

Gardencrete™



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GARDENCRETE INTRODUCTION

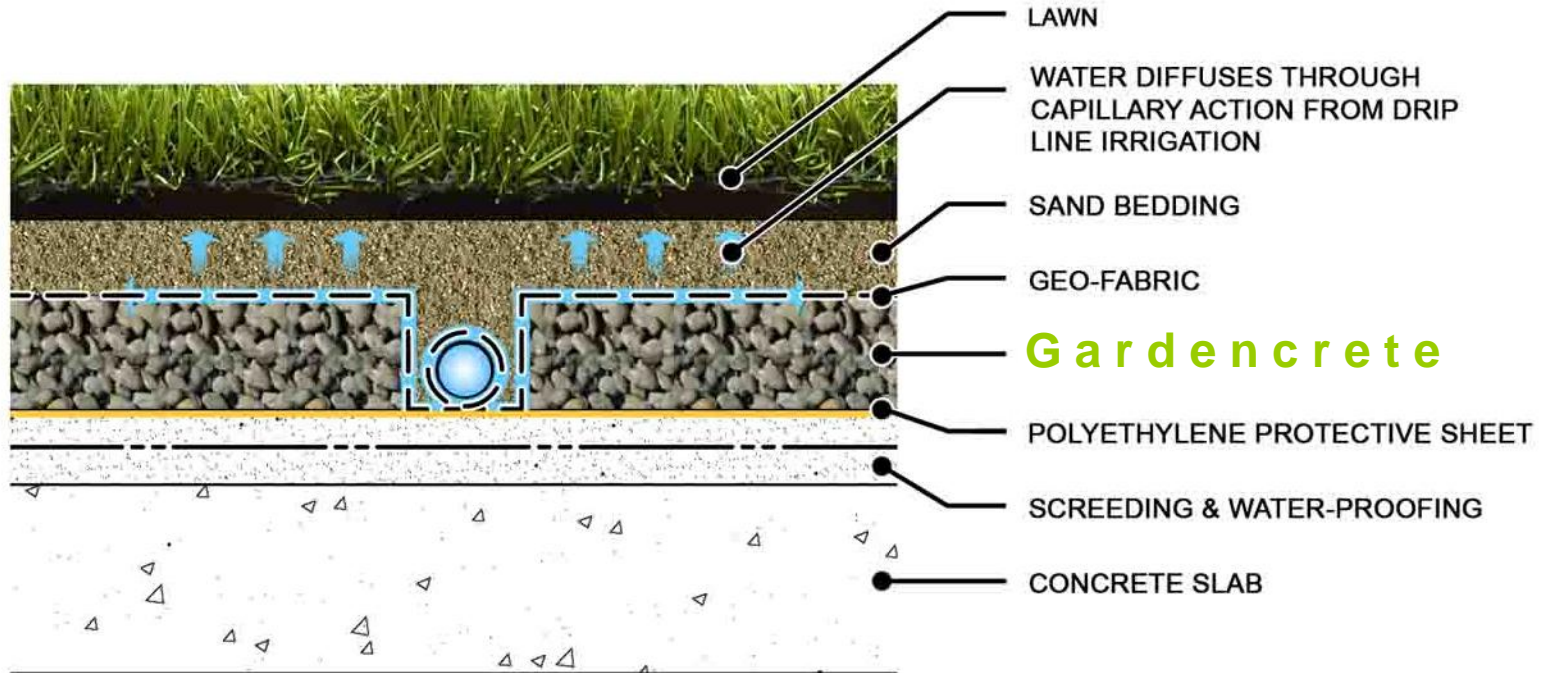
- 1. Gardencrete is a structural planting medium**
- 2. It is porous and composed of pumice and cement based on a patented formula that creates a stable, permeable and water retentive medium**
- 3. It has been successfully implemented in Japan as an extensive green roof system**



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GARDENCRETE INSTALLATION CONCEPT



