Clarcel®

FILTRATION WITH DIATOMACEUS EARTH

Diatomaceus Earth are unicellular brown algae whose cellulose membrane has the property of fixing the silica in water. They thus form shells consisting of hydrated silica whose size varies from 5 to 40 microns. The accumulation of these shells, in certain lakes or sea beds, forms large deposits which, after fossilisation, give a light and very porous rock: diatomite.

Manufacturing of filter aids marketed under the Clarcel® brand name

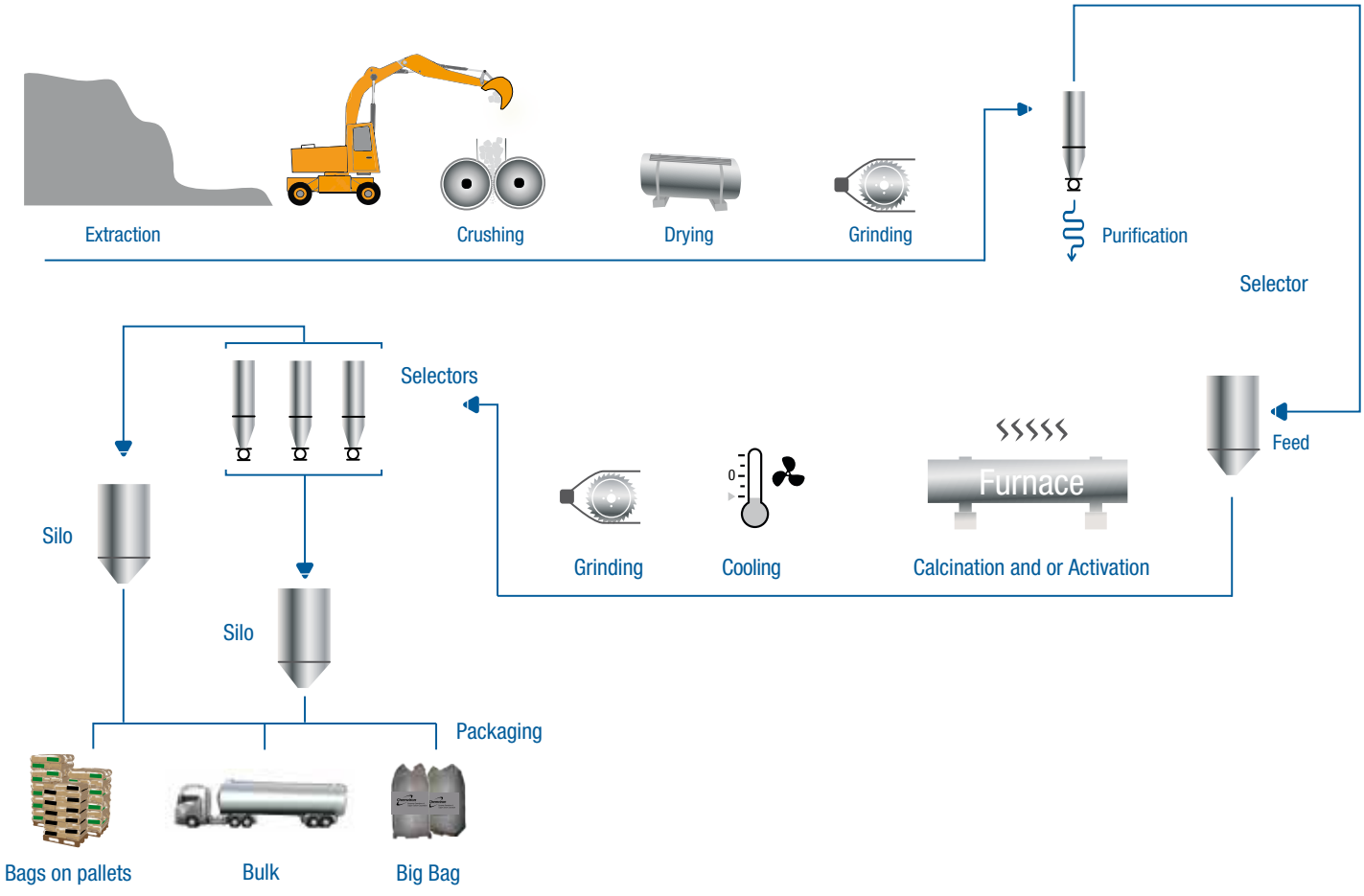
Because of its very high porosity, the diatomite extracted from our own quarries contains 50 to 60 % water. After crushing, the ore is dried, ground and then purified to obtain powder form.

This powder is then placed in a high-temperature furnace for:

- calcination to eliminate organic matter, adjust the porosity and enable agglomeration by diatom bridging.
- calcination / activation in the presence of a fluxing agent which increases the sintering between the particles and whitens them.

After cooling, the product is ground and then selected to form precise particle size fractions for the various applications.

