CLEARTECH OIL®

ACTIVATED DEPTH MICROFILTRATION®

ANTARA GROUPE

THE POWER OF COMBINING TWO INNOVATIVE TECHNOLOGIES FOR EFFECTIVE OIL TREATMENT

DEVELOPED TO :

ELIMINATE VARNISH, SOOT, GEL, WATER & SOLID PARTICLES

IMPROVE OPERATING EFFICIENCY +100%

PROTECT YOUR SYSTEM

APPLICATION AREAS

Our filter media is designed to treat lubricating, hydraulic and engine oils. **CLEARTECH OIL®** is used for sensitive equipment (turbines, compressors) and high-performance systems (aviation, automotive, industry).

Mineral oil	Synthetic oil	Phosphate esters	Non-flammable hydraulic fluids	Organic oil	Engine oil	Fyrquel	Skydrol

Types of contaminants :

CLEARTECH OIL® media effectively captures several types of contaminants from solid particles to submicron molecules.

Performance :

- **Solids: 2 µm particles (Beta 5000 ratio) & Submicronics < 0.1 µm**
- **Dissolved solid and liquid degradation residues, varnish :** Gels, Lacquers, Resins, Soot
- **Water**: retention of 7.2L/element
- **We guarantee that the oil additives are not captured.**

THE COMBINATION OF TWO TECHNOLOGIES

Depth microfiltration

Our composite fiber media is a clever blend of new-generation organic fibers.
The fibers have a tortuosity and porosity which increases vacuum volume and efficiency.
The dispersment of contaminants through very small filtration channels optimize both filter service life and types of trapped contaminants.

Activated filtration

In order to increase the filtration capacity to capture microparticles down to <0.1µm, some filtration aids with specific properties are added to our filter media to create electrokinetic effects. The materials chosen allow us to generate different polarities, to increase void volume and tortuosity. Misopores and polar effects increase the spectrum of pollutants treated.

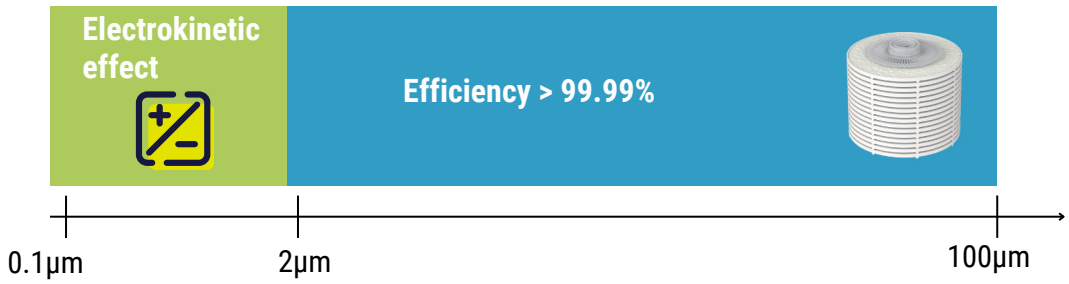
CLEARTECH OIL® EXTENDS SYSTEM LIFE AND REDUCES MAINTENANCE COSTS

UNRIVALLED RESULTS & PERFORMANCE

WIDE FILTER SPECTRUM : 0.1µm - 100µm

The filter media has an efficiency for solid particles of 2 µm with a Beta ratio of 5000 and can stop submicronic pollution below < 0.1µm with constant efficiency up to a pressure increase of 2.5 bars.

