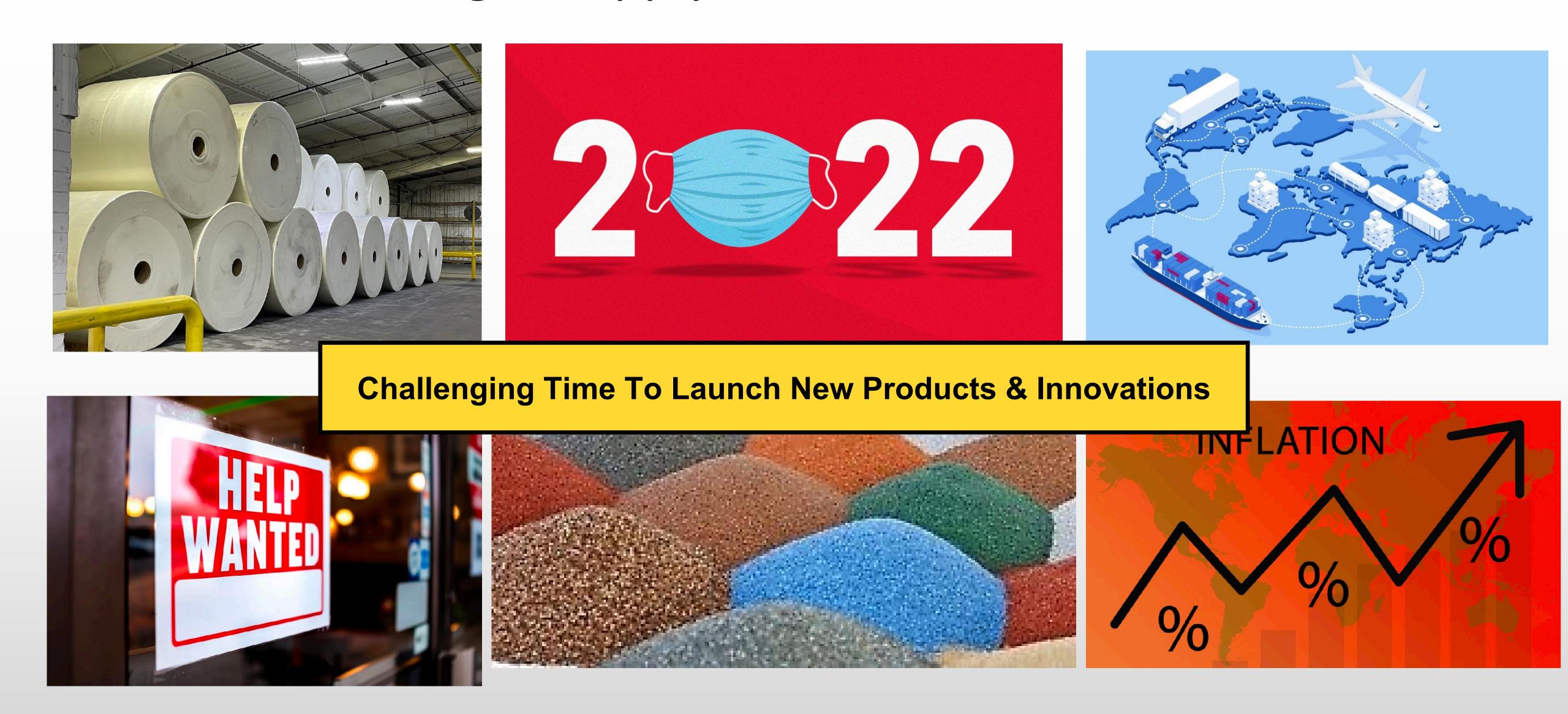


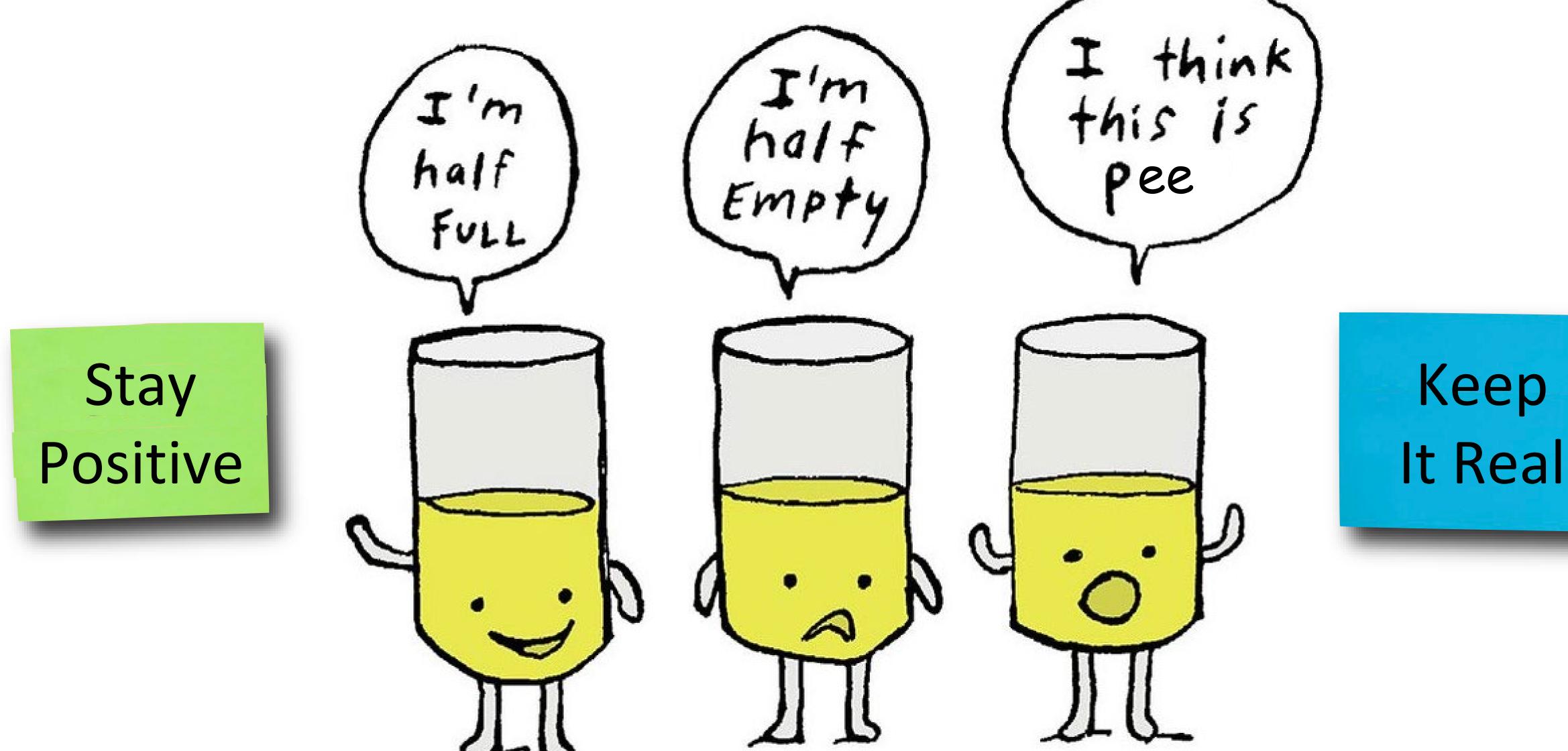


#### Product Trends



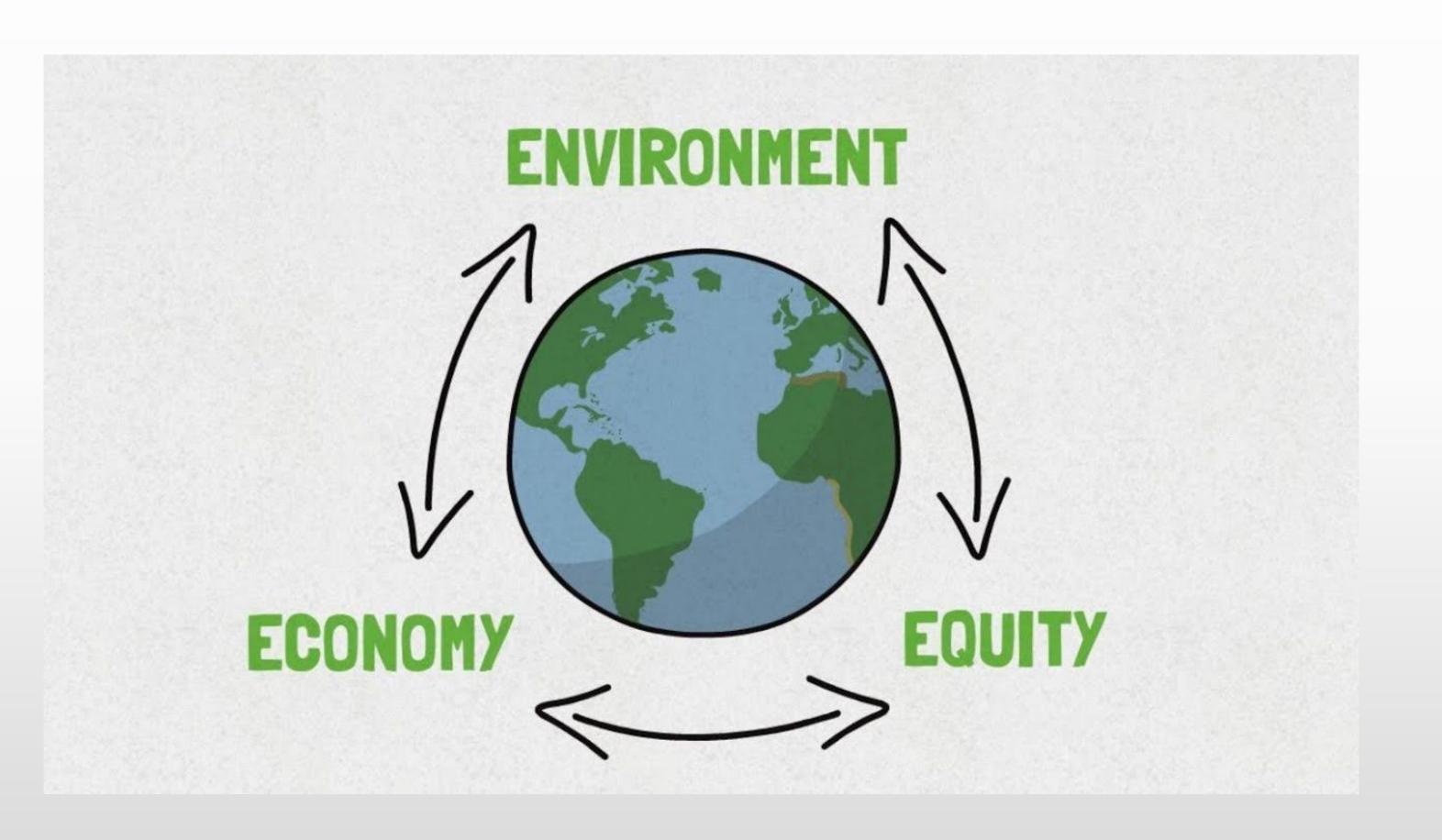
#### Manufacturing & Supply Chain Issues Persisted