Manufacturing process:



Clarcel® Diatomaceous Earth

An extensive range of mineral filter aids

Calcined

Flux - Calcined

		"Pink grades"				"White grades"					"Fast grades"			
GRADES		**CBL3**	**CBL**	**CBR**	**CBR3**	**DIFB**	**DIFBO**	**DICB**	**DIC**	**DICS**	**DIC3**	**DITR**	**DIT2R**	**DIT3R**
Permeability (Darcy)		0.03 to 0.05	0.05 to 0.10	0.09 to 0.16	0.16 to 0.30	0.45 to 0.90	0.90 to 1.30	0.80 to 1.80	1.4 to 2.6	2.4 to 4.0	3.5 to 5.5	4.9 to 8.1	7.5 to 12.5	10.5 to 17.5
Cake density (g/cm^3)		≤ 0.40	≤ 0.40	≤ 0.41	≤ 0.41	≤ 0.43	≤ 0.40	≤ 0.43	≤ 0.41	≤ 0.41	≤ 0.41	≤ 0.38	≤ 0.38	≤ 0.38
Laser granulometry (µm)	D 90	-	-	-	-	≤ 150	≤ 220	≤ 220	≤ 250	≤ 270	≤ 300	≤ 350	≤ 420	≤ 450
	D 80	≤ 60	≤ 100	≤ 150	≤ 170	-	-	-	-	-	-	-	-	-

Applications


Metallurgy & Automobile

Cutting oil
Rolling oil


Beverages

Beer
Wine
Fruit juices
Liquid sugar


Pharmaceutical

Amino acids
Analgesics
Antibiotics
Glycerin
Lactose
Vitamins


Food products

Sweeteners
Edible oil
Starch hydrolysates
Sugar


Chemicals

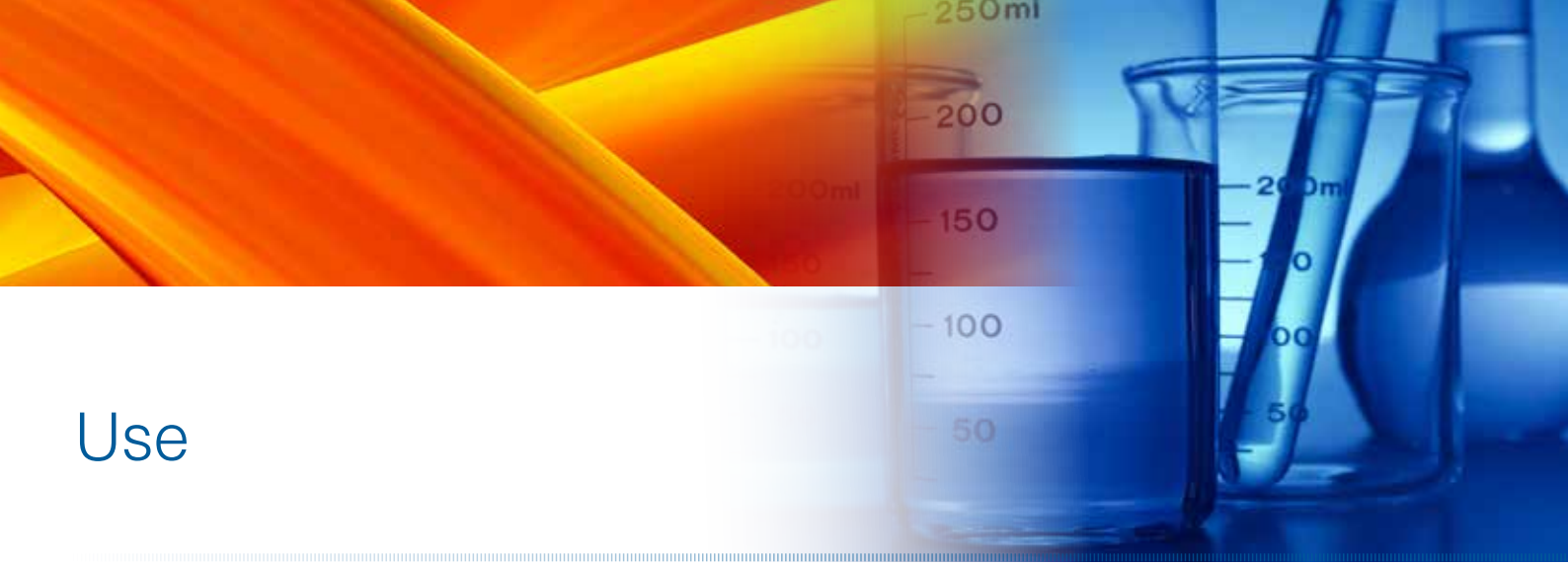
Acids
Titanium dioxide
Alcohols and esters
Lubricant additives


Food additives

Amino acids (food & feed)
Organic acids
Texturizing agents
Enzymes
Gelatine
Yeast and extracts