Oil Filtration Performance for Particles (Performance up to 2.5 bars)

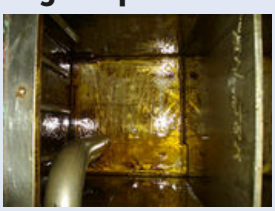


GUARANTEED OIL PURITY

BEFORE

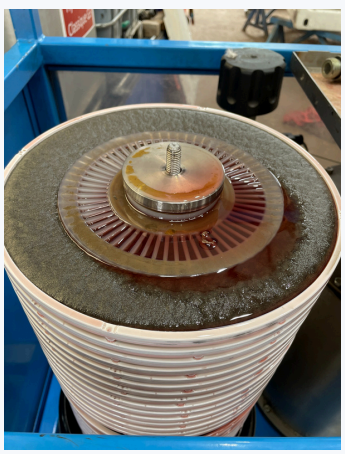
MPC: 45
24/23/22

High deposit level



AFTER

MPC: 5
12/11/9



Clean system

KEY PERFORMANCE

Effective Contaminant Retention	10 000g/m²
Water Retention	7.2L/element
Maximum Flow Rate/ Unit for Solid Particles	60 L/min/element
Connections	Can replace HYDAC style Olf N15DMXXX, PALL, Supradisc oil

CLEARTECH OIL® effectively removes oxidation residues and submicronic particles

OUR INNOVATIVE APPROACH TO FILTER DESIGN

CLEARTECH OIL®

DEPTH MICROFILTRATION

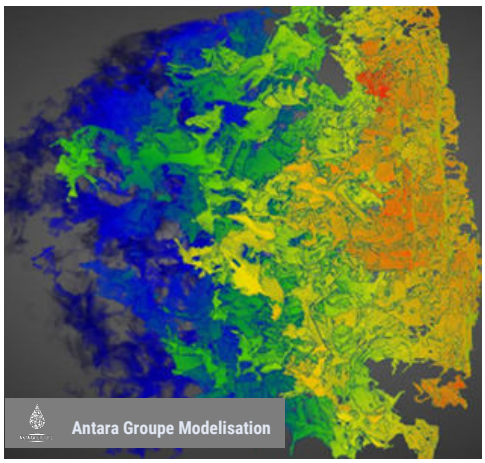
Unlike other common filter media found, our specially designed filter media not only retains contaminants on the surface but also captures them throughout the entire depth of the media. As a result, **CLEARTECH OIL® with its exceptional properties, allows optimal retention of varnish (degradation residues), gels, solid particles, submicronic particles smaller than 0.1 µm, and water molecules.**

Results
Increased media and oil lifespan

How do we do it?

CLEARTECH OIL® is designed to optimally capture polar components (varnish, gel, water...). We have developed a media composed of organic composite fibers (similar to lignin) that possess an unparalleled level of porosity and tortuosity (filtration K-factor). These fibers form a network of macropores, mesopores, and micropores, **creating a maximum exchange** surface area and preventing any performance loss during high contaminant loads.