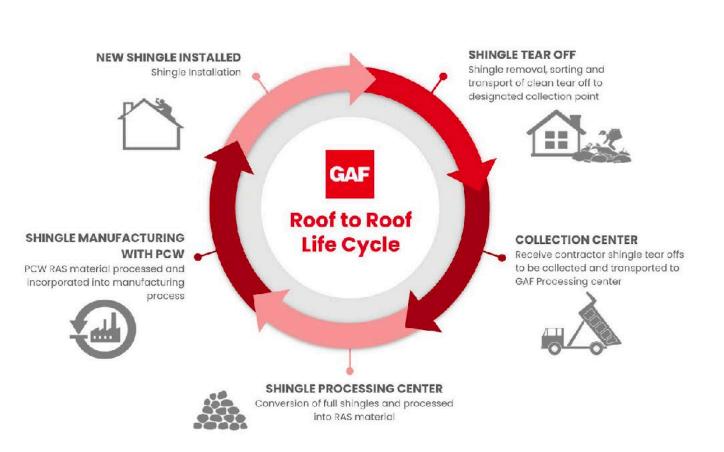




### Sustainability

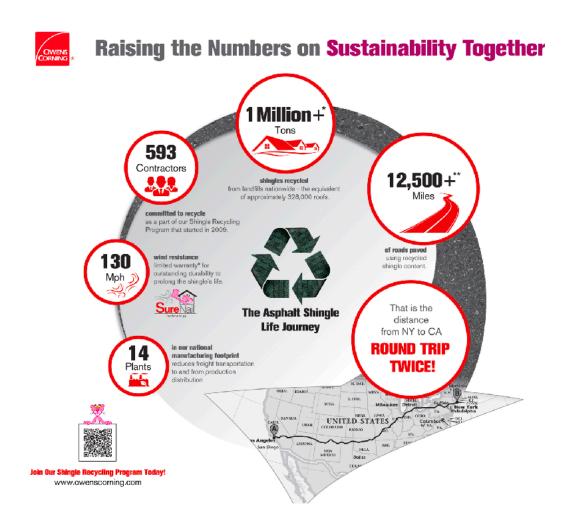


#### Shingle Recycling & Recycled Content



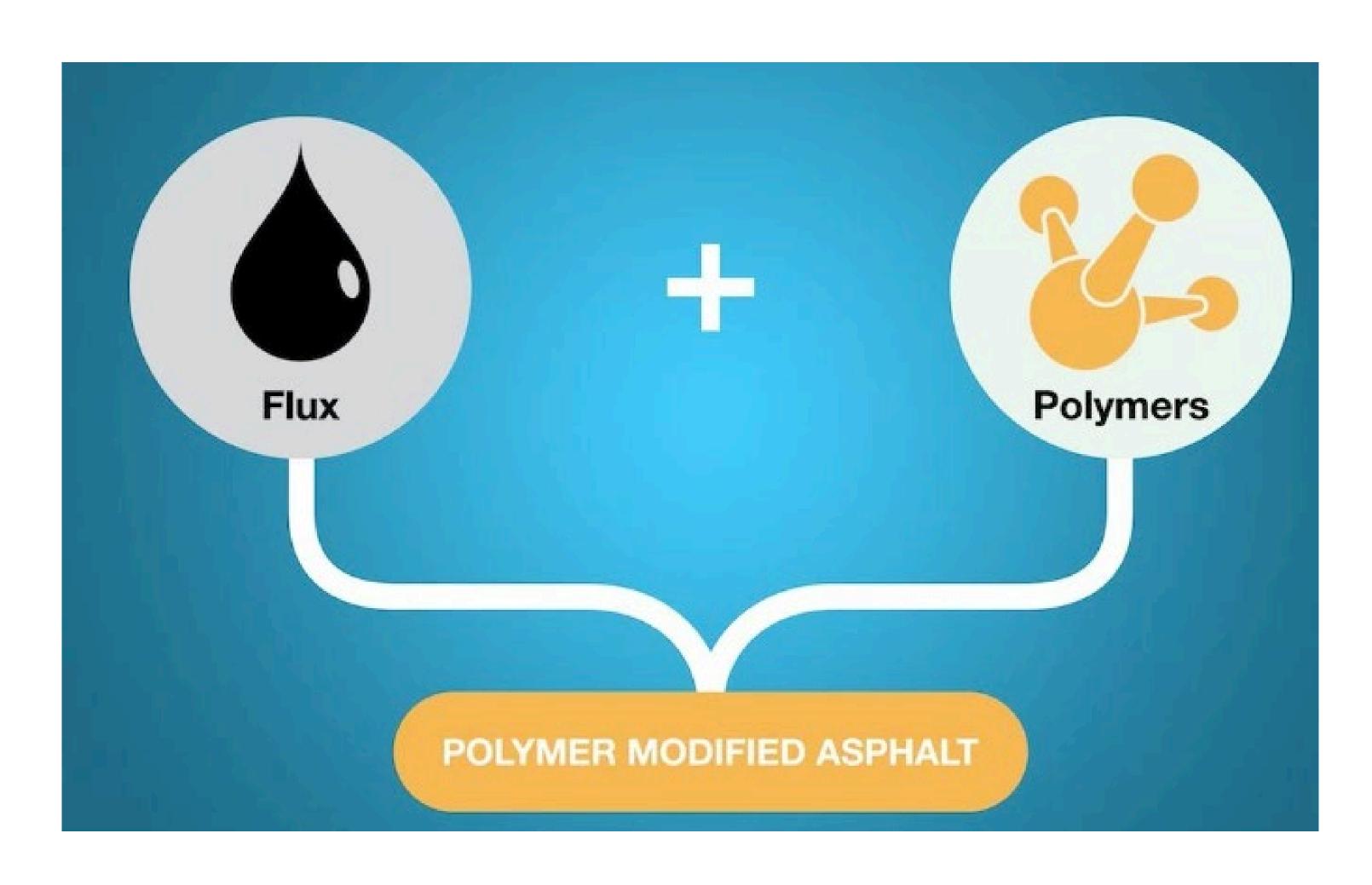


October 5-6, 2022 | Chicago, Illinois





## Polymers & Blends With Lower Environmental Impact



