

Improve urban environment by Garden Crete



MISAWA Ltd

What is Garden Crete?

- Garden Crete is composed by pumice which harden by lime base hardener.
- Garden Crete is light weight concrete. Lighter than soil ($900\text{kg}/\text{m}^3 \sim 1200\text{kg}/\text{m}^3$)
- Harder than soil (Compressive strength $3.22\text{N}/\text{mm}^2$)
- Water retain ability is same as soil ($300\ell/\text{m}^3$)
- Garden Crete has air space inside. 30% of total volume is air space.
- It bring thermal insulation effect. Thermal conductivity is 1/10 of concrete.
- More than 10 years of field experience, only 3 to 4cm thickness of Garden Crete with
- 2 to 3cm thickness of soil can grow many kind of flora on urban environment at Tokyo .
- Drilling 9cm diameter of holes on Garden Crete and insert soil with flora, it can grow flowers and plants on vertical environment.
- Garden Crete can lay on asphalt and concrete surface directly. So Garden Crete with irrigation system can grow many kind of flora easy on urban environment.
- Garden Crete is inorganic green structure composed by pumice and lime based hardener. So it has strong resistance to weathering and also has fire resistance.
- It can protect strong sunshine of ultra violet rays under weather of urban environment.

Thermal insulation effect on rooftop of building

- Maximum 8 degree, average 3 degree of thermal insulation effect appeared downstairs on Garden Crete surface rooftop compare with beard concrete rooftop in summer seasons.
- Maximum 4 degree, average 2 degree of keep warm effect appeared downstairs on Garden Crete surface rooftop compare with beard concrete rooftop in winter seasons.

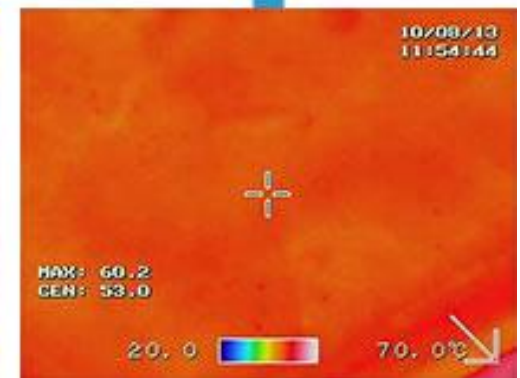
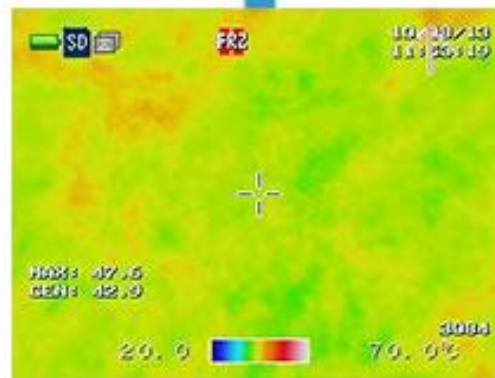
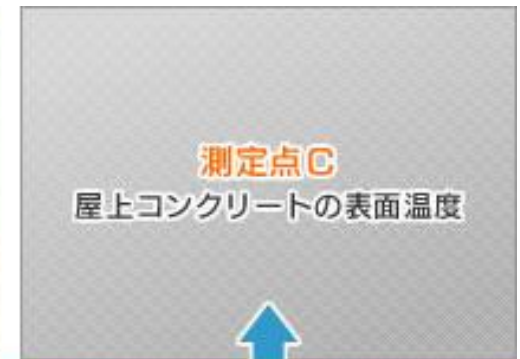
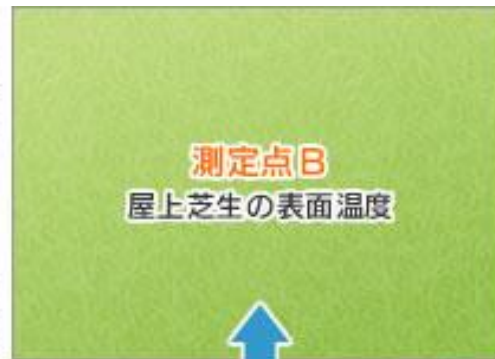
Roof top green field on factory by Garden Crete. 1000 m2.