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CHARACTERISTICS



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GARDENCRETE CHARACTERISTICS

1. LIGHT WEIGHT

- *Gardencrete is almost 50% lighter than concrete*
- *It is 40% lighter than soil*
- *For a 40 mm thick layer, its unit load is 0.36 kN/m² (dry) ~ 0.48 kN/m² (saturated)*



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GARDENCRETE CHARACTERISTICS

2. HIGH WATER RETENTIVE CAPACITY

- *Gardencrete retains water up to 30% of its total volume*
- *For a 40 mm thick layer, Gardencrete retains 12 litre/m²*



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GARDENCRETE CHARACTERISTICS

3. HIGH WATER PERMEABILITY

- *Gardencrete drains 10 times faster than asphalt*
- *It has a percolation rate of > 1 mm/sec*



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GARDENCRETE CHARACTERISTICS

4. HIGH RESISTANCE TO HEAT FLOW

- *Temperature difference across Gardencrete layer as high as 18 °C*

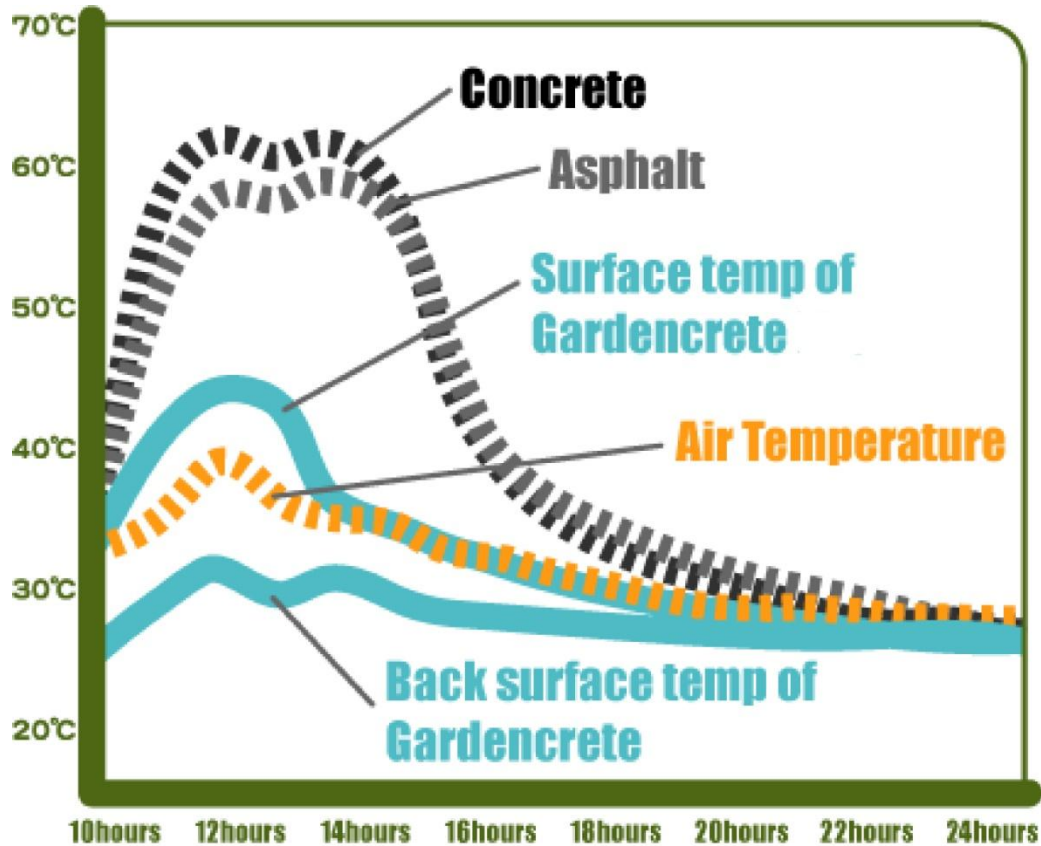


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GARDENCRETE CHARACTERISTICS

Surface Temperature Comparison Graph



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GARDENCRETE CHARACTERISTICS

5. GOOD COMPRESSIVE STRENGTH

- *Gardencrete has a compressive strength of 3.2 kN/m², exceeding 1.5 kN/m² required by Building Control Regulation, Cap. 29, Rg 5 for occupant live load*



