

# *Omega 1*

A Refractory  
Enhancement  
Coating

□ *Effective Radiant Heat Management* □

*Ω1 - The  
Infrared  
'Mirror'*

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□ *Improved Hot Zone Efficiency* □

# $\Omega$ 1 - *The Infrared 'Mirror'*

**For Effective Radiant Heat Management & Improved Hot Zone Efficiency**

## Introduction

**Omega 1** was developed due to the need for a high temperature reflective coating that would redistribute heat more evenly in ware producing kilns that needed to improve their efficiency.

### Omega 1

**Omega 1** is a scientifically formulated coating that can be applied to the surfaces of high temperature kiln and furnace linings to improve the distribution of heat within the hot zones of these vessels under firing conditions.

In a high temperature environment, the objective is to have the *load* attain the high temperature, rather than the heat vessel itself (the walls, ceiling and floor) or the furniture within the heat vessel. This is a simple but important point, and is the foundation upon which the concept of radiant heat management is built.

### The Secret of Omega 1

The secret of Omega 1 is the fact that it is a reflective coating designed to minimize the absorption of infrared radiation by a heat vessel and maximize the containment of the energy within the heat vessel, and in so doing, increase the efficiency of the heat vessel under firing conditions.

In practical terms, a reflective coating is thus a coating, which scatters the infrared energy (photons) back into the heat vessel, as opposed to absorbing them.

An effective reflective coating is therefore analogous to a mirror, and in fact we have labeled our coating, Omega 1, as *The Infrared 'Mirror'*. Of course, a normal mirror gives back a true reflection, whereas *The Infrared 'Mirror'* gives a chaotic reflection.

This chaotic reflection (or scattering) of the short wavelength infrared radiation results in the radiation bouncing randomly within the heat vessel, eliminating shadows and causing a more even distribution of heat.

The special qualities of this product enable the end user to save fuel costs, shorten firing cycle times and substantially reduce the percentage of sub standard ware produced. The combination of these 3 elements provides significant advantages for manufacturers of bathroom ware, crockery, bricks, stoneware, etc.

Since 1993, this coating has also been specified and used in more than 6000 pottery kilns for schools, primarily as a safety requirement in Australia. The reason for this is that Omega 1 has been proven to dramatically reduce and in most cases eliminate the potentially lethal airborne dust and fibre from the fibreboard and firebrick kiln linings.

For further information, or assistance in determining the suitability of this product for your substrates, contact **Soren Kierkegaard** via: [soren@industrialevolutionsnz.com](mailto:soren@industrialevolutionsnz.com)

# Technical Specification Sheet

## Omega 1 - *The Infrared 'Mirror'*

Mineralogy -  $\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$

### IDENTIFICATION

**Omega 1** is supplied in **wet** form, and is a **white, odourless paint-like material**, with a wet density of **1550 kg/m<sup>3</sup>**.

### PACKAGING

It is packaged in tamper-proof airtight plastic pails of **10 litres** each.  
Unopened, it has a shelf life of **one year**.

### RECOMMENDED USES

1. On clean atmosphere heat vessels linings – reflective refractory coating results in a more even heat distribution and reduced heat shadowing.
2. To encapsulate ceramic fibre, including vacuum formed ceramic fibreboard, thereby virtually eliminating potentially hazardous ceramic fibres and dust.

### APPLICATION

The material is applied using a proprietary method with an **airless sprayer**.

### TEMPERATURES

Maximum service temperature = 1550°C  
Minimum curing temperature for ceramic bonding = 1080°C

### FIRED CHEMICAL ANALYSIS

$\text{Al}_2\text{O}_3$  - 29%       $\text{SiO}_2$  - 6%       $\text{P}_2\text{O}_5$  - 33%  
Less than 0.5% of the particles are above 325-mesh ASTM grain size.

### STORAGE CONDITIONS

1. **ALWAYS** store **between 3°C & 15°C (ideally between 5°C & 10°C)**. **NEVER freeze**.
2. After use, **ALWAYS** reseal the remaining material in an airtight plastic container with a maximum ratio of **one part air to nine parts material**.
3. **NEVER mix different pails or batches together**.