

The Unsung Hero Beneath Our Feet: Understanding Sealcoatings

Asphalt pavements, from bustling highways to quiet driveways, are a predominant part of modern infrastructure. While their robust appearance suggests invincibility, asphalt is, in fact, a vulnerable material susceptible to the relentless assault of water, sun, ice, de-icing salts, petrochemicals and traffic. This is where sealcoatings, the unsung heroes of pavement preservation, step in. By providing a protective layer, sealcoatings significantly extend the lifespan of asphalt, offering both environmental and economic benefits.

What are Sealcoatings?

Sealcoatings are protective layers applied to asphalt pavements. Essentially, they form a barrier over the asphalt surface, shielding it from the elements and everyday wear and tear. This barrier helps to prevent the oxidation of the asphalt binder, which is the glue that holds the aggregate (stones and sand) together. Without this protection, the binder becomes brittle, leading to cracking, raveling (loose aggregate), and eventually, full-scale pavement deterioration.

Different Types of Sealcoatings

The primary types of asphalt sealcoatings available today are:

1. **Refined Coal Tar Emulsion:** Workhorse of the industry, coal tar sealers are known for their exceptional durability and resistance to chemicals, oil, and gasoline. They provide a very dark, aesthetically pleasing finish. However, due to environmental concerns regarding polycyclic aromatic hydrocarbons (PAHs), their use has been banned or restricted in some regions of the country.
2. **Asphalt Emulsion:** A more environmentally friendly alternative, asphalt emulsion sealers are derived from petroleum asphalt. While perhaps slightly less resistant to certain chemicals than coal tar, modern asphalt emulsions have significantly improved in performance, offering good durability and protection against UV rays and water.
3. **LP Sealer Based Emulsion:** A new generation of sealcoatings that provide high performance and effective alternative to both Refined tar and Asphalt emulsion-based sealers. Comparable to Refined tar sealers in Toughness and durability, and better than basic Asphalt Sealers in resistance to fuel, salt and petrochemicals.
4. **Polymer Based:** These premium sealers offer superior durability, color retention, and resistance to fading. They provide a flexible, long-lasting surface that can withstand heavy traffic and harsh weather conditions. While more expensive upfront, their extended lifespan can make them cost-effective in the long run.

The choice of sealcoating often depends on local regulations, budget, environmental considerations, and the specific performance requirements of the pavement.

Benefits of Sealcoatings

The advantages of applying sealcoatings are numerous and far-reaching:

- **Protection from Elements:** Sealcoatings act as a shield against UV radiation, rain, snow, and ice, which are primary culprits in asphalt degradation.
- **Oxidation Prevention:** By blocking oxygen from reaching the asphalt binder, sealcoatings prevent the binder from hardening and becoming brittle, thereby maintaining the pavement's flexibility.
- **Water Penetration Reduction:** Cracks and porous surfaces allow water to seep into the pavement's base, leading to subgrade failure and potholes. Sealcoatings fill these minor imperfections, reducing water ingress.
- **Improved Appearance:** A fresh coat of sealer restores the deep black color of asphalt, enhancing curb appeal and making line striping more visible.
- **Cost-Effectiveness:** Most importantly, sealcoatings are a proactive maintenance strategy that significantly defers expensive repairs and complete pavement replacements.

LIFE EXPECTANCY OF ASPHALT PAVEMENTS

The consensus of the industry regarding the life expectancy of an asphalt pavement is approx. 7-10 years without any maintenance. Home driveways may last 10-15 years, without maintenance.

The life of an asphalt pavement depends on the following factors.

- Pavement design i.e. base, sub-base, drainage, asphalt mix, compaction, depth of the asphalt, etc.
- The traffic bearing capacity
- Traffic frequency
- Exposure to damaging elements, e.g. de-icing salts, oil, grease, gasoline, fats, etc.
- Maintenance e.g. sealcoating, crack filling, patching, etc.

For the sake of understanding, the life of an asphalt pavement is the period during which it will preserve its strength to bear the traffic loads for which it is designed. For example, a commercial parking lot will need to be repaved after 7-8 years.

Life Cycle Cost Analysis: Sealcoating vs. No Sealcoating

To truly appreciate the economic value of sealcoating, let's conduct a simplified Life Cycle Cost Analysis. Life-Cycle Cost Analysis (LCCA) is a process for evaluating the economic worth of a pavement segment by analyzing initial costs and discounted future costs such as preventive maintenance, resurfacing, rehabilitation and reconstruction cost, over a defined analysis period. LCCA is only a tool in decision making process, it does not dictate the decision.

