

Commercial Roofing



BGBG Member Since 2004

www.3RRoofing.com



Co-Founder of Roofs to Roads www.roofs2roadscolorado.org



Asphalt Shingle Recycling

 **is HERE!**

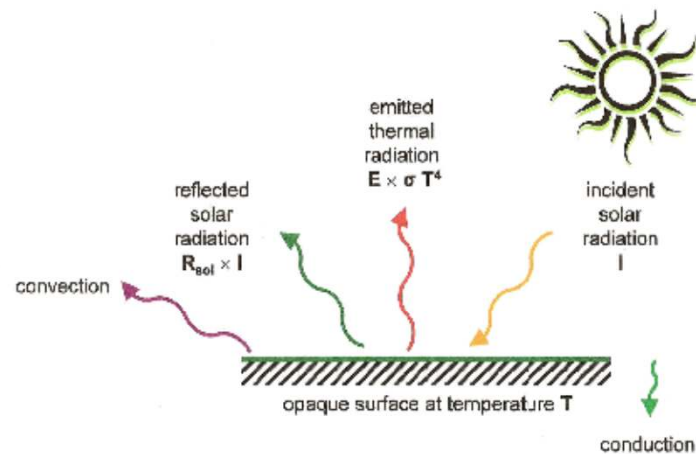
Paving Roads with Tear-off Shingles

- COST SAVINGS
- CO₂ REDUCTION
- JOB CREATION
- LANDFILL DIVERSION
- BETTER QUALITY ROAD PAVEMENT

Roofs to Roads (720) 333-7416
www.roofs2roadscolorado.org

What is Energy Star Roofing?

What makes a surface cool?