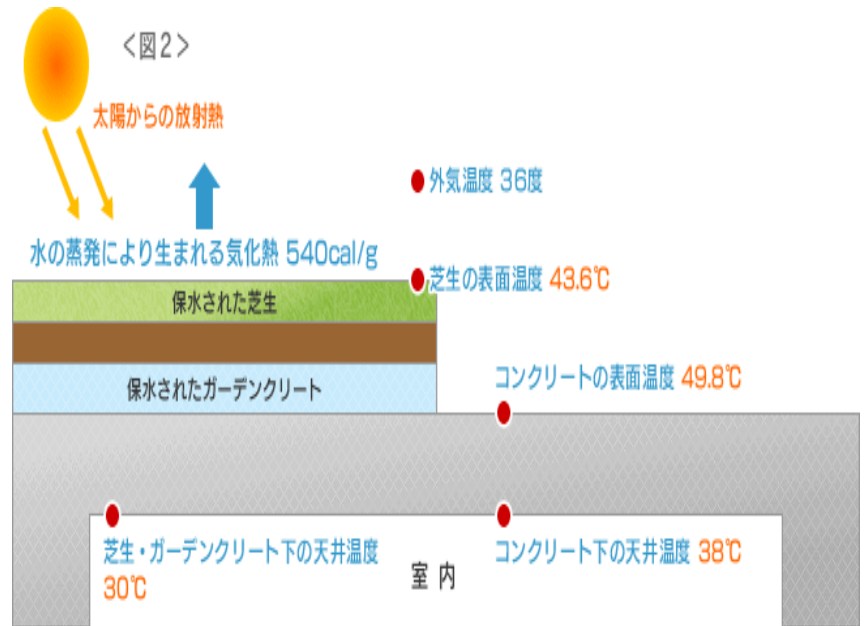
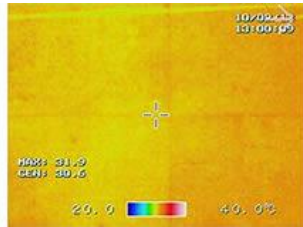
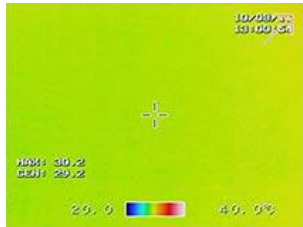
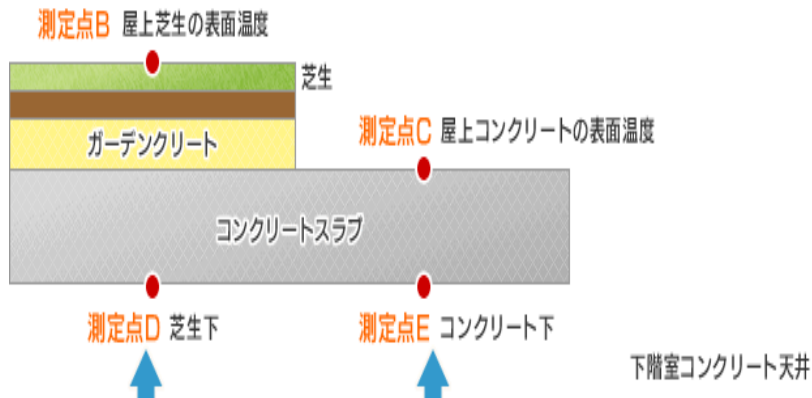
Thermal insulation on rooftop of condominium by Garden Crete



