Dampney Protective Coatings

Thurmalox® 250 Selective Black Solar Collector Coating

Description

Thurmalox 250 is a selective black silicone-based heat resistant coating designed for use on metal surfaces of solar collector panels. It selectively absorbs solar wave lengths with the greatest heat content (visible and infrared wave lengths) and therefore collects heat energy more efficiently than ordinary nonselective black paints which emit (reflect) a significant amount of incident solar radiation.

Thurmalox 250 will function with maximum efficiency when used on collector panels having glazed covers. It is unaffected by high heat and humidity and exhibits no outgassing during stagnation periods. See Application and Technical Data sections for additional information.

In cases where a non-selective coating is required, Thurmalox 270 Black coating is recommended. See Bulletin 270 for details.

For unglazed collectors such as outside surfaces of passive houses and Trombe walls, use Endcor 902 Black Latex passive solar coating. See Bulletin 902 for details.

Features

- Selective surface
- Resists outgassing to 400°F (204°C)
- Heat resistant to 1,000°F (538°C)
- Doesn't peel, flake or chalk
- Won't bleach or discolor
- Withstands repeated thermal cycling
- Resistant to UV degradation
- Dries for handling in 30 minutes
- Air dry or heat cure
- Long lasting
- Available in 13 oz. (net wt.) aerosol cans

Surface Preparation

Aluminum: Prepare surface with Endcor 450 Rust Rinse (see Bulletin 450). Wash thoroughly with water and dry. Apply Thurmalox 250 as noted below.

Stainless Steel and Copper: Remove oils and grease by wiping down surface with Dampney 170 Clean-up Thinner.

Mixing

Redisperse any settled-out pigments by stirring with a paint paddle followed by thorough mixing to a uniform consistency with an explosion-proof or air-driven power mixer. Do not open containers until ready to use. Keep lid on container when not in use.

Thinning Required

Do not apply Thurmalox 250 without thinning. The choice of thinner will influence the coating's average selective characteristics. For optimum selectivity, a slow-evaporating thinner such as Dampney 100 should be used. For production line application where a faster dry time is required, use Dampney 110 Thinner. The fastest thinner available is Dampney 140. NOTE: Fast-evaporating thinners such as Dampney 110 and 140 may promote dry spray, which could result in thicker than recommended films. To ensure the optimum combination of application speed and selective properties, consult your nearest Dampney representative for specific recommendations.

Application

For best results, apply Thurmalox 250 by spray. *IMPORTANT:* To ensure maximum performance, coating film thickness must be carefully controlled. For maximum selectivity, spray apply a very thin coating, only enough to just hide the metal surface and to make it uniformly black in appearance. Apply only one coat to a maximum dry film thickness of 0.10 mils (0.4 mils wet film thickness - unreduced; 0.8 mils wet film thickness - reduced 1:1 with the recommended Thurmalox thinner. In the case of steel surfaces additional consideration must be given to the potential problems of corrosion and rusting of collector surfaces and appurtenances. Under such circumstances corrosion can be effectively prevented by applying a prime coat of thurmalox 245 Silicone-Zinc Primer prior to application of the Thurmalox 250 Selective Black Coating. The use of thurmalox 245, however, will inhibit the selectivity of the coating system. Apply one coat of Thurmalox 245 to a dry film thickness of 1-1.5 mils. Apply one coat of Thurmalox 250 to a dry film thickness of 1-1.5 mils. Total system dry film thickness: 2-3 mils. See Bulletin 245 for detailed information.

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NOTE: To ensure maximum performance characteristics, emissivity measurements should be taken as a control procedure. See Selectivity Data in Technical Data section.

Equipment

Best results are achieved with conventional spray application or aerosol spray. Reduce with equal volume of Dampney 100 Thinner. Adjustments for proper spray patterns may be required.

As a guide only...

Spray gun	DeVilbiss P-MBC or JGA
Air hose	5/16" (I.D.)
*Fluid hose	3/8" (I.D.)
Air cap	704
Fluid nozzle	FX (0.042")
Pot pressure	2-5 lbs.
Atomizing pressure	30-35 lbs.
Needle adjustment	Half open
Distance from work	8-19"

*Smaller hose diameters, or hose lengths greater than 25 feet may make it necessary to increase pressure.

