



 enhanced  
by Omya

# Omya Neutrasorb

Efficient Neutralization of  
Industrial Waste Water



THINKING OF TOMORROW

# Omya Neutrasorb: Efficient pH adjustment, safe handling and low maintenance



## Industrial water neutralization

Industrial waste water treatment usually consists of physical separation of solids in primary treatment. This is followed by a biological treatment step for degradation of dissolved organic compounds. Different from municipal wastewater, however, many industrial waste waters are acidic. For biological treatment the pH should be ideally between 6.8 – 7.6. Omya Neutrasorb is a very efficient acid neutralizing chemical based on natural Calcium Carbonate. The acid neutralization reaction can be described with the following equation:



*“Omya Neutrasorb is finely ground and particles have a highly reactive micro-crystalline surface.”*



**Figure 1:** Scale formation is a common problem of lime slakers. Omya Neutrasorb does not form scales and reduces maintenance costs

## Safe handling and maintenance-free operation

Omya Neutrasorb is a naturally occurring product. It can be transported and stored without special measures. In comparison to burnt lime or caustic soda, safety training and procedures for spills and accidents are facilitated and the overall risk profile of the neutralization step is greatly reduced.

In comparison to burnt lime, Omya Neutrasorb does not form scales. Clogging of pipes can be ruled out and sophisticated circle line concepts, valve designs and make-down stations are not necessary. This significantly reduces maintenance costs and man-hours and increases station availability.



**Figure 2:** Close-up of the micro-crystalline particle surface of Omya Neutrasorb

## High reactivity

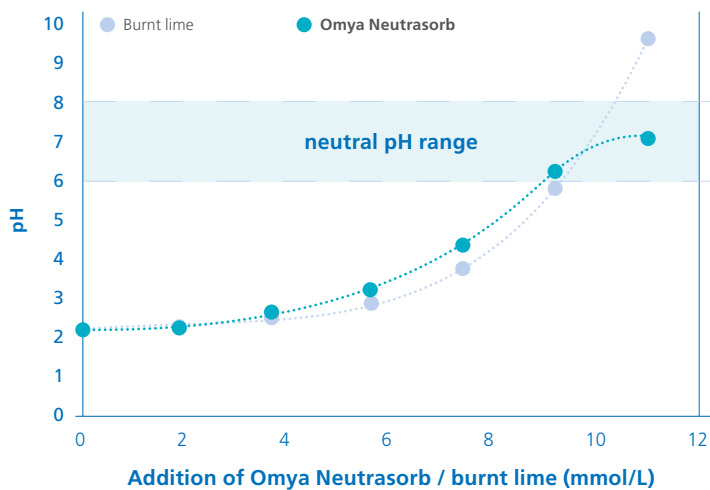
Omya Neutrasorb consists of Calcium Carbonate of very high purity. On a microscopic level it is characterized by a highly reactive porous microcrystalline structure. Moreover, it is ground to a very fine particle size distribution. Altogether this results in a high reactivity and quick neutralization of acids.

*“Omya Neutrasorb quickly neutralizes and buffers industrial waste waters.”*

Figure 3 shows the result of a trial in which the reactivity of burnt lime and Omya Neutrasorb were compared. For this set-up Omya Neutrasorb showed equal reactivity due to its fine particle size distribution and high surface area.

Further it can be noted that already slight overdosing of burnt lime easily leads to high pH levels making lime dosing more difficult. For Omya Neutrasorb, a stable pH in the neutral range is easily reached.

Importantly, if accidentally overdosed, the equilibrium rules out that the pH increases to a value > 8.1 which assures that the biology is not put at risk. With a well-buffered pH, downstream dosing points for pH control are no longer necessary. Furthermore, a stable and well buffered pH provides for a more stable and (cost) efficient downstream coagulation and flocculation process.



