



Environment Products & Technologies

Improve Water & Air Treatment Processes using
specialized Calcium Carbonate Products and Technologies



Welcome to the World of Omya



- Headquarters in Oftringen, Switzerland
- 8,000 employees
- Over 125 years of business since 1884
- 4th Generation privately held Swiss based Corporation
- ISO 9001 / ISO 14001 certified in most of the plants

Omya is a leading global producer of industrial minerals – mainly products derived from Calcium Carbonate and Dolomite – and a worldwide distributor of specialty chemicals. The company's major markets are forest products (fiber based products such as paper, board and tissue), polymers, building materials (paints, coatings, sealants, adhesives and construction) as well

as life sciences (food, feed, pharmaceuticals, cosmetics, environment and agriculture).

Founded in 1884 in Switzerland, Omya has a global presence extending to more than 150 locations in over 50 countries with 8,000 employees.

Calcium Carbonate a Natural Base Material

Around 4 percent of the earth's crust is Calcium Carbonate, making it one of the most abundant natural raw materials. From an environmentally responsible perspective it is very important to use natural products such as Calcium Carbonate when we have to repair or restore what human activity has destroyed or damaged on the earth. In nature we find Calcium Carbonate in three main forms: chalk, limestone and marble all being composed of the mineral Calcite.

All of them have the same chemical formula: CaCO_3 . Calcium Carbonate is a sedimentary stone made from the accretions of calcium derived from animals, marine mollusks, corals and algae skeletons. Chalk is a friable stone whereas limestone and marble are hard and non-porous types of rock. Calcium Carbonate as a natural base material is an alkali typically having a pH of 9 which makes it highly suitable for various environmental applications in water and air treatment as well as acid neutralization.



The Natural Step (*)
Stockholm, Sweden
www.naturalstep.org

(*) The Natural Step Framework is a proven, scientifically robust model that helps organizations make pragmatic decisions to move toward sustainability. Omya is using the framework to guide us to a vision of being a truly sustainable business and we are proud to be amongst many well-known businesses and organizations working with The Natural Step.

Omya in Environmental Applications

Water Treatment

Drinking Water Treatment

Selected high quality Calcium Carbonate products are used since many years to improve physical properties and human health requirements in drinking water production. Calcium Carbonate is required to reach and fulfil regulatory requirements in most countries of the world. The World Health Organization (WHO) is providing global basic guidance & recommendation in the use and requirements of Calcium and Magnesium in drinking water. Besides regulatory and health requirements Omya's selected Calcium Carbonate products are used to efficiently adjust chemical and physical properties of drinking water such as pH level and hardness. Products and technologies offered are:

- **Omyaqua** - a micronized Calcium Carbonate for pH control and mineralization
- **Filtracarb** - Calcium Carbonate granules to improve & adjust hardness and alkalinity
- **Criscarb** - Seed crystals for softening application in combination with hydrated lime
- **Omyalime** - high surface and high reactivity lime suspension

Contribution of Minerals in Drinking Water for Human Health

The dietary contribution of Calcium and Magnesium is typically 80% of the total daily intake. Of this approximately only 30% of Calcium and 35% of Magnesium will be absorbed from the body. The bioavailability of calcium and magnesium from milk and water are on the order of 50%.



Increased regulatory requirements in the treatment and production of drinking water require the development of new, sustainable, efficient and environmental friendly products. Omya is responding to these requirements by developing new products based on Modified Calcium Carbonates for the use in pre-treatment of drinking water to reduce or eliminate the use of iron or aluminum salts as well as synthetic polymers.

- **Omyafloc** - environmental friendly and efficient flocculents

Many drinking water plants are already using selected Omya products since more than 40 years and benefit from the increased performance of their treatment processes.



- Recommended Dietary Intake (RDA) for Calcium:
EU: 800 – 1000 mg Ca/day
US: 1000-1300 mg Ca/day RDA
(depends on sex, age, health status)

According to the WHO about 5-20% of the RDA for Calcium and Magnesium is the typical contribution from drinking water. Because of dietary habits people in many countries fail to obtain from their diets the recommended intakes for one or both of these nutrients.

This deficiency of minerals may in longer term affect the health of the population. Mineral rich drinking water can provide substantial contributions to daily intakes of these nutrients in most population groups.

Municipal & Industrial Waste Water Treatment

Special Calcium Carbonate products are used to improve biological processes in municipal sewage treatment plants acting as a carrier for bacteria and control the pH (buffer system).

Selected flocculents based on Modified Calcium Carbonate were developed for the removal of solids in mineral containing waste water and dewatering of sludge such as mining effluents (e.g. coal mine sludge), effluent from civil engineering (e.g. tunneling), pigment suspensions, etc. Other processes have been developed for the treatment of acidic waste effluents, such as stepwise neutralization of effluents containing valuable metals (Nickel, Titanium, Gold and Uranium).

Air Treatment

Desulphurization

The combustion of coal in power stations to produce electricity releases sulphur into the atmosphere contained within the coal. Sulphur and other acids generated and released during the combustion process are returned into the biosphere through acid rain, consequently providing a direct negative influence on the acidity of soils and natural waters (lakes, ponds, rivers). Calcium Carbonate is used to capture sulphur and other acids during the combustion process consequently eliminating the release of such air and water polluting substances.

- **Omyafloc** - environmental friendly and efficient flocculents
- **Omyamove** - a process for acidic effluent treatment & selected precipitation of metals

Lake & Wetland Liming

Use of calcium carbonate for adjustment of pH of inland waters (lakes, ponds, rivers, lagoons) to avoid and /or reduce the effect of acidic rain or eutrophication (excess of phosphor and nitrates in natural waters).

- **Nautex** - selected powder or granular products distributed by boats or helicopters.

Defluorination

When clay is burned in industrial processes, it releases fluorine into the atmosphere. Fluorine is known to be a greenhouse gas damaging the atmosphere and therefore requires to be removed using Calcium Carbonate during combustion process.



Overview of Products used in Water & Air Treatment

Fresh Water & Desalination	Waste Water	Sludge Treatment	Air Treatment
Filtracarb	Optical 20	Omyafloc	Desulfocarb
Omyaqua	Omyafloc	Omyalime	Desulfonit
Omyafloc	GAC (Norit, Spain)		OmyaPurge
SpectraGuard (PWT)	Omyalime		Coaltreat
Sodium Meta - Bisulfite			

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