



## EcoRock Detailed Claims Review

April 2009

Serious Materials (as a company) is strongly opposed to any form of greenwashing. This places a bar on us (substantially higher than many others) in the building materials industry. We take this responsibility seriously, to our shareholders, our customers, our planet, and ourselves. We feel it is imperative to have “transparency” around our environmental product claims so informed customers (like you) can compare factual information when making product choices.

This review qualifies the environmental claims made regarding EcoRock. The development of EcoRock is unique in building materials, as the product was developed from scratch with one goal in mind: Maximizing Environmental Stewardship. Manufacturing technology has improved dramatically since the late 1800’s when Gypsum drywall was invented. It took Serious Materials’ R&D team applying high tech material science concepts to a 100 year old industry to create a new, environmentally safe solution.

### ***EcoRock is 5X More Environmentally Friendly Than Gypsum***

This statement is based specifically on the need to reduce CO<sub>2</sub> and energy usage in the manufacture of the product. A 5/8” Type X Gypsum board core requires about 200,000 BTUs of energy (embodied energy) to produce. This total includes the energy required to make the ingredients as well as the natural gas used to calcine and dry the materials. This number also includes the mining and grinding of Gypsum. Older plants may use substantially more energy than the value stated here.\* It does not include transportation in or out, since the transport of the raw materials is within North America for both EcoRock and all Gypsum wallboard plants. The transport generally cancels out (on average) and also accounts for a very small percentage of the total embodied energy.

EcoRock requires about 42,000 BTUs (embodied energy) to manufacture, mostly from embodied energies in the ingredients, since no calcining or drying is required.

42,000 BTUs embodied energy for EcoRock is 1/5<sup>th</sup> of 200,000 BTUs in a 5/8” Gypsum board core, which also means 1/5<sup>th</sup> the CO<sub>2</sub>, and thus by the measure of energy usage and effect on climate change, EcoRock is 5X more environmentally friendly than Gypsum.

\* These values are based on publications from various validated sources, including reports from the EPA and NREL.

### ***80% Raw Materials are Post-Industrial Waste***

EcoRock uses approximately 80% post-industrial waste as a raw material input. By using post-industrial waste as a primary ingredient, EcoRock avoids using significant amounts of virgin resources, as typically occurs within Gypsum wallboard production. Eliminating the use of raw Gypsum will have a significant impact on the overall flow of virgin resource materials used in the building materials sector, which is estimated to account for 40% of virgin resource material usage annually.

### ***After 100 years you Finally Have a Choice***

Gypsum drywall was first patented in 1894, approximately 115 years ago. US Gypsum Corporation was formed through the merger of several companies in 1917, leading to widespread production. There have been few other choices of lightweight wallboard other than Gypsum-based wallboard since its invention 115 years ago. Today in the United States, there are zero choices other than Gypsum wallboard, which has been manufactured essentially the same way for over 100 years.

### ***Meets ASTM C1396 Physical Specs***

ASTM C1396 is a set of physical property specifications for Gypsum board listing regulations for flexural strength, dimensional tolerance, etc. While C1396 was written for Gypsum wall board specifically, EcoRock does indeed meet the physical property requirements laid out in the ASTM specification. EcoRock is not made of Gypsum, so technically while it meets every test and the spirit of C1396, it does not satisfy the early text of C1396, which specifies the Gypsum content of the board. So, the statement that EcoRock meets all of the physical specs of C1396 is 100% accurate. A Gypsum board manufacturer could claim that EcoRock does not meet all of C1396 since it is not actually made of Gypsum. However that is a moot argument as the intent of C1396 was to set forth physical property specifications for wallboard, not to require it to be made from Gypsum.

### ***80% Less Embodied Energy in the Core***

This statement is based specifically on the need to reduce energy usage in the manufacture of the product. A 5/8" Type X Gypsum board core requires about 200,000 BTUs of energy (embodied energy) to produce. This total includes the energy required to make the ingredients as well as the natural gas used to calcine and dry the materials. This number also includes the mining and grinding of Gypsum. Older plants may use substantially more energy than the value stated here. These values are based on publications from validated sources. It does not include transportation in or out, since the transport of the raw materials is within North America for both EcoRock and all Gypsum wallboard plants. The transport generally cancels out (on average) and also accounts for a very small percentage of the total embodied energy.

EcoRock requires about 42,000 BTUs (embodied energy) to manufacture, mostly from embodied energies in the ingredients, since no calcining or drying is required.