#### Tackling Smog & CO2 Reduction

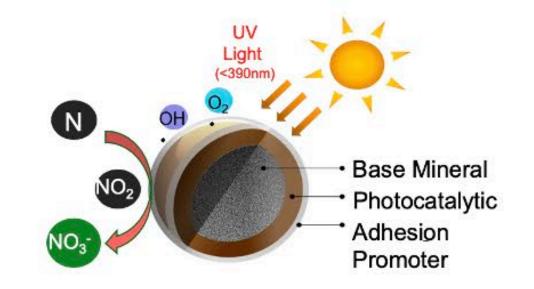


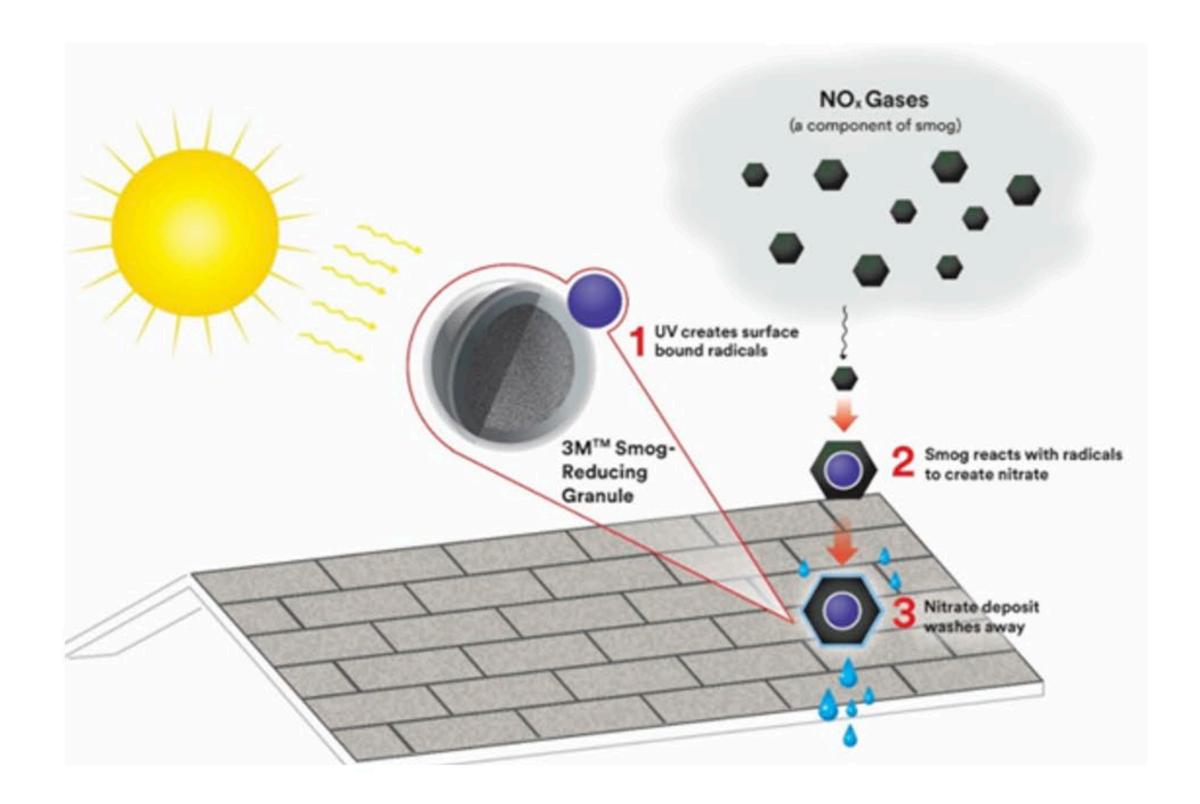






#### **3M™ Smog-reducing Granules**

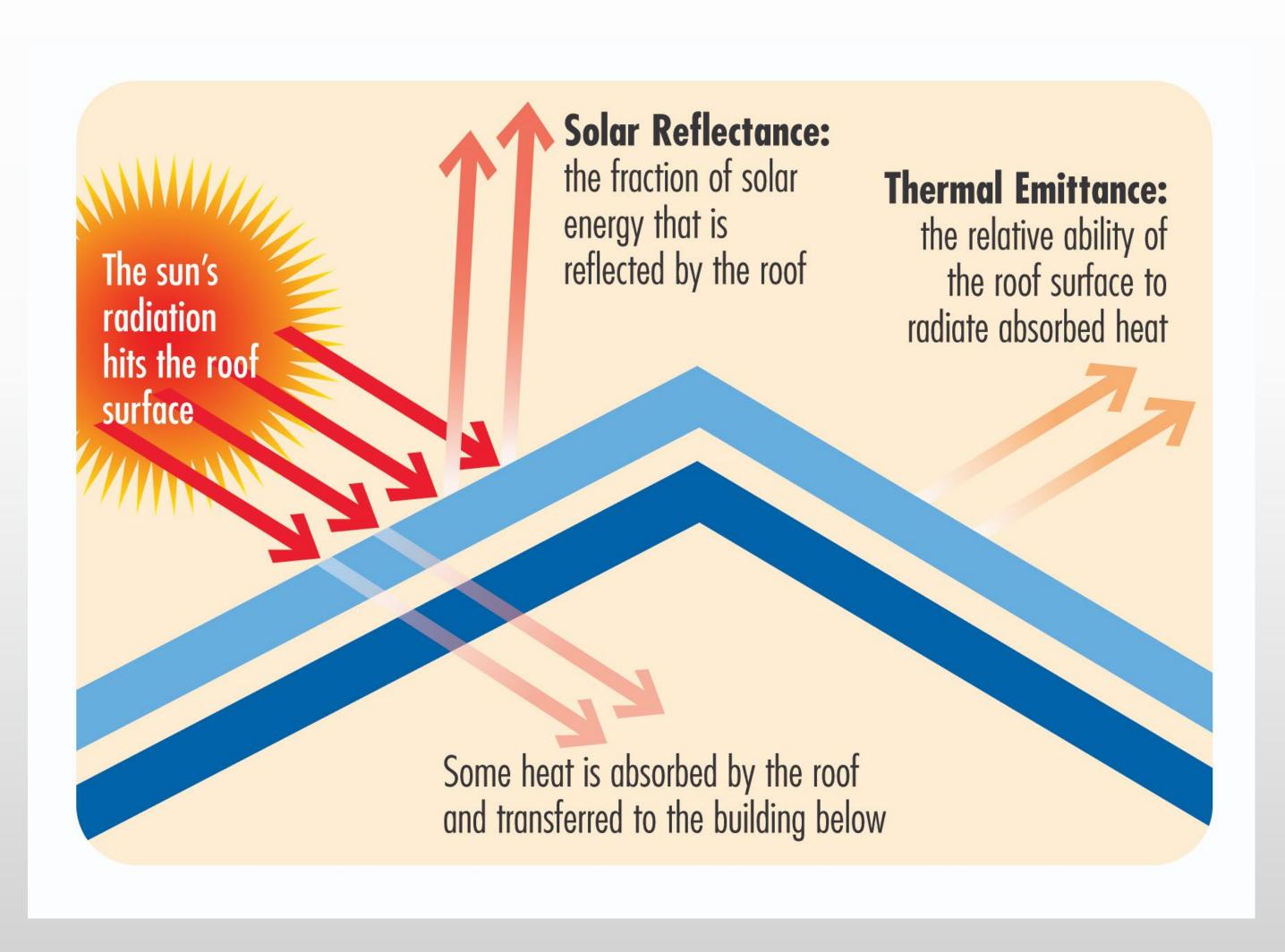








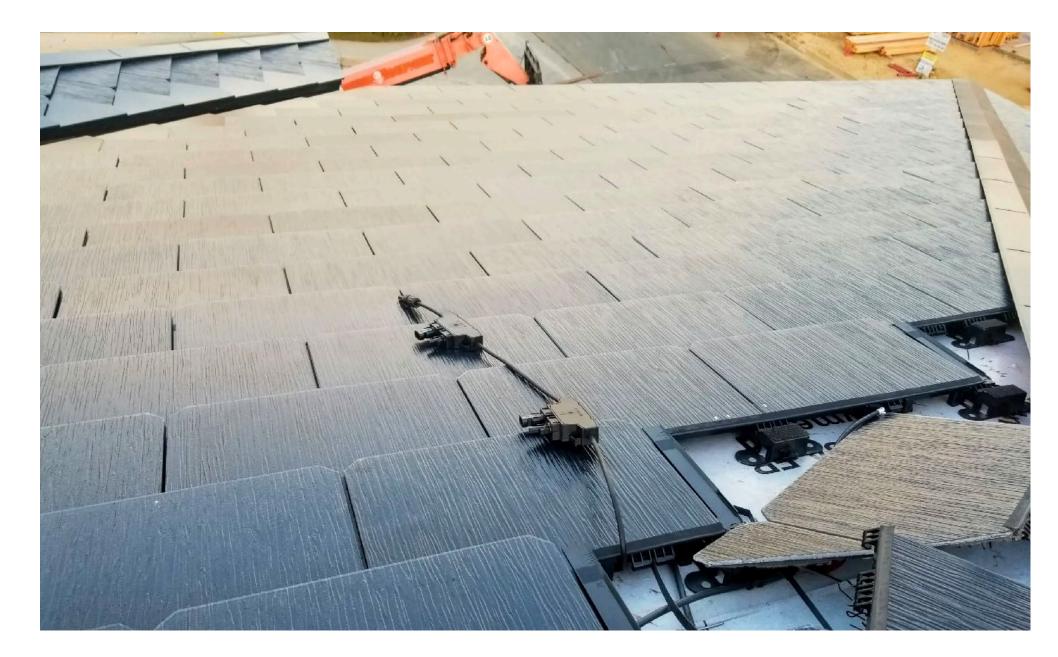
# Harnessing The Sun: Solar & Reflectivity



