g. coconut shells and hardwoods are more desirable than coal, pitch etc.

Services

- Reactivation services which enable the recycling and re-use of spent activated carbon reduces waste
- Portable filtration equipment rentals
- Closed-loop services (e.g. supply of mobile filtration equipment, collection, reactivation and support) that offer regular and predictable revenue streams for providers

Emerging, high growth end-markets

- Fuel storage
- Super capacitors (energy storage)
- Tablets and capsules for drug delivery



Strategic actions

Cabot announced a strategic review of its Purification Solutions business in 4Q2020 and its sale to One Equity Partners in Nov 21 (expected close 2Q FY22). It also sold its U.S. coal mine in 2020 which supplied the raw materials.

Kuraray acquired Calgon Carbon in 2018 to benefit from synergies with its existing U.S. / Europe focused activated carbon business, as well as increasing coverage into Japan and Asia. It is expanding facilities in the U.S. and Belgium to meet growing demand and is considering U.S. expansion of recycling and reactivation services.

Haycarb is seeking further capacity and environmental service expansion, together with backward integration into sustainable raw material supply. Recent growth has been driven by impregnated solutions with new developments in super capacitors, respirators, face masks and containerised treatment systems.

Ingevity plans to diversify beyond gasoline vapour emission control, but focus on high margin and sustainability focused end-uses. It plans to invest in additional manufacturing facilities to drive revenue growth.

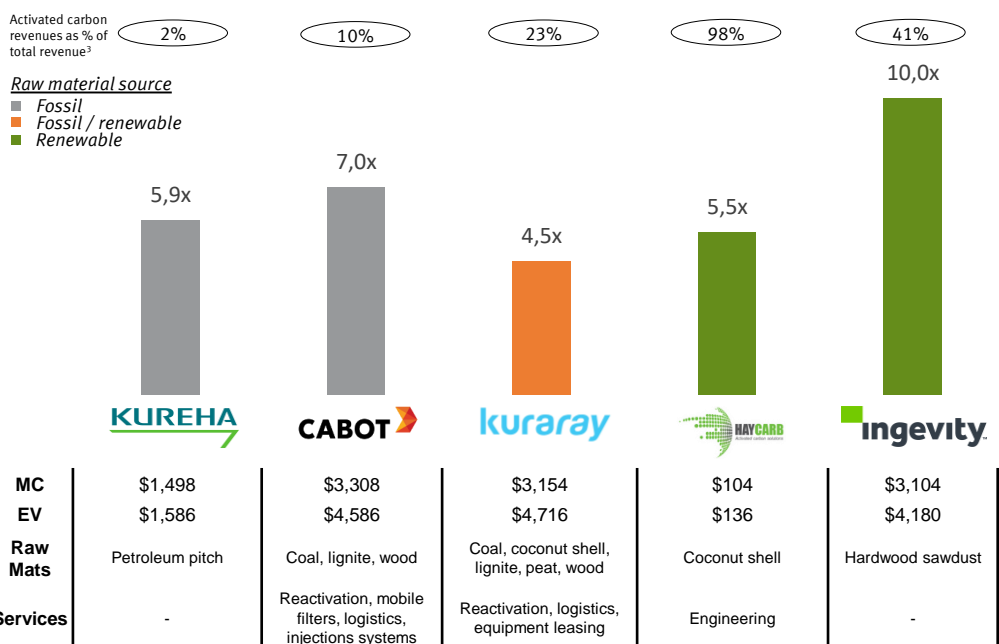
Valuation

The key value enhancers for the listed companies are sustainability (including of raw materials e.g. coal, petroleum pitch less preferred over coconut shell) and services component, in addition to scale.

The multiples of Cabot and Kureha (though based on coal / petroleum pitch) are less relevant, as the share of activated carbon is very low. Cabot benefits from a higher service component.

Ingevity and HayCarb¹ (despite size) tend to trade higher due to sustainable raw materials (hardwood sawdust and coconut shell respectively).