Drying Time

Thurmalox 250 dries to handle in 30 minutes. For optimum service, coating can be baked one hour at 350-400°F although curing will occur in service.

Cleanup

Clean all equipment with Dampney 10 Clean-up, or Thinner, or xylol.

Storage

Store Thurmalox 250 in a cool place, preferably below 80°F.

Precautionary Information

WARNING: Flammable Liquid and Vapor
Keep away from heat, sparks and flame. Vapors may cause flash fire. Do not breathe vapors or spray mist. Avoid contact with eyes, skin and clothing. Use with

adequate ventilation during mixing and application. Wear an appropriate, properly fitted organic vapor cartridge-type respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Wash thoroughly after handling. Wear protective gloves, chemical safety goggles and impervious protective clothing. Use skin cream. In confined spaces it is required to use a positive pressure supplied-air respirator (NIOSH approved). Use explosion-proof lights and electrical equipment. Use only nonsparking tools and equipment. Wear conductive and nonsparking footwear. Make certain all electrical equipment is grounded. Observe all safety precautions and follow procedures described in OSHA regulations. See Material Safety Data Sheet (MSDS) for complete precautionary and disposal information.
If instructions and warnings cannot be strictly followed, do not use this product.

FOR INDUSTRIAL USE ONLY

Not Recommended For

- Immersion service
- Direct contact with flame

Shipping Weights

	1 gallon	5 gallons
Thurmalox 250 Coating	11 lbs.	9 lbs.
Dampney 100 Thinner	46 lbs.	42 lbs.

13-oz. Aerosol	
Single can	2 lbs.
Case of 12	14 lbs.

0208
Replaces 0599

TECHNICAL DATA

Characteristics	Thurmalox 250
Color	Black
Operating temperature range	Ambient to 500°F (260°C)
Surface temperature at time of application	50-120°F (10-49°C) max. (spray cans, 75°F (24°C) max.
Maximum temperature resistance	1000°F (538°C)
Percent (%) Solids by volume	20
Weight per gallon	9.24 lbs. (1.1 kg/liter)
Theoretical coverage per gallon*	320 mil. sq. ft. (7.9 sq. m. / liter)
Selectivity Data	50°F-500°F (10°C-260°C)
Absorptivity (alpha)-reduced 1:1 with Thurmalox 295 Thinner	
0.5 mils wet (.06 mils dry) [1.5 microns dry]	0.96
1.0 mils wet (.13 mils dry) [3.3 microns dry]	0.96
2.0 mils wet (.25 mils dry) [6.4 microns dry]	0.96
180°F (83°C) Emissivity (epsilon) – reduced 1:1 with Dampney 100 Thinner	
0.5 mils wet (.06 mils dry) [1.5 microns dry]	0.52
1.0 mils wet (.13 mils dry) [3.3 microns dry]	0.65
2.0 mils wet (.25 mils dry) [6.4 microns dry]	0.80
180°F (83°C) Emissivity (epsilon) – unreduced	
2.0 mils wet (.50 mils dry) [12.7 microns dry]	0.90
Flash point (Pensky-Martens)	
Thurmalox 250	81°F (27°C)
Thurmalox 295 Thinner	81°F (27°C)
Drying time at 77°F	
Set to touch	10-15 minutes
Heat cure at 350°-400°F	1 hour
Shelf life	1 year

* *Note: Actual coverage rate will vary depending upon material losses during mixing and application, and upon type and condition of surface to be coated. Allowance must be made for losses when estimating material requirements. See Bulletin 3110 "Calculating Coating Requirement" for additional information.*

WARRANTY

Dampney protective coating products are expressly warranted to meet applicable technical and quality specifications. The technical data contained herein are accurate at the date of issuance but are subject to change without prior notification. No warranty of current accuracy is hereby given or implied. User must contact Dampney to verify correctness before ordering. Dampney assumes no responsibility for coverage, performance or injuries resulting from handling or use and **LIABILITY, IF ANY, SHALL BE LIMITED TO PRODUCT REPLACEMENT.** In no event will Dampney be responsible for consequential damages, except insofar as mandated by law. Dampney **DISCLAIMS ALL OTHER WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**