#### Solar Panels







#### Reflective "Cool" Roofs



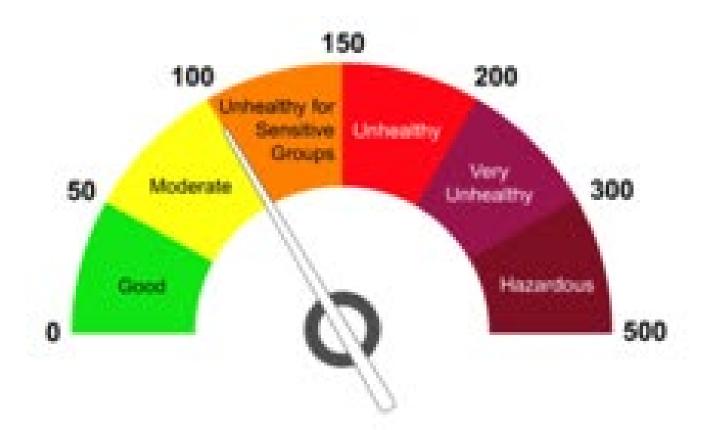
HVAC energy and \$ savings



Comfort, health, and safety in heat waves



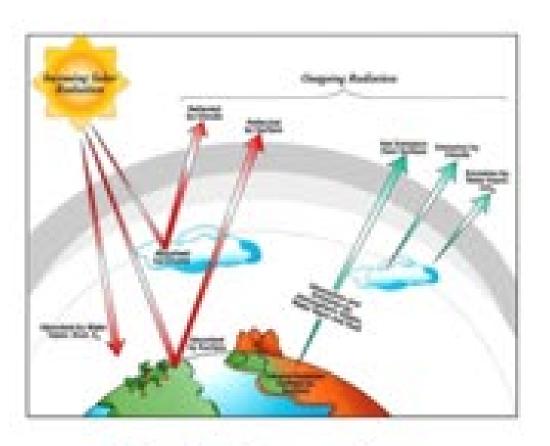
Heat island mitigation

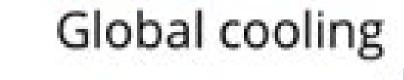


Smog abatement

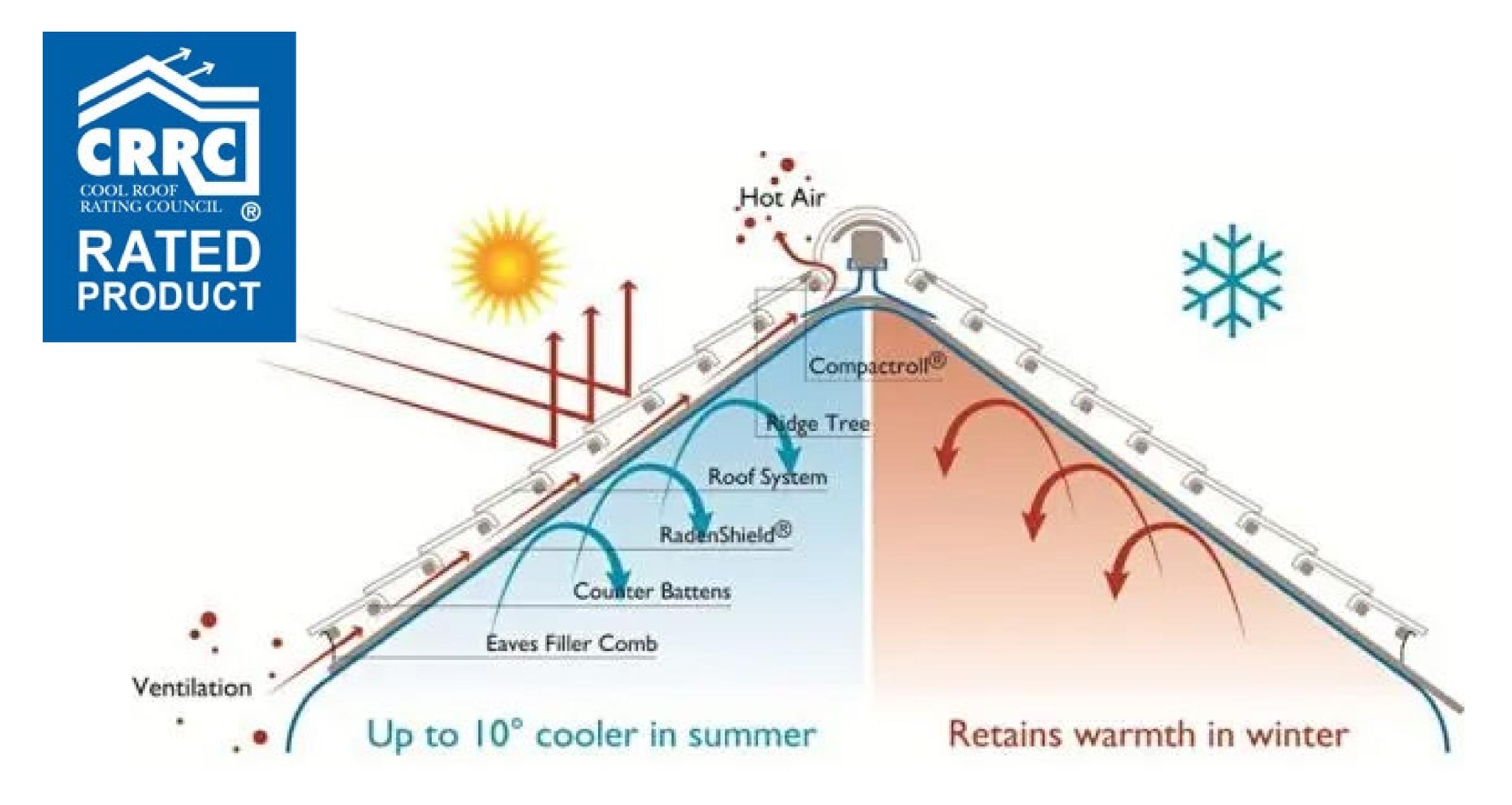


Peak power demand reduction