Illustration of porosity and tortuosity modeling



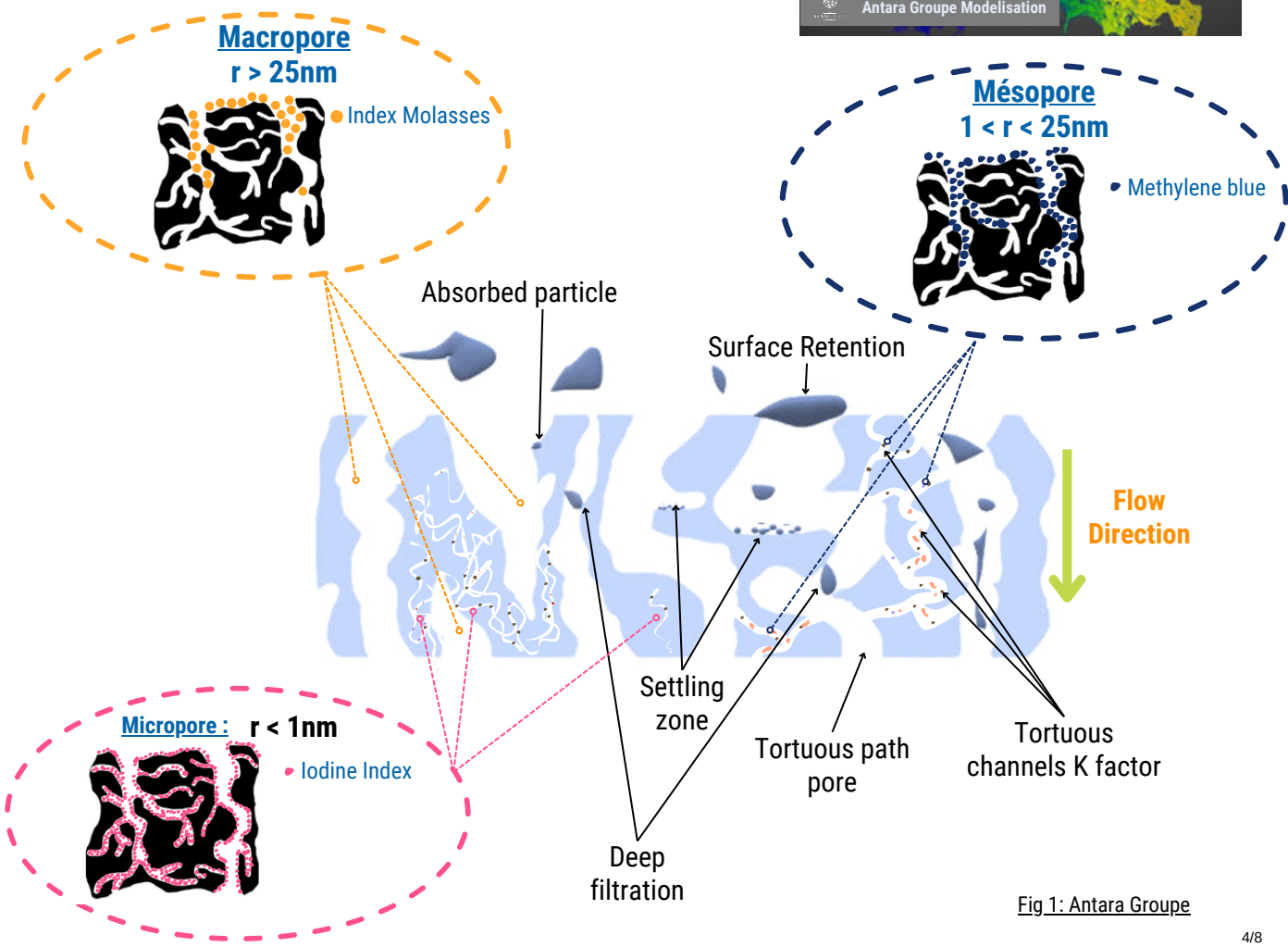


Fig 1: Antara Groupe

OUR INNOVATIVE APPROACH TO FILTER DESIGN

CLEARTECH OIL®

DEPTH MICROFILTRATION

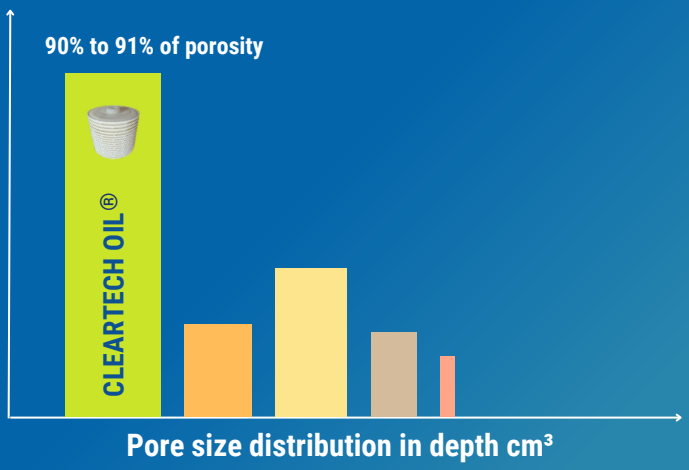
Our pollutant retention capacity and efficiency superior to other techniques on the market

Porosity (%)

For the same material thickness, Cleartech Oil® has greater porosity and permeability. The distribution is also wider and more varied.