Trading Comparables – 2021E EV/EBITDA²



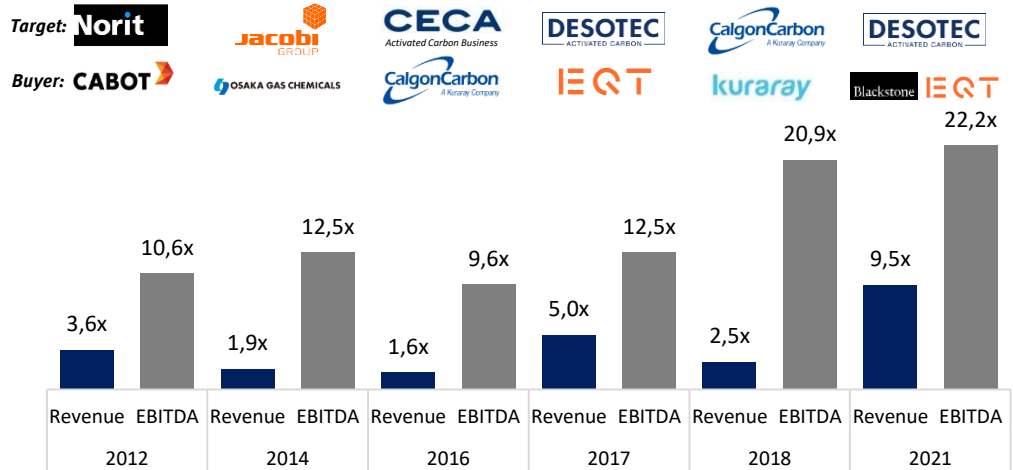
Source: Company data
 (1) Haycarb is listed on the Colombo Stock Exchange in Sri Lanka
 (2) Factset – as of 17th Dec 21 sourced from market and company data
 (3) Stifel view based on estimated revenues from activated carbon business based on FY20 Annual Reports



The transaction multiples have trended upwards over the last decade

These have been driven by a higher service component and synergies

Key Transactions in the Sector¹



The transaction multiples have trended upwards over the last decade.

These have been driven by a higher service component and synergies

- Desotec has been sold twice in the last four years at high multiples, given its strong service offering with recurring revenue driving a high EBITDA margin

- Kuraray's acquisition of Calgon Carbon was driven by synergies and growth opportunities via complimentary regional focus and increased purchasing power/ security of supply
- OGC's acquisition of Jacobi Carbons (significant service element) complimented their existing business, creating a global leader across key-markets

Case Study – Desotec Activated Carbon

Stifel chemicals team members served as financial advisor to AAC on the sale of DESOTEC to EQT Partners in 2017².

DESOTEC specializes in activated carbon technologies and mobile purification solutions for liquids, gases and soil.

- Extensive preparation of elaborate marketing materials, full suite of vendor DD reports and W&I insurance
- Early management interaction with selected strategic and financial parties to warm up interest and educate buyers
- Staggered approach of tier-1 before tier-2 strategics, followed by the approach of private equity firms and family offices
- Strong interest from a large number of buyers with multiple binding offers at the finish line, fully financed

- **Sellers:** AAC Capital and the Management Team
Location: Amsterdam ,Netherlands
- **Acquirer:** EQT Partners
Location: Stockholm, Sweden
- **Closing:** August 2017

Source: Company data
 (1) MergerMarket – as of 17th Dec 21 sourced from company data
 (2) Deal executed by Stifel Chemicals Team members as part of prior employer



We have an experienced dedicated chemicals investment banking team with coverage over key regions supported by strong product teams globally

The Global Chemicals Team at Stifel has successfully closed 30 transactions since 2018¹

Core Global Chemicals Team



Aamit Joshi
Managing Director
London



ALANTRA LINCOLN
Dresdner Kleinwort

Global Co-Head of Chemicals

- c.20 years of helping global companies achieve their strategic initiatives via acquisitions, divestments & private equity fund raises
- Relationships with global and mid-market chemicals firms across Europe, North America and Asia