#### Reflective "Cool" Roofs



#### Reflective "Cool" Shingles



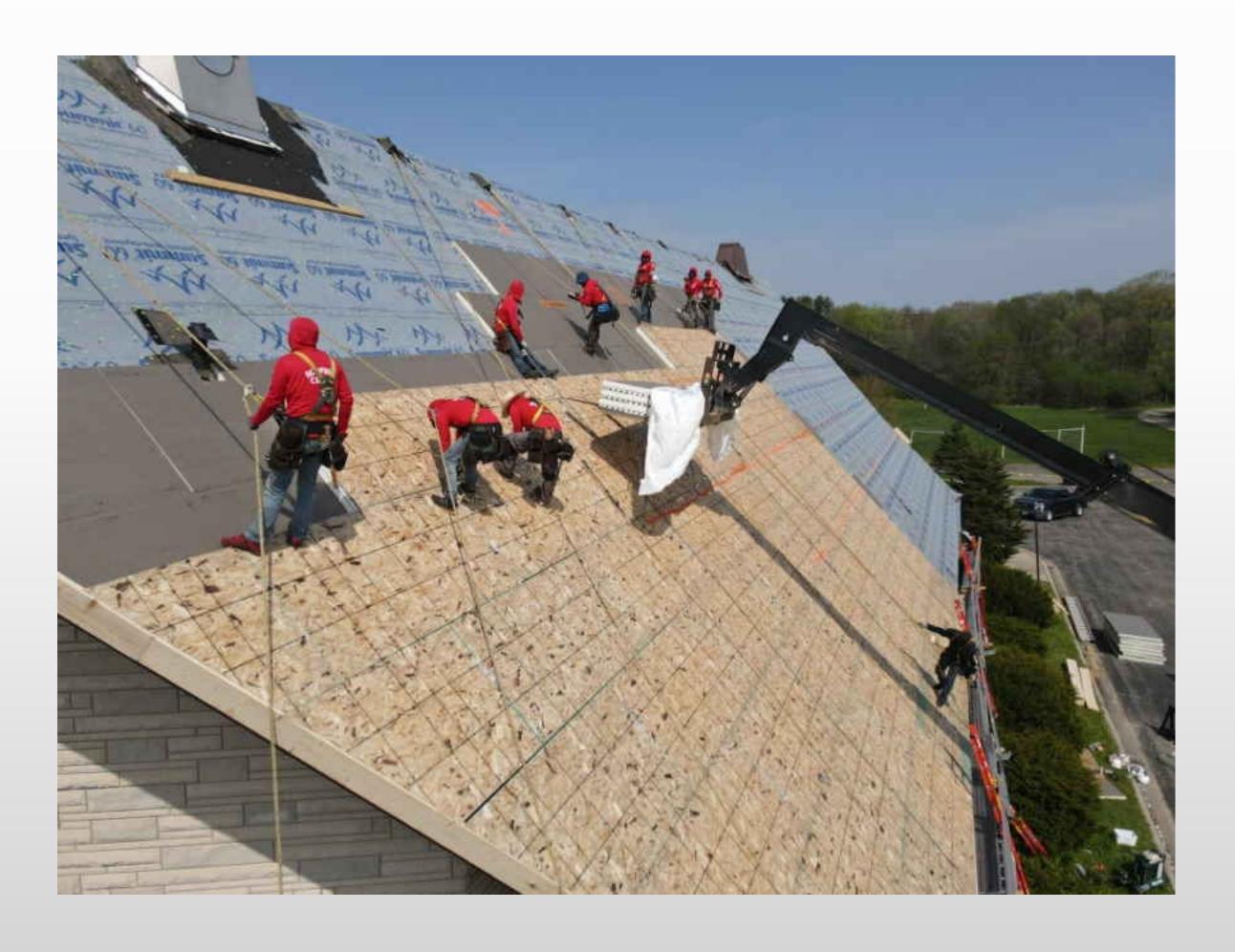








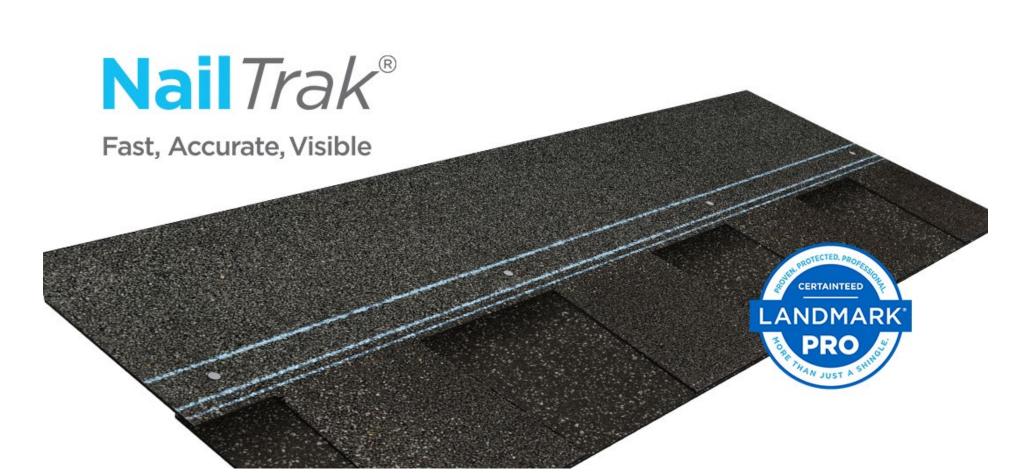
#### Installer Benefits



#### Nailing Areas & Wind Performance







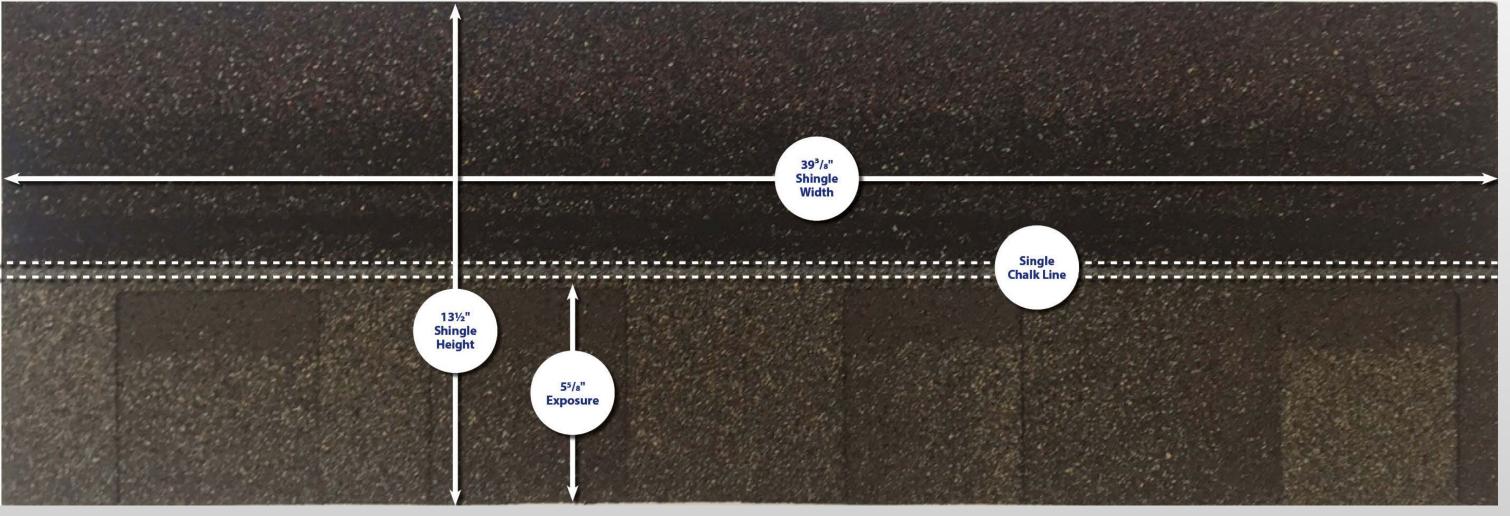






#### Labor and Time Savings



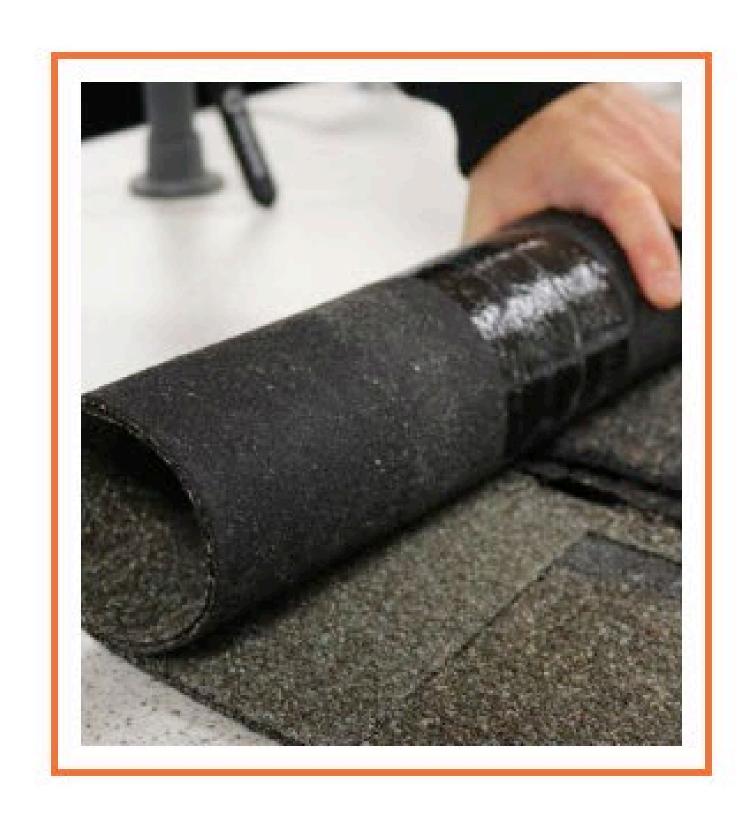


