

Heat Exchange Paint Tough Coat D-47

Introduction

High fuel cost, Global warming caused by CO2 emissions and urban heat island affect which concrete covered buildings and grounds intensify heat in cities, these problems are overshadowing our every day life. Solar radiation control is considered one of the effective means to solve these problems. System avoiding heat converted from sun light will keep building cooler, then, reduce energy consumption for air-conditioning.

For years, reflection method is the way to control solar radiation. White or light color surfaces have been used for years for that reason. Problem with reflection method is that its efficacy will be decreased over the years by environmental debris such as dirt, scratch and abrasion. Once reflection paint lost its efficacy, even its insulation layer will become heat storing layer to work against the effort to reduce temperature on the wall. The choice of colors is also limited because of its nature.

Newly developed single water base Tough Coat D47 is not solar reflective paint. It consumes heat from the sun, using kinetic activity inside its proprietary layer. It is so affective to protect your wall from solar heat in summer.

Because D47 is not using reflection method;

- Minimal affect by dirt, scratch or abrasion
- Better choice of color
- Can be used on concrete ground
- Better heating consumption rate in winter
- Does not affect surrounding buildings



Experiment using two container houses

(Under-roof 1000 ft²)



1, Air condition system set on 70 degree during Feb. 28 – Mar. 12

	Electricity Consumption	Difference
D47	138.10 kwh	-5.9 kwh
Reflection Paint	144.00 kwh	-4.1%

2, Air conditioner set on 68 degree during Jul. 17 – Aug. 21

D47	219.35 kwh	-15.8 kwh
Ordinary Paint	235.15 kwh	-6.7%

3, Air conditioner set on 80 degree during Sep. 2 – Sep. 16

D47	20.00 kwh	-3.88 kwh
Ordinary Paint	23.88 kwh	-15%

Estimate of electricity and CO₂ reduction

Given condition

Roof size	10000 ft ²
Set room temperature	80 degree (Average outside temp. 90 degree)
Duration	75 days (July-September) 5 hours a day
Cost of electricity	\$0.15/kw

	RC Structure	Steel Roof
Electricity saved	9811 kwh	41207 kwh
Cost saved	\$ 1471.65	\$6181.05
CO ₂ reduction	3.71 tons	15.58 tons

Estimate above was made based on the result from the experiment. Each result may vary.

Application of Heat Exchange Paint

Metal Roof (D-42)



(Merit)

- Lowering room temperature
- Reducing cooling cost & CO2
- Protecting metal surface

Water Shield Roof (D-42)



(Merit)

- Lowering room temperature
- Reducing cooling cost & CO2
- Protecting water-proofing surface

Play Tool (D-42)



(Merit)

- Reducing temperature increase of surface
- Protecting metal surface

Walk Way (D-47)



(Merit)

- Lowering reflective heat from the ground
- Reducing temperature increase on the surface

Play Ground (D-47)



(Merit)

- Lowering reflective heat from the ground
- Reducing temperature increase on the surface

Pool Deck (D-47)



(Merit)

- Lowering reflective heat from the ground
- Reducing temperature increase on the surface

Building Wall (D-47)



(Merit)

- Lowering room temperature
- Reducing cooling cost & CO2
- Avoiding dew inside the room

House (D-47)



(Merit)

- Lowering room temperature
- Reducing cooling cost & CO2
- Cutting insulation cost
- Avoiding dew inside the room

Around Solar Panel (D-47)



(Merit)

- Lowering reflective heat around the system
- Enhance productivity of the system