DATE: 31 January, 2022

SUBJECT: PREVENT WATER ABSORPTION WITH CRETEDEFENDER PRODUCTS

To whom it may concern:

CreteDefender Inc., engaged Bowser-Morner of Dayton, Ohio USA, to conduct the ASTM C642-06 "Standard Test Method for Density, Absorption, and Voids in Hardened Concrete" to determine impact of use of its CreteDefender P2, MS2, and CP products on water absorption in concrete.

Water Absorption

We are most concerned with the water absorption because that is a direct measure of how much water was able to get into the concrete under varying conditions. Those conditions are:

1. Treatment with either CreteDefender MS2, P2, or CP, or no treatment.
2. Saturation with unheated water – which is "typical" conditions
3. Saturation with boiling water – which approximates "maximum" absorption, under the harshest conditions.

Raw data are available in the Bowser-Morner report, available on request from CreteDefender, Inc. For water absorption, we focus on the data for "Absorption after Immersion" (item #2 above) and "Absorption after Immersion & Boiling" (Item #3 above). They must be interpreted considering 6% air entrainment of the concrete.

The conclusions to pull from that data indicate the following:

Decrease in water absorption over untreated, **typical** conditions:

MS2	~100%
P2	72%
CP	35%

Decrease in water absorption over untreated, **harshest** conditions:

MS2	76%
P2	54%
CP	11%

Voids

Each of the 3 products also decreased the voids in the concrete subject to permeability by water. The percent reductions are:

MS2	16.7%
P2	12.8%
CP	3.8%

These numbers are not as high as the percent reduction in water absorbed. But, that can be attributed to how significant even a small decrease in voids in the concrete can be in decreasing the ability of outside substances from getting into the concrete.

The test results show concrete treated with any of the CreteDefender products will have a significant impact on amounts of water absorption into concrete, thereby decreasing the negative impacts of water and the chemicals it carries, including salt damage, freeze-thaw damage, and overall deterioration. CreteDefender MS2 has the best results in both typical conditions and those with harsh heat, with outstanding resistance to water.

CreteDefender P2 also provides outstanding results by filling the pore structure, even though it is not hydrophobic.

Bowser-Morner provides engineering, construction, and analytical testing services, starting as a chemistry lab over 100 years ago in Dayton, Ohio. Today, its Construction Materials Testing Laboratory, which conducted these tests, maintains numerous accreditations and certifications, including approvals by the Departments of Transportation in Ohio, Indiana, and Kentucky, the West Department of Natural Resources, and the U.S. Army Corps of Engineers.

Sincerely,

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Thomas H. Nickell
CEO

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