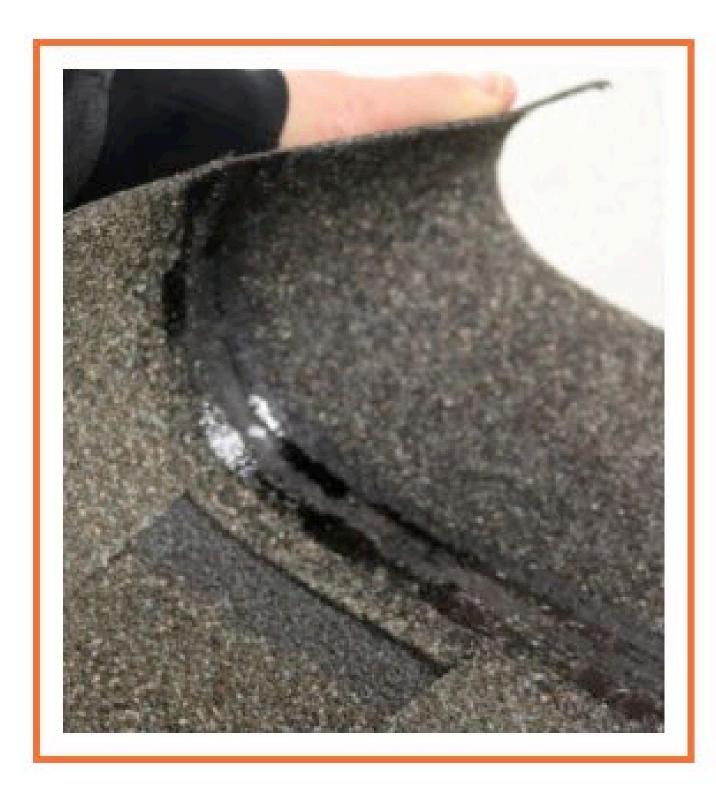


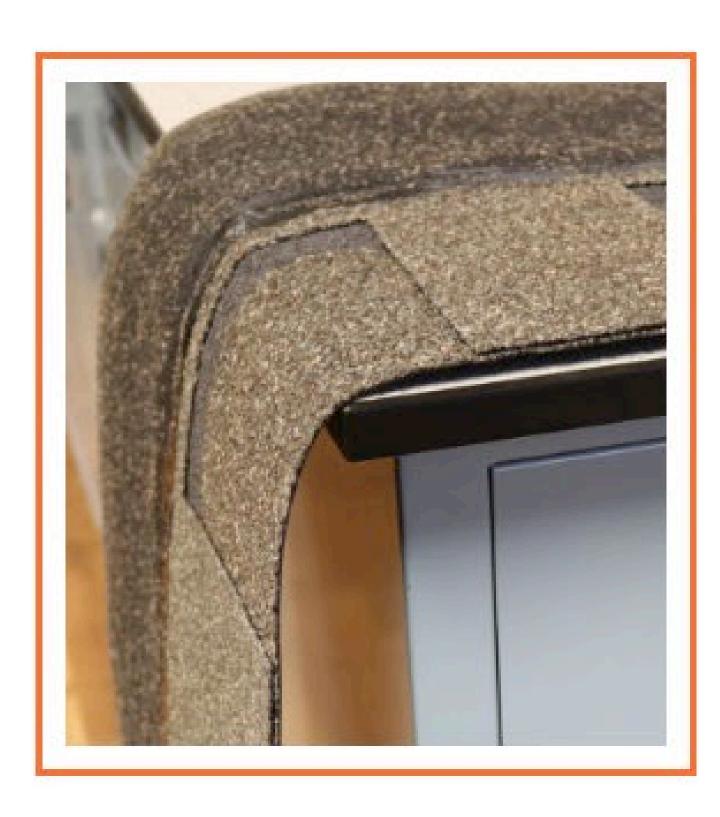
### Polymer Technology



### Shingle Flexibility & Memory

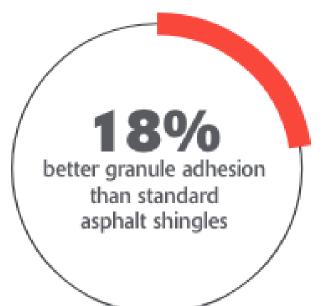


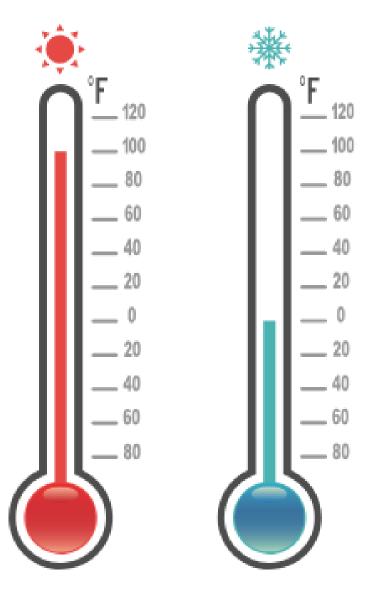




## Better Granule Adhesion Through Thermal Shock "Freeze/Thaw" Conditions







Enhanced flexibility compared to standard asphalt shingles down to 0°F.

