

DAIPALITE-Ei is a calcium silicate thermal insulation material which has water-repellent and chemical corrosion inhibition performance, and is used in various industrial facilities such as oil refinery plant, power plants, petrochmical plants, and others.

Special effects of DAIPALITE- Ei

DAIPALITE-Ei is surface-treated with a special corrosion inhibitor containing soluble components (Na^{+} , SiO_{3}^{-2}). When the components are dissolved in water, the pH of the solution is more than 10, and a passive film is formed on the pipe surface, preventing iron corrosion.



Corrosion inhibition



Secular change of piping covered with thermal insulation material *

* The covered material is our water-repellent product, calcium silicate thermal insulation material made in Japan. DAIPALITE-Ei has similar performance.



Crude oil piping at a thermal power plant (7 years) : The piping was covered with our water-repellent products. The small white circle on the pipe is due to the hole which was opened accidentally after the inspection. There is evidence that water has flowed for several years. The piping was not corroded.



Steam (12K) piping at a steel plant (14years) : The left side was almost uncorroded where it was covered with our water-repellent products. On the right side, the corrosion was considerably progressing in the area covered with mineral fiber thermal insulation material.

Standard physical properties of DAIPALITE-Ei (reference values)

Apparent Density	Flexural Strength	Compressive Strength	Heating Linear Shrinkage	Maximum Service Temperature	Recommended service temperature range	Thermal conductivity $\lambda ~~(W/(m \boldsymbol{\cdot} K)) ~,$ Temperature $\theta ~~(^{\mathbb{C}})$
\leq 155kg/m ³	\ge 200kPa (\ge 20N/cm ²)	\ge 300kPa (\ge 30N/cm ²)	2.0% max.	1000℃	Ordinary temperature to 1000℃	$ \begin{array}{l} (200 \leq \theta \leq 300) \\ \lambda = 0.0407 + 0.000128 \cdot \theta \\ (300 < \theta \leq 600) \\ \lambda = 0.0555 + 2.05 \times 10^{-5} \cdot \theta + 1.93 \times 10^{-7} \cdot \theta^2 \end{array} $

Environment-friendly production process

(original manufacturing method in Vietnam plant)

JIC is the first and the only one that succeeded in inventing the production process using rice husk. Rice husk is used as energies for reaction of raw materials and drying formed products. The rice husk ash is used for as a raw material instead of Silica rock. This unique process is certificated as an environment-conscious business by Viet Nam Government.



DAIPALITE-E series (Thermal Insulation Material Using Biomass) is registered to Sustainable Technology Promotion Platform (STePP) of United Nations Industrial Development Organization (UNIDO) Investment and Technology Promotion Office, Tokyo (ITPO Tokyo)





Water-repellent performance

In order to measure water-repellent and water absorption, the thermal insulation material was sprinkled for 60 minutes. The results are as follows. (by a test method similar to the JIS A 9510, measured in November 2020) However, DAIPALITE-Ei is a surface water-repellent product and does not have the water repellency classified in 4.3 of JIS A9510 1-15.



Stress corrosion cracking inhibition (ASTM C795)

These calcium silicate materials have performance to satisfy ASTM standards as a thermal insulation material in contact with austenitic stainless steel.



Standard dimension [mm]

	Internal Diameter	Thickness	Width	Length
Pipe cover	22~610	25 * 30	_	914
Board	_	65 75	303 > 150 >	< 914 < 914

※ The 25mm thickness is for board only.

Corrosion test of carbon steel piece immersed in eluent of thermal insulation material

A certain amount of the thermal insulation material is ground and eluted with distilled water. Carbon steel pieces were immersed in each eluate and kept at 70° C for 4 weeks.

DAIPALITE-Ei elution aqueous solution

: Mass of test piece after test [g]

: Volume of specimen (cm³)

 $\rho_{\rm W}$: Water density 1 [g/cm³]

M

V

Almost no corrosion







DAIPALITE-Ei is a water-repellent material but not a waterproof material. Also, there is no guarantee that the metal to be covered will not corrode. With proper construction and maintenance, DAIPALITE-Ei's water repellency and corrosion inhibition are effective.



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