Dr. Bernd Schneider
Managing Director
Frankfurt



ALANTRA LINCOLN
pwc

Global Co-Head of Chemicals

- Over 20 years of professional experience in mergers and acquisitions, corporate finance and business development
- Involved in over 50 transactions within the chemicals industry with a majority being cross-border transactions



Arya Abedin
Director
New York



Morgan Stanley
BARCLAYS LINCOLN

Global Deal execution leader

- Over 12 years financial management, including capital raising, investor dialogue, M&A, and capital allocation strategy in the chemicals sector
- Led execution for IPO mandates, buy-side and sell-side transactions



Amitabh Ghule
Senior VP
London



Investec
HSBC pwc

Global Deal execution leader

- Nearly 20 years of investing, M&A, fundraising and consulting experience
- Advised major oil, petrochemicals and mining companies on a range of cross border transactions globally
- Operational experience in petchem



Daniel Reynolds
Analyst
London



NexantECA



Florian Kellermeyer
Analyst
Frankfurt



EVONIK

Stifel Global Locations



(1) Includes deals executed by Stifel Chemicals Team members as part of prior employer



Appendix – Activated Carbon Overview

What is Activated Carbon?

Activated carbon is a porous form of carbon that can bind to various substances (liquid or gas) through adsorption, making it highly suitable for purification and filtering. The product has a large number of fine pores, whose size and mutual proportions are determined by the raw material used and the activation method. A single teaspoon of activated carbon has an internal surface area of an entire football pitch.



Activated Carbon pore structure¹

How is Activated Carbon produced?

The production process consists of carbonizing and activating coal, wood, coconut and nut shells, olive stones, and other organic materials through a gaseous or chemical process.

Product Variation

Activated carbon is sold in various forms depending on end-use application:



Cloth



Granular



Pelletized



Powdered

Raw Material Comparison²

Material	Activation process	Porosity	Functionality	Primary applications
Hardwood sawdust	Chemical Thermal	Micro (small) Meso (med.) Macro (large)	Capture Hold Release	Gasoline vapour Methane Water Food
Bituminous coal	Thermal	Micro	Capture Hold	Water Air / gas
Lignite Coal	Thermal	Micro	Capture Hold	Mercury
Coconut	Thermal	Micro	Capture Hold	Air / gas Gas masks

Source: Company data
 (1) Calgon Carbon Presentation
 (2) Ingevity Presentation – Innovative Pathways for Activated Carbon, June 2021



Appendix – Some companies active in the Activated Carbon area



Headquarters:
Nottingham, UK
Ownership:
Private, not disclosed
Description:
Production and development of activated carbon



Headquarters:
Sheffield, UK
Ownership:
CPL Industries, Vision Capital
Description:
A leading manufacturer and supplier of activated carbons and related services



Headquarters:
Roeselare, Belgium
Ownership:
EQT, Blackstone Group
Description:
International developer, producer and supplier of purification solutions mainly based on activated carbon technology



Headquarters:
Frankfurt, Germany
Ownership:
Donau Realitäten GmbH
Description:
Supply of activated carbon, reactivation and disposal services, service and application technologies



Headquarters:
Essen, Germany
Ownership:
International Chemical Investors
Description:
Activated carbon solutions, reactivation, impregnation, mobile absorber rental, application technology



Headquarters:
Florida, U.S.
Ownership:
Vision Capital
Description:
Manufacture, marketing and distribution of activated carbon solutions



Headquarters:
Kirchhundem, Germany.
Ownership:
Private, not disclosed
Description:
Various activated carbon products and filter solutions



Headquarters:
Philadelphia, U.S.
Ownership:
Newterra Group, Frontenac
Description:
Activated carbon solutions: filters, adsorption equipment and services for environmental remediation

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