EcoRock's embodied energy of 42,000 BTUs is 1/5<sup>th</sup> (or 21%) of the BTUs in a 5/8" Gypsum board core. This is equal to 80% less energy.

### ***80% Lower Carbon Footprint***

This statement is based specifically on the need to reduce CO<sub>2</sub> in the manufacture of the product. A 5/8" Type X Gypsum board core requires about 200,000 BTUs of energy (embodied energy) to produce. This total includes the energy required to make the ingredients as well as the natural gas used to calcine and dry the materials. This number also includes the mining and grinding of Gypsum. Older plants may use substantially more energy than the value stated here. These values are based on publications from validated sources. It does not include transportation in or out, since the transport of the raw materials is within North America for both EcoRock and all Gypsum wallboard plants. The transport generally cancels out (on average) and also accounts for a very small percentage of the total embodied energy.

Most of the industrial energy used in the wallboard industry is from Natural Gas which generates 117 pounds per million BTU. On average, a 5/8" Gypsum board is responsible for approximately 30 pounds of CO<sub>2</sub> from the core, including mining, grinding, calcining, drying, ingredients, etc.

EcoRock requires about 42,000 BTUs (embodied energy) to manufacture, mostly from embodied energies in the ingredients, since no calcining or drying is required. This results in approximately 6 pounds of CO<sub>2</sub> per board core.

EcoRock's 6 pounds is 20% of Gypsum board's 30 pounds or 80% less CO<sub>2</sub>.

### ***Termite Resistant***

EcoRock contains no organic material such as cellulose or starch, both of which represent termite food sources. Gypsum wallboard often contains one or both materials, offering a food source to termites. EcoRock has been tested to ASTM D3345-74 passing with no termite interest in the product.

### ***Generates no Mercury in Production***

Airborne mercury is very harmful to people, animals and marine life. Just a teaspoon of mercury in a lake can make the fish dangerous to eat. EcoRock was tested for mercury content with a result of virtually zero parts per million (PPM). The manufacturing process does not reach temperatures high enough to release mercury. Certain Gypsum processes (from FGD, synthetic or recycled Gypsum) may release mercury during calcining, according to EPA testing, leading to 10's of pounds per year released from some facilities (enough to contaminate 100's of lakes). EcoRock does not release any mercury and is never calcined or externally heated in manufacturing.

### ***50% More Mold Resistant***

Mold testing is performed to ASTM D3273. A “mold resistant” wallboard scores a “10 out of 10” at a certain number of weeks in the test chamber. A score 10 means zero mold growth and/or colonization is visible at that point in time. Mold-resistant Gypsum tests show a 10 at 4 weeks. Regular Gypsum scores a 10 for only a few days but by 1 week is at a 2 (lower numbers mean more mold growth). EcoRock was able to score a “10 out of 10” at 6 weeks, leading us to state that EcoRock is 50% more mold resistant than other currently published drywall tests, which stops at 4 weeks.

In addition, EcoRock contains a naturally mold resistant core. While there is no specific anti-fungal or anti-mold additive used in the production of EcoRock, the higher pH core and lack of organic material such as starches allows it to be naturally resistant to mold growth.

### ***Generates less dust than Gypsum***

In order to support this claim, both subjective and objective testing was used. People used (and cut) both EcoRock and standard Gypsum board in a similar fashion. In all cases, testers rated EcoRock as having less dust or significantly less dust. Scoring the responses, testers concluded that EcoRock generates between 60% and 80% less dust than Gypsum board. EcoRock is better for the environment, the jobsite, and your lungs.

In addition, testing was conducted at an independent lab to ASTM F0025-04, which confirmed that EcoRock generates 60% less dust than Gypsum wallboard.

### ***Cleaner Score & Snap than Gypsum***

A subjective analysis was gathered from testers comparing both EcoRock and Gypsum wallboard. EcoRock created less jagged edges and was evaluated as having a straighter score and snap than Gypsum. While not necessarily an environmental claim, the workability of a product is important to the contractors and drywaller’s who use it daily. Cleaner score and snap is a wonderful timesaving feature for daily users.

### ***Ultra Low Radon Emanation Rate***

Certain building products have recently become concerning (for instance granite) for higher levels of radon emanation rate. Long-term exposure to radon substantially above background levels can be hazardous. EcoRock was tested for Radon Emanation Rate by an independent lab and found to have ultra low radon emanation rate (well below the radon emanation rate of soil), outperforming many other common building materials.

### ***Less Silica Dust If Cutting***

EcoRock was independently tested to ASTM E1132 and found to generate less silica dust than Gypsum wallboard.