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ADVANTAGES



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GARDENCRETE ADVANTAGES

1. GARDENCRETE REDUCES LOADING

- *Gardencrete is almost 50% lighter than concrete*
- *It is 40% lighter than soil*



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GARDENCRETE ADVANTAGES

2. GARDENCRETE INCREASES FIELD CAPACITY AND PROLONGS AVAILABILITY OF WATER TO PLANTS

- *Gardencrete has high water retention capacity due to the micropores of its pumice content*
- *These micropores increase field capacity and prolong water availability*



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GARDENCRETE ADVANTAGES

3. GARDENCRETE BUFFERS STORMWATER & FACILITATES GROUND PERCOLATION

- *Gardencrete's 30% pore space translates to a high buffer capacity for stormwater*
- *Gardencrete's stable macropores facilitates stormwater percolation through ground*



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GARDENCRETE ADVANTAGES

4. GARDENCRETE ELIMINATES PONDING DUE TO CLOG

- *Unlike clayey soils, Gardencrete does not have fine particles which can cause clogs*
- *Gardencrete's macropores allows it to drain readily at a rate of > 1 mm/sec*



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GARDENCRETE ADVANTAGES

5. GARDENCRETE OPTIMISES AERATION OF ROOT ZONE

- *Gardencrete's stable structure of micropores and macropores allows good circulation of air*
- *Gardencrete has 30% pore space*



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GARDENCRETE ADVANTAGES

6. GARDENCRETE AVOIDS SOIL COMPACTION ISSUES

- *Gardencrete does not become compacted due to its stable structure*
- *Gardencrete has a compressive strength of 3.2 kN/m²*



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GARDENCRETE ADVANTAGES

7. GARDENCRETE REDUCES SOLAR HEAT GAIN

- *Temperature difference across Gardencrete layer as high as 18 °C*
- *Applied extensively, Gardencrete can help to alleviate the Heat Island Phenomena by reducing surface temperature*



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INSTALLATION OF GARDENCRETE ON METAL ROOF FOR TEMPERATURE MEASUREMENT

NISHINIPPORI, TOKYO, JAPAN. SUMMER, JUNE 2004



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- 50 mm thick
- 5 min of sprinkler water in morning



