

February 26, 2018

## **Development of Sustain - Crete™, a high-performance concrete that contributes to sustainability**

*- Potential for various applications, jointly developed with the University of Tokyo  
and Tokyo University of Science-*

Sumitomo Mitsui Construction Co., Ltd. (President: Hideo Arai, 2-1-6 Tsukuda, Chuo-ku, Tokyo), in collaboration with Professor Takafumi Noguchi, Graduate School of Engineering, The University of Tokyo, and Professor Manabu Kanematsu, Tokyo University of Science, has developed Sustain - Crete™ (patent pending), a high-performance concrete that contributes to sustainability.

### ■ Features of this concrete

Sustain - Crete™ is a five-star concrete with the following five characteristics

#### ★ Ultra-low shrinkage

Both drying shrinkage and autogenous shrinkage, which cause cracking, are virtually zero.

#### ★ Ultra-low heat generation

The extremely low heat generation during curing eliminates the need for mass concrete crack preventive measures (No thermal cracking) and enhances both the quality and productivity of large structures.

#### ★ Ultra-low carbon emissions

Production is possible even without Portland cement (\*), resulting in significant CO<sub>2</sub> emissions Reduction.

#### ★ High fluidity

Its high fluidity contributes to the prevention of defects due to poor filling and labor savings (improved productivity). The ability to accommodate a variety of shapes expands the possibilities for architectural design.

#### ★ High strength

High-strength concrete (70MPa or higher) which can be used to build high-rise structures.

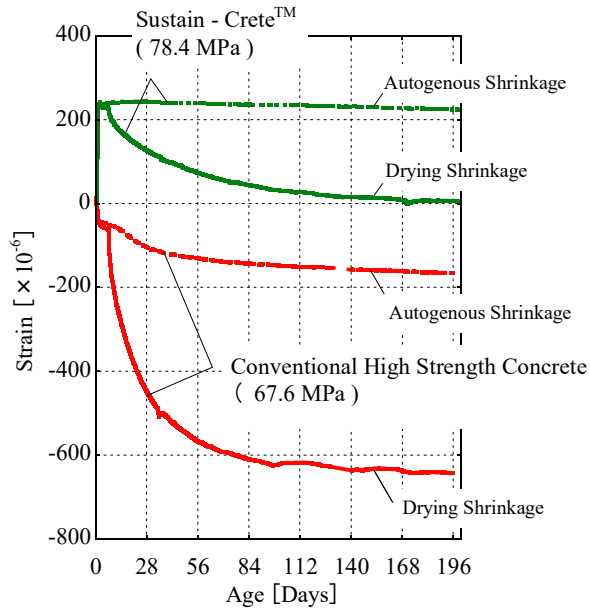
Concrete with all five of the above characteristics has never existed. This concrete contributes to the sustainability of the construction industry, from buildings to social infrastructure, as well as whole society, by not only virtually eliminating the risk of cracking, but also enhancing the productivity, design, and environmental friendliness of concrete structures.

In addition, since it can be manufactured with materials used for conventional concrete, no new special equipment or materials are required.

(\*) This is the official name for cement commonly used in concrete. Most of the CO<sub>2</sub> emissions during concrete production are determined by the used amount of Portland cement.

**■ Origin of the name "Sustain - Crete™ "**

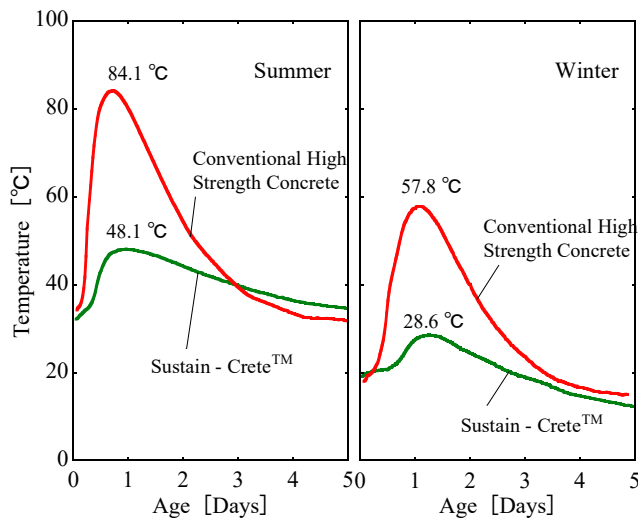
The etymology of the word concrete is said to be Con (together, cooperate) + Crete (grow). Sustain - Crete™ is a combined word combining Sustain (sustain) and Crete (grow), meaning "concrete that contributes to the continuous growth of production of concrete structures including environmental aspects while securing a superior quality.



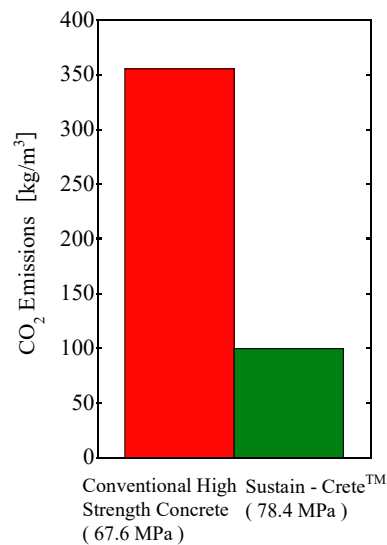
**★ Ultra-low shrinkage**  
Example of shrinkage measurement



**★ High fluidity**  
Example of slump / slump flow measurement  
Top: Conventional high-strength concrete  
Below: Sustain - Crete™



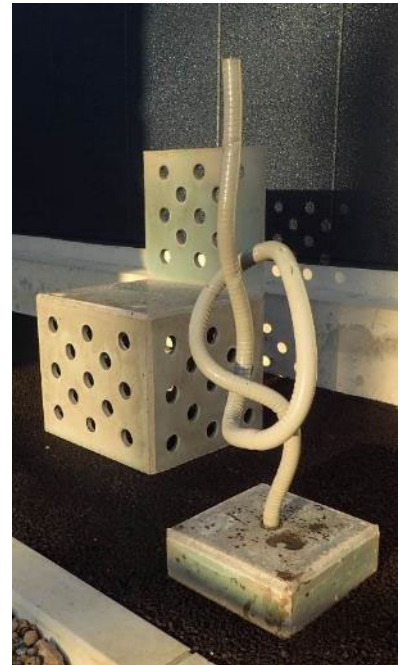
**★ Ultra-low heat generation**  
Example of mass concrete temperature measurement



**★ Ultra-low environmental impact**  
Example of estimated CO<sub>2</sub> emissions



Sustain - Crete™ casting



The sculptures made with Sustain - Crete™

#### ■ Future developments

Our goal is to make a significant contribution to the sustainability of society by pursuing ultra-high durability of concrete structures. We will continue to pursue R&D to further improve the performance of Sustaincrete™ and promote its wide application in both the building construction and civil engineering fields.

#### ■ Contact

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