**Figure 3:** Comparison of neutralization efficiency of burnt lime and Omya Neutrasorb

## Advantages of Omya Neutrasorb:

- Omya Neutrasorb is finely pulverized and particles comprise a highly reactive micro-crystalline surface
- Omya Neutrasorb therefore quickly neutralizes and buffers industrial waste water
- Omya Neutrasorb is a safe chemical and reduces the risk profile of a plant
- Omya Neutrasorb does not form scales and thereby significantly reduces maintenance costs



# Case study: Neutralization of industrial waste water

## FACTS & FIGURES

### Type of industry:

- Chemical industry

### Wastewater flow:

- 10,000 m<sup>3</sup>/d

### Waste water characteristics:

- pH = 1.5
- COD = 3,000 mg/L

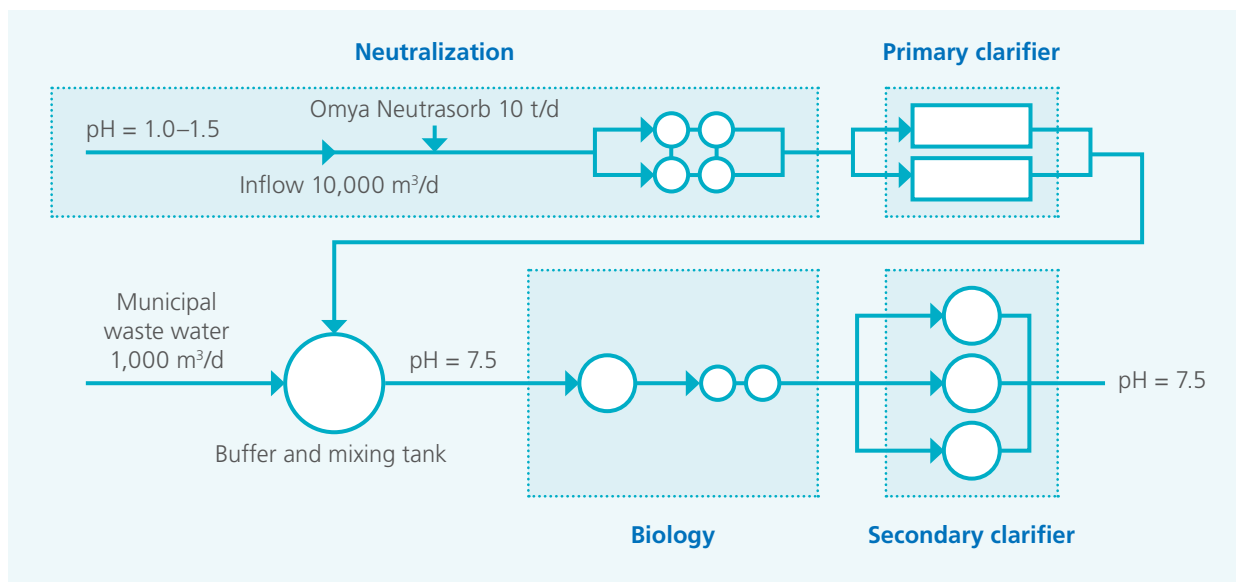


## Plant Set-Up

The specific wastewater treatment plant consists of a neutralization step, a primary clarifier, a storage and mixing tank, two sequential biology steps and a secondary clarifier (see flow sheet below).

## Plant Experience with Omya Neutrasorb

A 2-weeks trial period has been realized with Omya Neutrasorb. The dosing amount has earlier been established in lab tests. After a few days of fine-tuning, a stable pH of 7.2 – 7.5 at the inflow to the biology was reached. As everything was running successfully during the trial period, it was decided to permanently use Omya Neutrasorb for pH control. After more than one year of operation it can be concluded that a stable operation is possible during all plant loads and chemical production cycles. The consumption of Omya Neutrasorb is 3'500 t per year.



**Figure 4:** Industrial waste water treatment plant using Omya Neutrasorb for acid neutralization