Coarse filtration

Fine filtration



Use

Slurry preparation

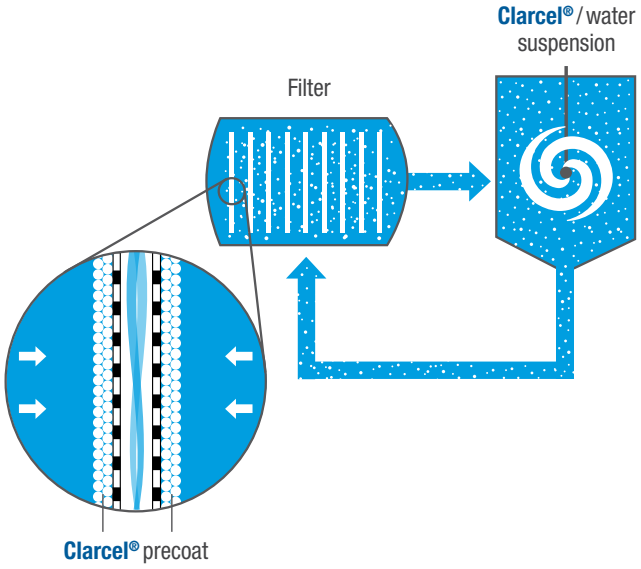
A suspension of 2 to 15 % filters aids is prepared both for the precoat and for the body feed. This suspension is agitated for approximately 15 minutes to obtain a homogeneous slurry. The precoat tank must have a minimum volume corresponding to that of the filter, the pipes and the volume necessary for maintaining the blades of the agitator in the suspension.

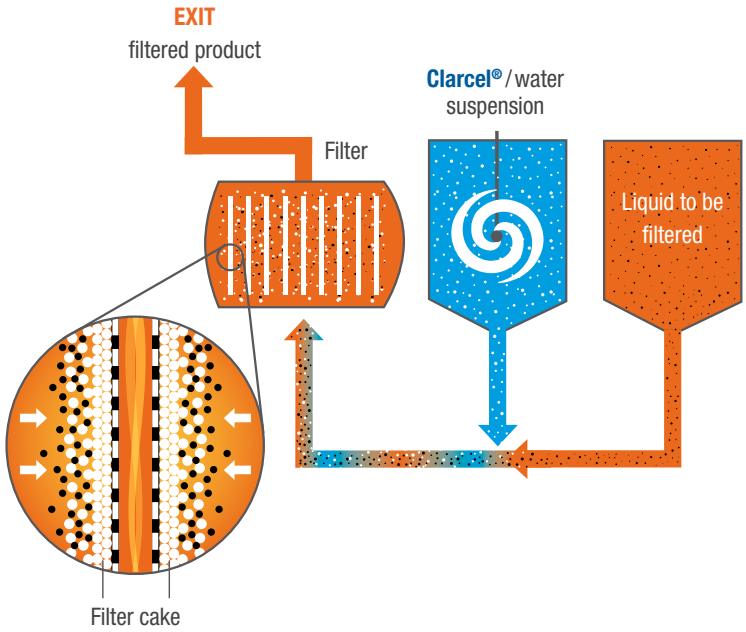
Precoat

The role of the precoat is to protect the supports of the filter (wire meshes, boxes, candles, etc.) against premature clogging by impurities, ensure clarification from the start of the filtration and facilitate opening of the filter. A coat of approximately 1 kg of **Clarcel®** per square metre of filter area is applied on these supports, by causing at least three times the volume of the precoat tank to recirculate through the filter. The filter aid must be spread uniformly over the whole filter surface; to ensure this, the precoating flow rate must be higher than the nominal flow rate (generally 1.5 to 2 times higher).

Body feed

The body feed stage consists in incorporating **Clarcel®** in the liquid to be filtered. It enables the filtration flow rates to be maintained and extends the cycle times without excessive increase in pressure loss. The average body feed ratio is 1 kg of **Clarcel®** per kg of impurities and the ratio may vary depending on the characteristics.





The above quantities are given as an indication. They vary according to the application and must be adjusted under industrial conditions.

Clarcel®

Mineral filter aids from our own diatomaceous earth quarries near Saint-Bauzile and Riom-ès-Montagnes.

Six reasons to choose them

- **Efficient**
  - Porosity conducive to excellent clarification.
  - Low-compressibility cakes for longer filtration cycles.
- **Reliable**
  - Stable characteristics (permeability, cake density and particle size).
  - Tried and tested, easy-to use technology.
- **Versatile**
  - Treatment of liquids with varied and fluctuating characteristics.
- **Economical**
  - Low-energy filtration process compared to other separation technologies.
- **Available**
  - Several decades of raw material reserves.
  - Bulk deliveries directly from our two factories in France.
- **Safe**
  - Chemically inert products with no ATEX requirements during use.

  *(The *ATEX (EXplosive ATmosphere) regulations are based on two European directives 94/9/EC et 1999/92/EC).*

Our technical team is available to guide you and advise you on how to optimise your filtration processes by introducing new practices.

> Contact us at **www.chemviron.eu** or **calgoncarbon.com**

Chemviron is the European Operation of Calgon Carbon Corporation - which is a global manufacturer, supplier, and developer of activated carbons, innovative treatment systems, value added technologies and services for optimising production processes and safety purifying the environment.
Chemviron France is also a solution provider for filtration.
Chemviron has achieved **ISO 9001:2008** certification for the manufacture, sale and distribution of Activated Carbon and Diatomaceus Earth.

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Chemviron®
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