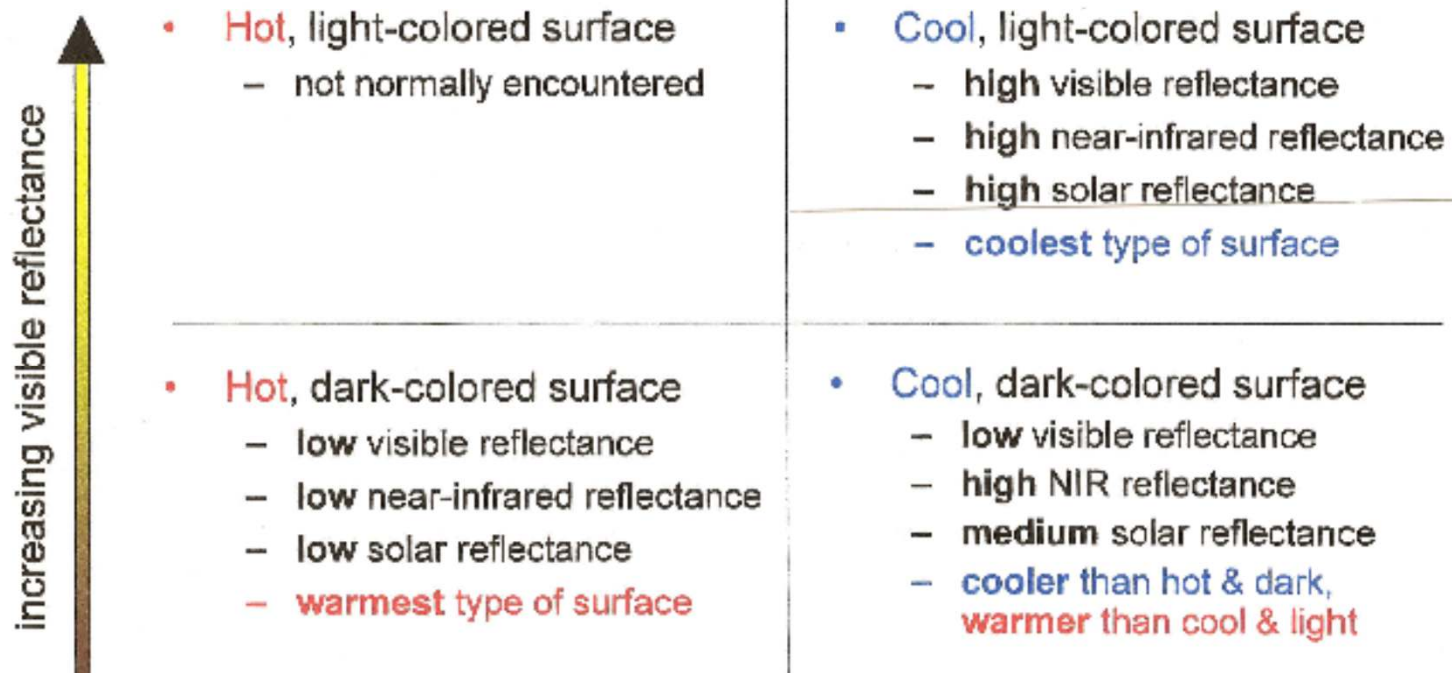


- **High solar reflectance** (R_{sol}) lowers solar heat gain (0.3 - 2.5 μm)
- **High thermal emittance** (E) enhances thermal radiative cooling (4 - 40 μm)

high solar reflectance + high thermal emittance = low surface temperature



Types of hot and cool surfaces



Considerations for Low Slope Roofing

- Single Ply Membrane, TPO, PVC, EPDM
- Overview, Types, comparisons
- Liquid Applied Energy Star Products
- Overview, application, budget considerations?
- Insulated Taper low slope mitigation

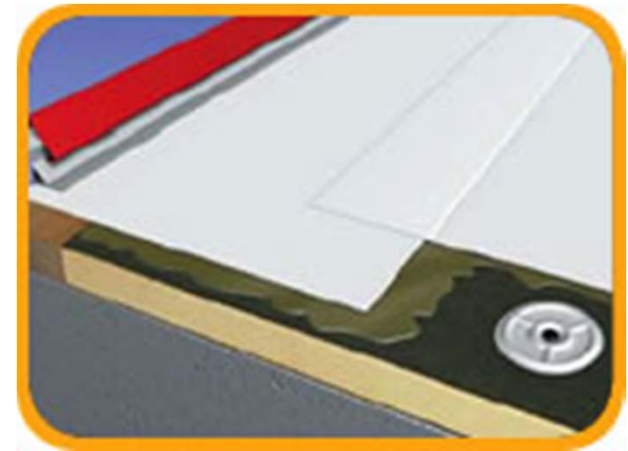
Single ply TPO Energy Star

- *15 year history
- *Mechanically fastened or fully adhered
- *Seams and field details are heat welded
- *Mil thickness: 40,50,60,80
- *E-Star in white, gray and tan
- *White TPO = SRI of 80



Single ply PVC Energy Star (Poly Vinyl Chloride)

- *40 year history
- *Mechanically fastened or fully adhered
- *Seams and field details are heat welded
- *Mil thickness: 45, 50, 60, 80
- *E-star in white, gray and tan
- *White PVC = SRI of 104



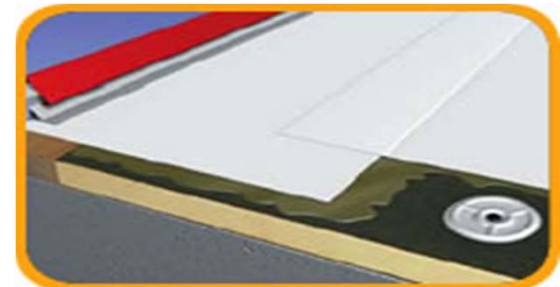
Single ply EPDM

- Ethylene Propylene Diene Monomer
 - *30 year history
 - *mechanically or fully adhered
 - *seams and field details are glued
 - *economical, effective water proofing membrane
 - *mil thickness: 45 60, 90 and custom
 - *Black EPDM = SRI of 21
 - *E-Star white = SRI of 84



Single Ply Membrane Comparisons

- *PVC and EPDM have longest overall track record
- *PVC and TPO have longer track record for Energy Star membranes
- *PVC has highest level of VOCs in production process; none of them are benign
- *PVC is specifically designed to withstand cooking grease and other organic compounds; TPO and EPDM are questionable



Insulated Taper systems

- Expanded poly styrene taper - EPS
- Polyisocyanurate tapered foam - Polyiso
- Minimum slope required is $\frac{1}{4}$ " /ft.