## Impact Resistance (Not Warranty)

#### **UL 2218 Class 4 Impact Test**

Standard Asphalt Products







#### Impact Resistance Test Methods



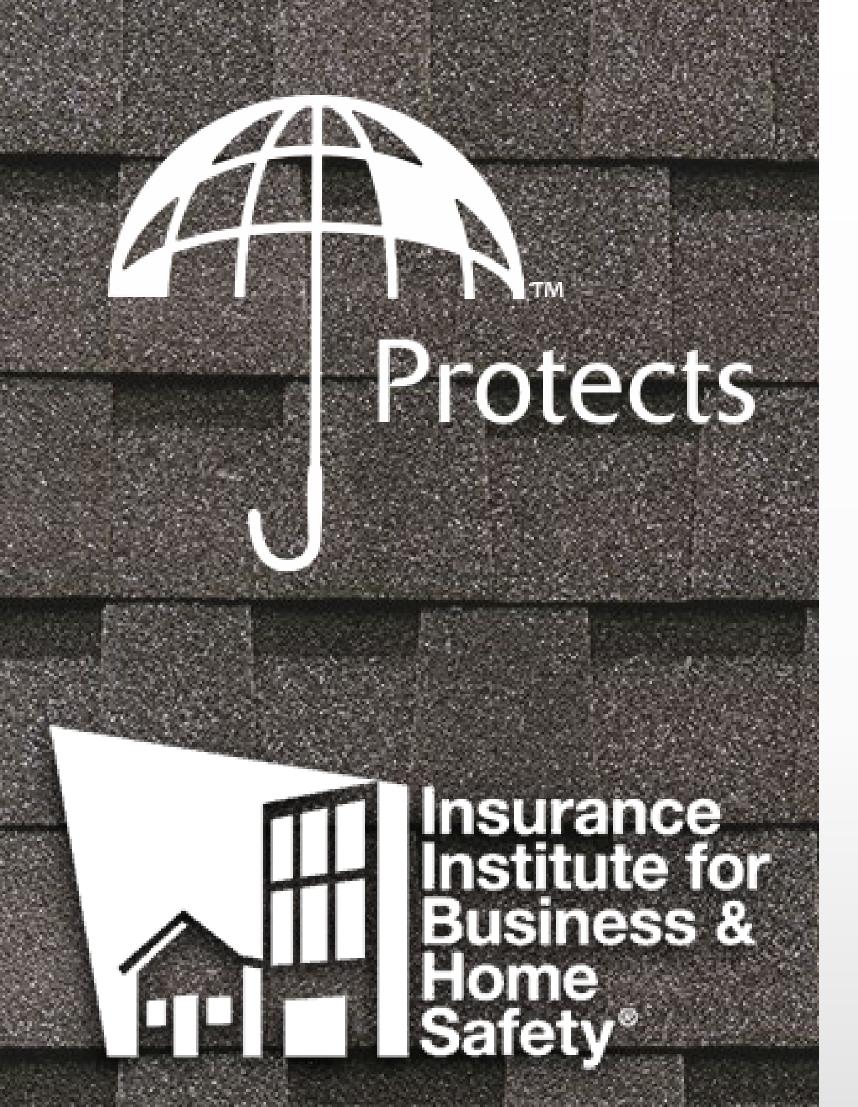




Member of the FM Global Group

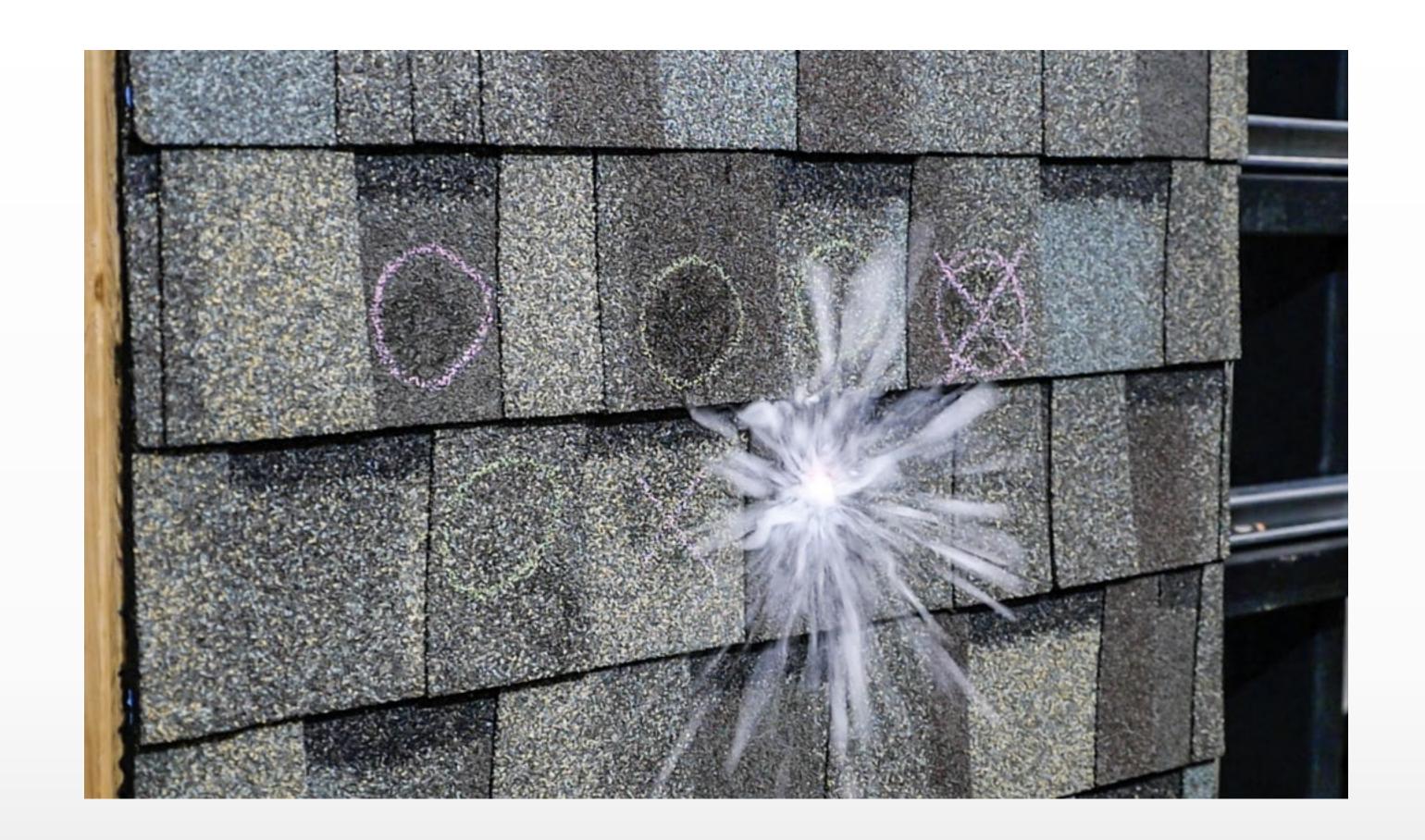
	Ice Ball Diameter		Mass		Kinetic Energy at Impact	
Class	(in)	(mm)	(lb)	(g)	(ft·lbf)	(J)
1	1¼	31.8	0.0338	15.3	3.72	5.0
2	1½	38.1	0.0584	26.5	7.77	10.4