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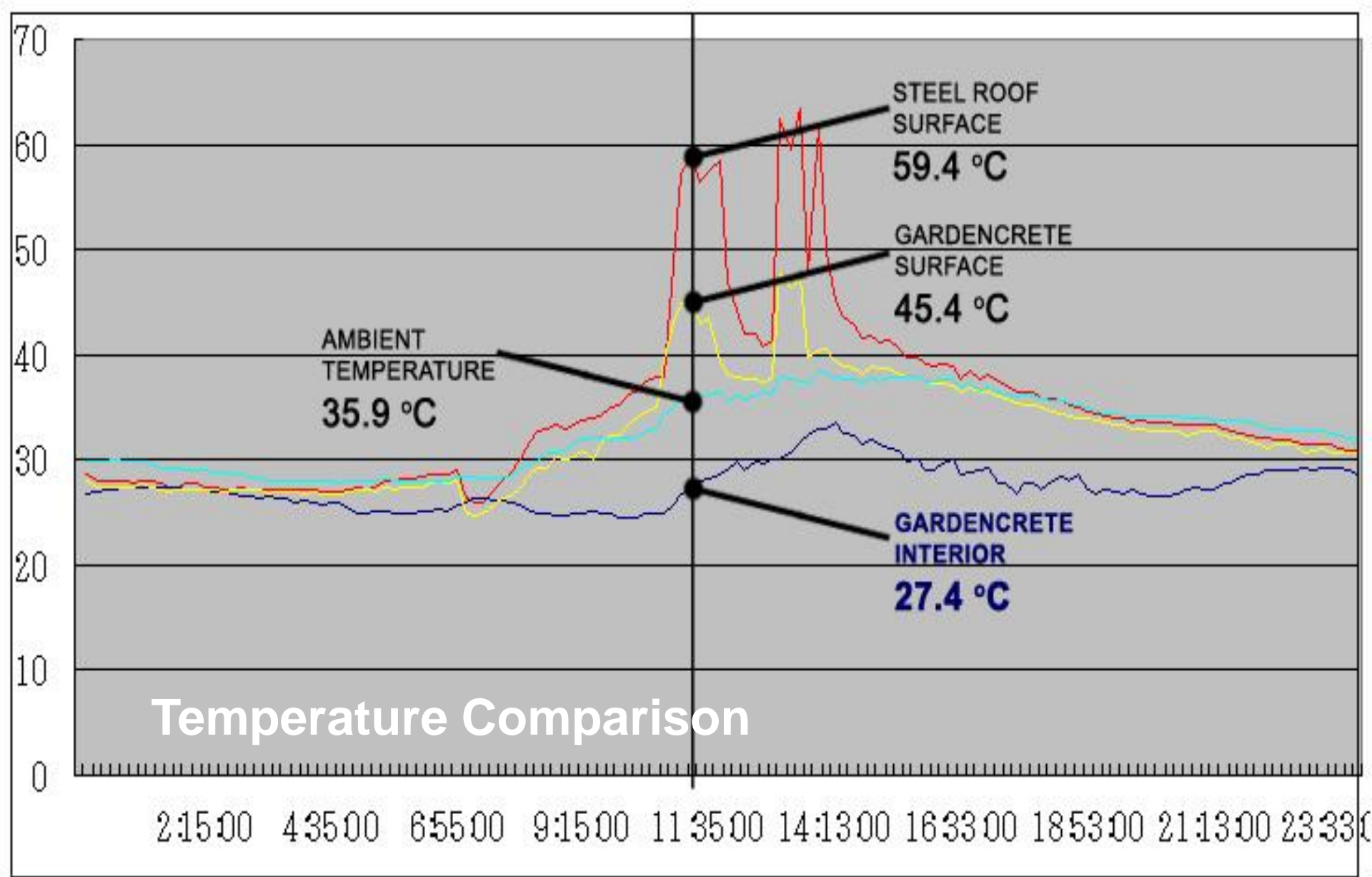


- Thermal variations recorded by loggers and sensors



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APPLICATIONS



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SKY TERRACE

CONDOMINIUM ROOF-TOP, ROPPONGI TOKYO, JAPAN



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ROOF LAWN

PRIVATE RESIDENCE, KUGAYAMA TOKYO, JAPAN



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GARDEN LAWN

NAPOLI PIZZERIA CANTINA, ZUSHI KANAGAWA, JAPAN



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FRONT YARD

COMMERCIAL PROPERTY, Ikebukuro Tokyo, Japan



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INSULATION

PRIVATE APARTMENT ROOF-TOP, JAPAN



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INSTALLATION



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LAYING OF PROTECTIVE SHEET AND IRRIGATION

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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GARDENCRETE MIX

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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LAYING OF GARDENCRETE

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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GARDENCRETE LAYER COMPLETED

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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GEO-FABRIC AND SAND BED COMPLETED

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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LAYING OF SEEDED MATS

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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INSTALLATION COMPLETED

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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2 WEEKS AFTER COMPLETION

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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1 MONTH AFTER COMPLETION

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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1 YEAR AFTER COMPLETION

YAMATAKE AZIL FACTORY, ISEHARA KANAGAWA, JAPAN



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CONCLUSION



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GARDENCRETE CONCLUSION

- 1. Gardencrete is a stable, permeable and water retentive planting medium that is highly suitable for extensive green roofs**
- 2. Gardencrete is an effective insulation layer and provides a buffer capacity for stormwater**
- 3. Gardencrete has been successfully implemented in Japan**



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