Benefits:

+ Efficiency ↑
+ Lifespan ↑

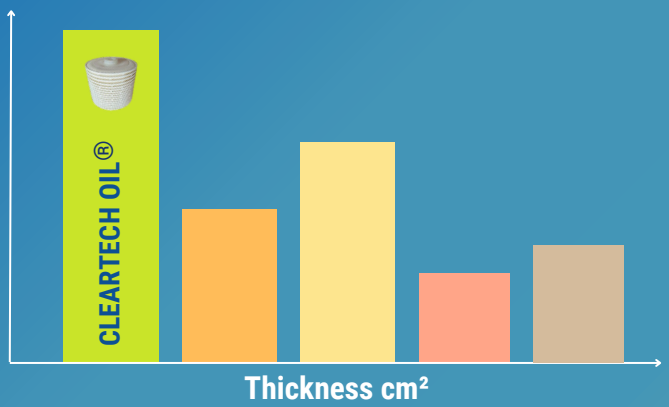


Tortuosity K Factor

Having a high K factor allows for greater efficiency in capturing fine submicronic particles. This has a direct impact on filtration mechanisms: inertial impact and absorption.

Benefits:

+ Efficiency ↑
+ Filtration spectrum ↑
+ Lifespan ↑



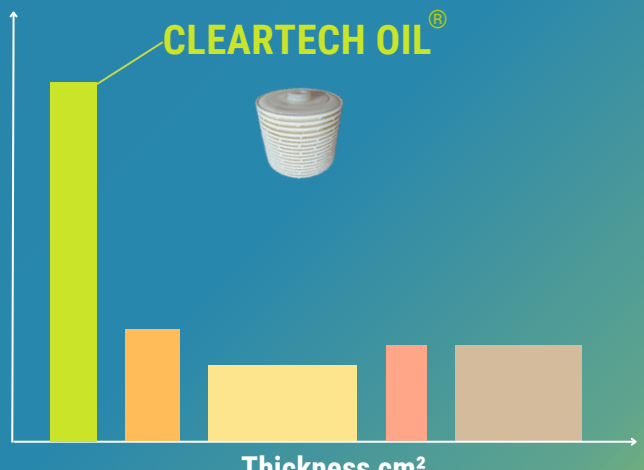
- CLEARTECH OIL®
- BLEACHED CELLULOSE
- COMPACTED CELLULOSE
- STABILIZED INORGANIC FIBER
- CELLULOSE PULP

Specific surface

The specific surface activated via filtration aids and the binder, which stabilizes the structure, increases the attraction of certain polar components and deposits smaller than the actual pore size.

Benefits:

+ Repartition ↑
+ Efficiency ↑



ACTIVATED FILTRATION®

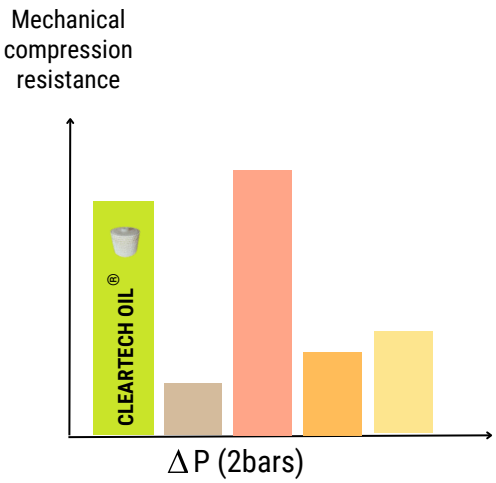
CLEARTECH OIL® is designed to optimally capture polar components and polymers of varying sizes, down to 0.1 µm. ACTIVATED because the materials have **active functional groups** on the surface of their structures, allowing them to retain a wide variety of particles or molecules (molecular weight in dyn) smaller than the actual pore size through polarity effects (various physico-chemical forces). During filtration electrokinetic forces are engaged to capture polar elements, varnish, water and soot.