3	1¾	44.5	0.0928	42.1	14.00	19.0
4	2	50.8	0.1385	62.9	26.13	32.2

Table 2 - ANSI FM-4473 impact parameters.

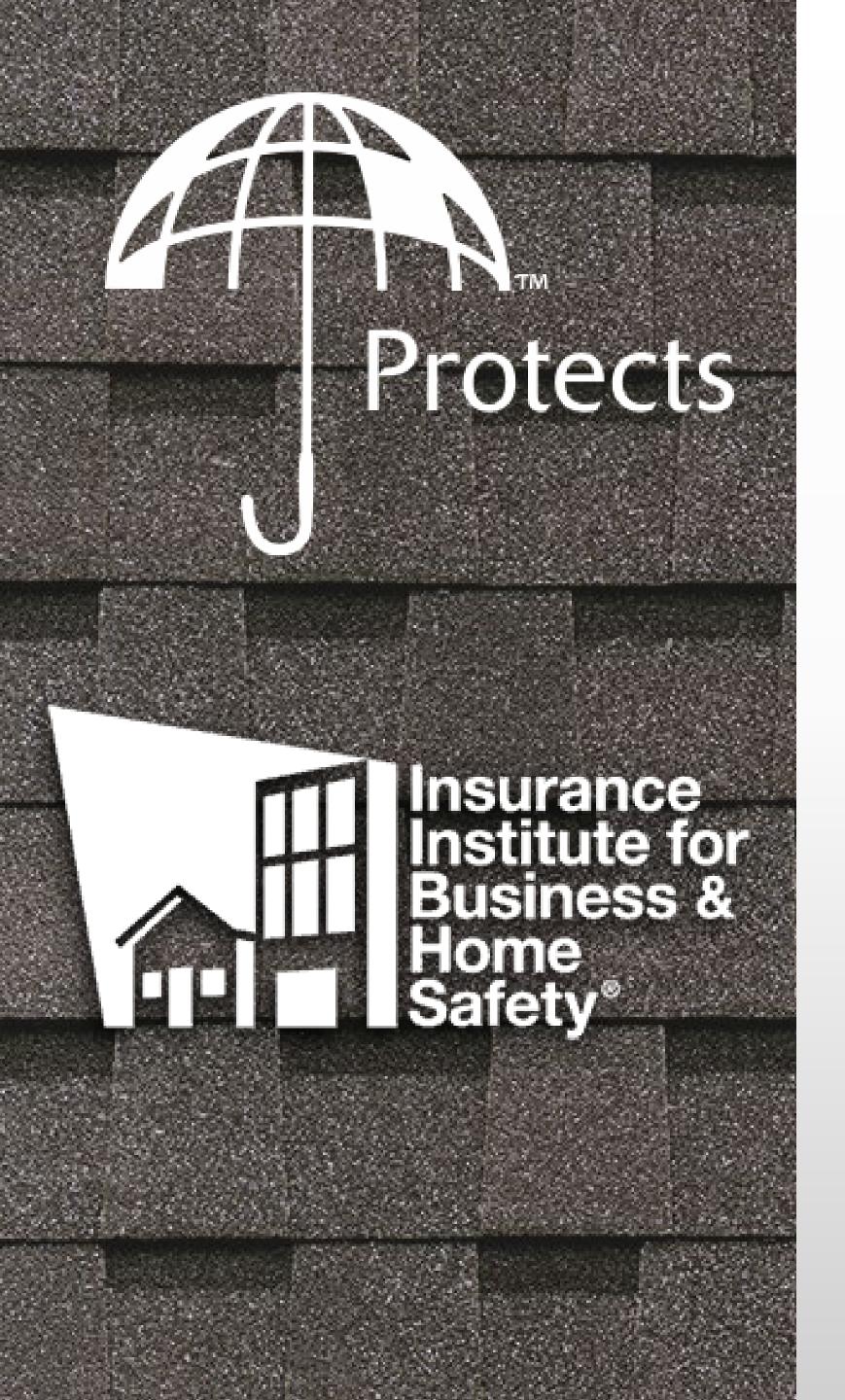












#### When Will It Become A Standard?



#### **ROOF SHINGLE HAIL IMPACT RATINGS**

Manufacturer/ Brand

Overall Rating Dents/ Ridges

Granule Loss

































































