- Solution for flat roofs with poor runoff
- Insulative value from R-10 to R-50
- Recommended complement to single ply roofs that have no or little structural slope

Liquid Applied Energy Star Coatings



Liquid Applied Features

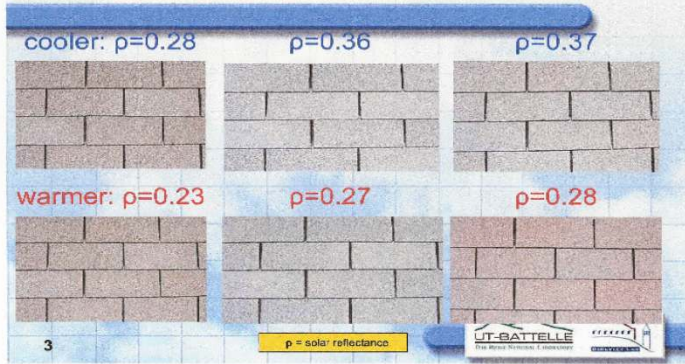
- 10 year track record
- Savings with restoration vs replacement
- Minor disruption of business during installation
- Lower maintenance costs

Steep Slope Energy Star roofing

- Cool Asphalt Shingles
- Cool Metal
- Cool tile

Steep Slope Asphalt Energy Star

Increasing solar reflectance of fiberglass asphalt shingles: prototypes



Increasing solar reflectance of fiberglass asphalt shingles: Elk Prestique® Cool Color Series



ISP Mineral SolarShield™ reflective granules:
(source:www.hersheyphilbin.com/news/isp/021506.html)



SolarShield™ granules meet and exceed EPA's Energy Star® steep-sloped roofing requirements

3M "cool" granules for fiberglass asphalt shingles



Steep Slope Metal Standard and Cool Roof

Stone Coated Steel and Solar



Galvalume Cool Metal Roof



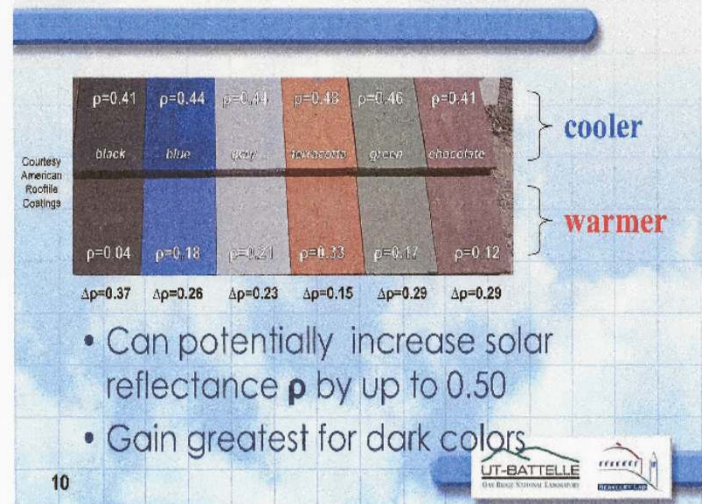
Steep Slope Tile and Cool Tile

Standard Concrete Tile



Cool Tile

Increasing solar reflectance of concrete tiles: American Rooftile Coatings



Climate Smart Considerations

- Energy audit required
- Review of all inefficiencies
- Applied Solutions
- Complete Application

Cost Comparison PVC

- PVC with insulated taper system
- *No Ponding
- *Most thermally efficient
- *Most durable single ply membrane
- * Price per \$7 to \$10/ sqr. ft.
- *Without taper \$3.50 to \$7/sqr. ft.

Cost Comparison TPO

- TPO with insulated taper system
 - * No Ponding
 - * Thermally efficient
 - * Durable single ply membrane
 - * Price \$6.75 to \$9.75 /sqr. ft.
 - * Without taper \$3.25 to \$6.75

Cost Comparison EPDM

- EPDM with insulated taper system
 - * No Ponding
 - * Thermally efficient
 - * Durable single ply membrane
 - * Price \$6.75 to \$9.75 /sqr. ft.
 - * Without taper \$3.25 to \$6.75

Cost Comparison Liquid applied Coating

- * Energy Star Rated Reflectivity
- * Durable Multi-ply membrane
- * Price \$2.85 to \$4.00 /sqr. ft.
-

Cost Comparisons Steep Slope

- E-Star Asphalt Shingles- \$3.50 to \$5.50/ sqr. ft.
- Cool Metal- \$ 6.00 to \$ 10.00/sqr. ft.
- Cool Tile- \$ 7.00 to \$12.00/sqr. ft.



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