Benefits
Improved filtration
Increased filter media resistance

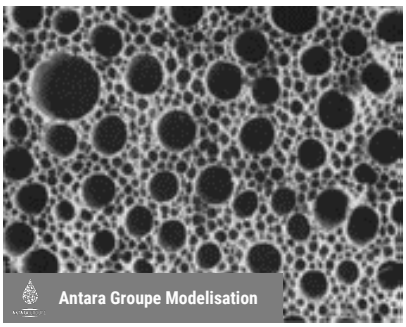
We have specifically chosen these composite elements for hydraulic oil and engine oil applications to optimize teh efficiency and lifspan of the filtering media. This makes **CLEARTECH OIL®** a composite media that combines the best of multiple materials: porosity, tortuosity and electrokinetic effects. **It is the best material of its generation for treating organic fluids.**

How do we do it?

Our filter media is manufactured **by incorporating filtration aids into the structure, which increases the specific filtration surface by 38%**. Their molecular structure with micropores optimizes weak interactions between molecules and provides specific porosity to attract polar components, soot, varnish, and gels **as small as 0.1 µm**. The resulting technical fiber also enhances mechanical resistance during increased pressures, making **CLEARTECH OIL® the most durable filter**.



Microporous structure of filtration aids



MEB – EDX Picture from MACLES University of Orleans

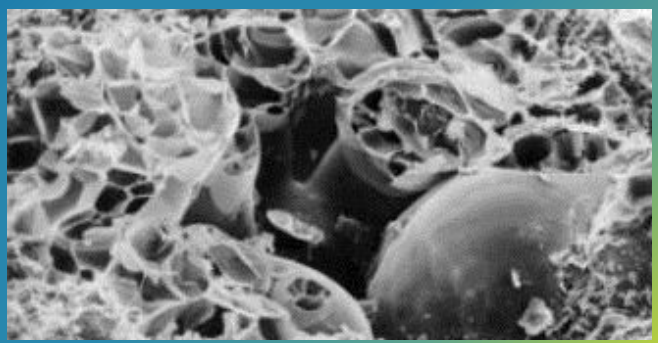
The filtration aids enable the progressive construction of the filtering media throughout the manufacturing process by continuously adding filtering material. The porosity of the filter layer remains stable, allowing **for long filtration cycles before clogging.**

The filtration aids used

Synthetic inorganic aids A1

Synthetic Filtration Aids A1 inside the Fibers SEM

Synthetic inorganic aids B2



Filtration Aids B2 inside the Fibers SEM

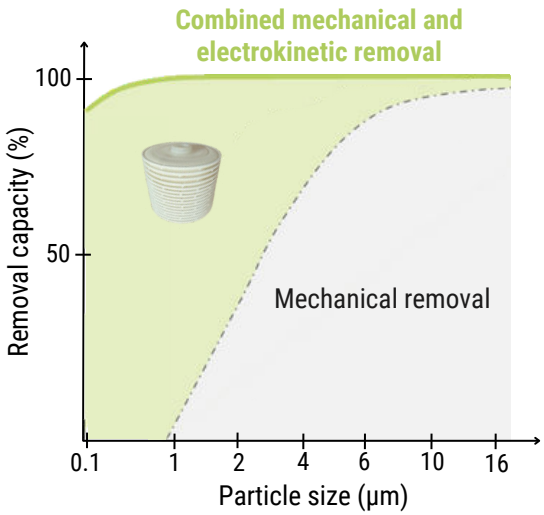
ACTIVATED FILTRATION® FOR PERFECT FILTRATION

CLEARTECH OIL® captures contaminants that no other filter can effectively treat, thanks to unparalleled technology on the market: activated microfiltration. The use of our filtering media guarantees very high fluid purity by capturing the smallest contaminants. **Our media is therefore the solution for fluid treatment with the highest purity requirements or extremely polluted fluids.**