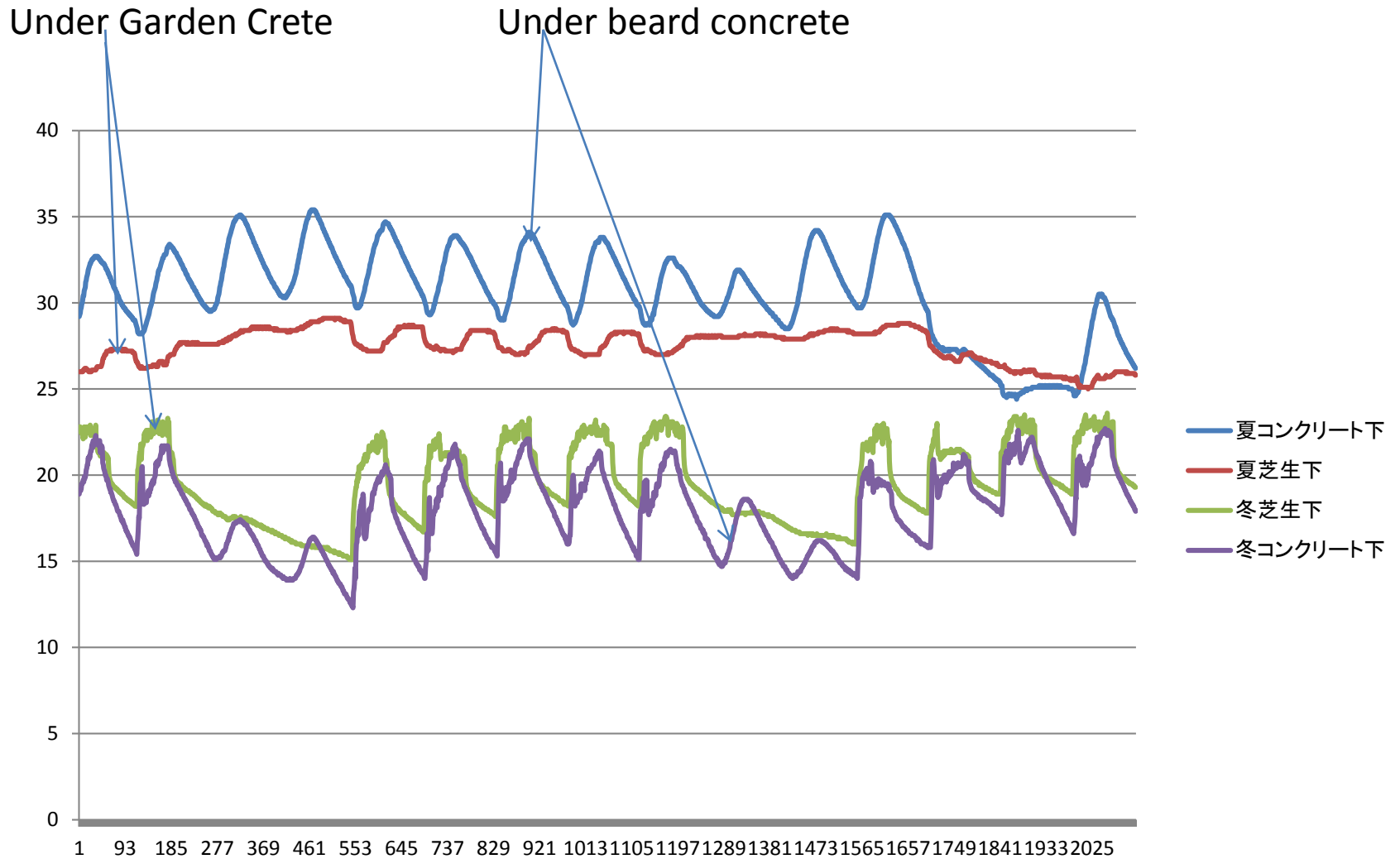
Temperature measurement of rooftop



Temperature measurement between rooftop and ceiling surface downstairs



Temperature transition of ceiling surface under grass with Garden Crete and beard concrete from summer to winter



Advantage of rooftop thermal insulation by Garden Crete

Compare between grass with Garden Crete and beard concrete, temperature of ceiling surface under grass with Garden Crete is lower than ceiling surface under beard concrete from summer to autumn(Thermal insulation effect).

Cold winter seasons, ceiling surface temperature under beard concrete is lower than ceiling surface under grass with Garden Crete.(Heating effect)

Maximum 8 degree, average 3 degree of thermal insulation effect appeared downstairs on grass with Garden Crete rooftop compare with beard concrete rooftop in summer seasons.

Maximum 4 degree, average 2 degree of keep heating effect appeared downstairs on grass with Garden Crete of rooftop compare with beard concrete rooftop in winter seasons.

Please refer front page graph.

Average temperature		summer	winter
	Temperature below grass with Garden Crete	26°C	20°C
	Temperature below beard concrete	29°C	18°C

Green garden on terrace of condominium





Reduce reflection of sunlight temperature on terrace.

Grass with Garden Crete reduce reflection of sunlight temperature on terrace.

Measure surface temperature of grass with Garden Crete and beard concrete on 9 floor of terrace at Tokyo. Time of measurement is 2PM August 6 2015. Out door air temperature is 33 degree.



Surface temperature difference between grass with Garden Crete and beard concrete is 26.1degree.

Surface temperature of grass with Garden Crete is 32.7 degree.

Surface temperature of beard concrete is 58.8 degree.



Garden Crete Green system is composed by Garden Crete ,irrigation cloth and irrigation tube. Garden Crete can lay on concrete and asphalt directly. Garden Crete Green system can change asphalt desert and concrete jungle of urban environment to green oasis easily.

- **Garden Crete can lay on concrete directly.**
- **It can make green environment easy.**

Only 3cm thickness of Garden Crete with irrigation system can grow many kind of Flora on urban environment.



Plant green on surrounding of building easily

Garden Crete Green System make countless vein of water by capillarity action of Garden Crete and irrigation system.

It can irrigate water evenly to save uneven of water irrigation, also protect rot of roots. Garden Crete Green System can grow flora by minimum supply of water.

Carport of shop house change to green field easily.

Green field enrich surrounding of house.



Flora Cascade is vertical type of Green system which make green environment for house surroundings.

Flora cascade is vertical type of green system witch has holes unify with Garden Crete.

Flora Cascade can stand on itself also can hang on fence of house surroundings.



Flora cascade can move and plant Flora easily at urban environment.

**Settle Flora cascade temple court
of Sensouji Asakusa Tokyo.**



**Plant viola and strawberry on
Flora cascade.**



Flora Cascade can set on verandah and terrace.

It can grow flora on vertical phase to save space of verandah and terrace.

Insert flora in holes of Flora cascade. It protect spread of soil and also can reduce volume of soil .

Flora Cascade can grow flora on vertical phase .So it can save space of verandah and terrace.



Flora Cascade can grow flora inside of rooms. It becomes as interior design.

Plant phalaenopsis on Flora Cascade. It becomes as fashionable interior.



Flora Cascade can irrigate water to roots of flora directory. So it can save volume of water and also keep sanitary environment in inside of rooms.