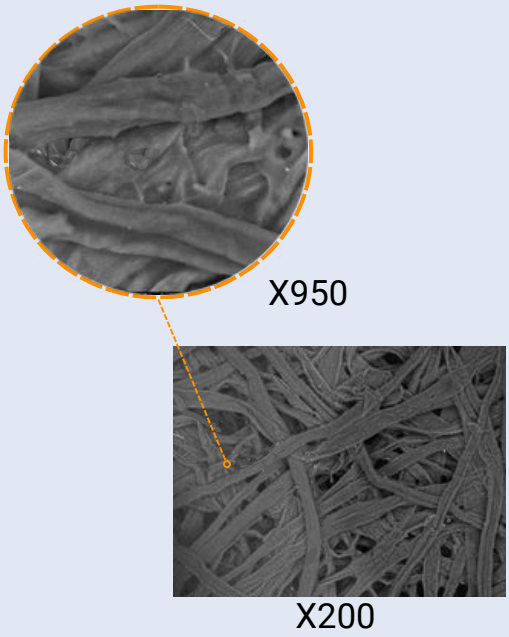
How do we do it?

CLEARTECH OIL® combines two innovative and unprecedented technologies on the market. We have created an optimal structure by using technical fibers that form a depth gradient structure and we have greatly enhanced its absorption capacity through the addition of filtration aids.

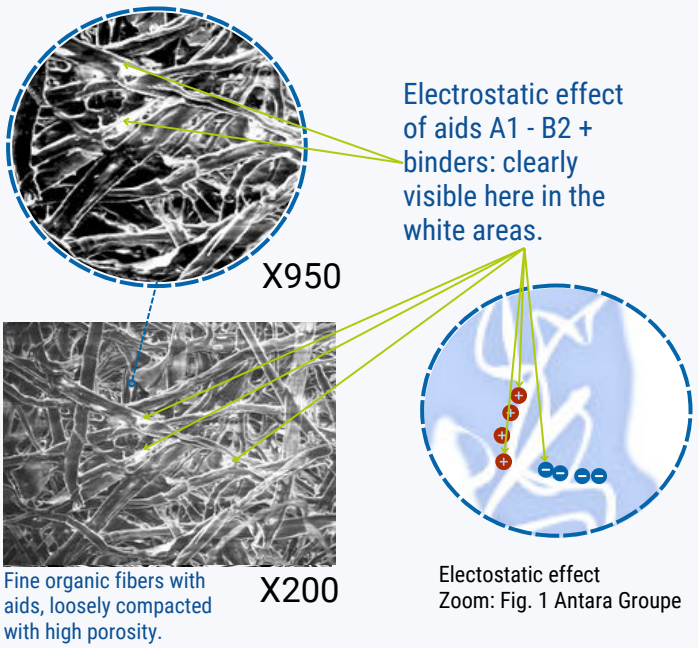
Unlike other media on the market, **CLEARTECH OIL® is made of composite fibers, which are less sensitive to DeltaP, more compact, and have higher porosity.** These inorganic fibers, combined with filtration aid, create **an electrostatic effect** with negative and positive surfaces, allowing for increased **absorption of submicronic particles <0.1 µm and dissolved contaminants.**



Cellulose media



CLEARTECH OIL®



MEB – EDX Picture from MACLES University of Orleans

CLEARTECH OIL®

ACTIVATED DEEP MICROFILTRATION

AGILE FLEXIBLE EFFICIENT IN A CONSTANTLY EVOLVING WORLD

LABORATORY

TRAINING

SERVICE

MANUFACTURING

CLEARTECH OIL® OPTIMIZES OIL FILTRATION TO IMPROVE SYSTEM RELIABILITY

CONTACT US

02 37 44 63 30
www.antara-groupe.com
6 Rue de la Fosse aux Canes
28200 Châteaudun

ANTARA GROUPE

MANUFACTURER Filtration Techniques
LABORATORY Diagnostics, analysis, research, and testing
MEASUREMENT TOOLS Metrology
CLEANING SERVICES Service provision and rentals
TRAINING Accredited training center

VISIT OUR WEBSITE