Let's use the following parameters for the LCCA

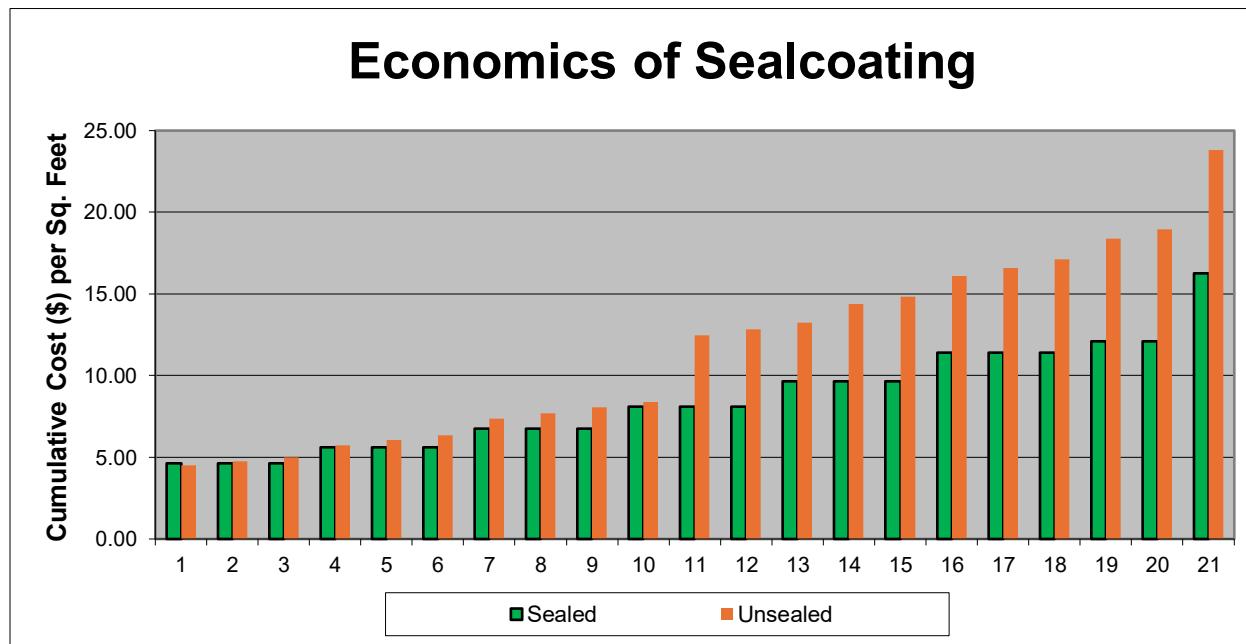
Important Note: The numbers mentioned below are industry averages (as of November 2025), the numbers will be different based on a lot of factors, such as Geographic Location, Choice of Sealer, Contractor, etc.

- **Paving New Road:** \$4/sq.ft
- **Repaving:** \$2.5/sq.ft
- **Sealcoating:** \$0.15/sq.ft
- **Crack Filling & Striping:** \$0.05 - \$0.10/ ft (let's use an average of \$0.075/ ft for calculation)
- **Unsealcoated Pavement Repaved after 10 years.**
- **Sealcoated Pavement Repaved after 20 years.**
- **Repaving costs include crack filling and striping.**

Let's analyze the costs over a 20-year period for 1 square foot of pavement.

ECONOMICS OF SEALCOATING			
YEAR	MAINTENANCE PERFORMED	CTPE/ SQ FT.	UN-MAINTAINED
2025	BASE+ 2" ASPHALT	\$ 4.00	\$ 4.00
	STRIPING	\$ 0.50	\$ 0.50
	2 SEALCOATS	\$ 0.15	
2026	1ST. YEAR MAINTENANCE COST	\$ -	\$ 0.25
2027	2ND. YEAR MAINTENANCE COST	\$ -	\$ 0.25
2028	3RD. YR. MAINTENANCE COST + 2 SEALCOATS	\$ 0.75 \$ 0.20	\$ 0.75 -
2029	4TH. YEAR MAINTENANCE COST	\$ -	\$ 0.30
2030	5TH. YEAR MAINTENANCE COST	\$ -	\$ 0.30
2031	6TH. YEAR MAINTENANCE COST + 2 SEALCOATS	\$ 0.85 \$ 0.30	\$ 1.00 -
2032	7TH. YEAR MAINTENANCE COST	\$ -	\$ 0.35
2033	8TH. YEAR MAINTENANCE COST	\$ -	\$ 0.35
2034	9TH. YEAR MAINTENANCE COST + 2 SEALCOATS	\$ 0.95 \$ 0.40	\$ 0.35 -
2035	10TH. YEAR MAINTENANCE COST 1.5 INCH OVERLAY	\$ -	\$ 1.05 \$ 3.00
2036	11TH. YEAR MAINTENANCE COST	\$ -	\$ 0.40
2037	12TH. YEAR MAINTENANCE COST + 2 SEALCOATS	\$ 1.05 \$ 0.50	\$ 0.40 -
2038	13TH. YEAR MAINTENANCE COST	\$ -	\$ 1.15

2039	14TH. YEAR MAINTENANCE COST	\$ -	\$ 0.45
2040	15TH. YEAR MAINTENANCE COST	\$ 1.15	\$ 1.25
	+ 2 SEALCOATS	\$ 0.60	
2041	16TH. YEAR MAINTENANCE COST		\$ 0.50
2042	17TH. YEAR MAINTENANCE COST	\$ -	\$ 0.50
2043	18TH. YEAR MAINTENANCE COST	\$ -	\$ 1.30
	+ 2 SEALCOATS	\$ 0.70	
2044	19TH. YEAR MAINTENANCE COST		\$ 0.55
2045	20TH. YEAR MAINTENANCE COST	\$ -	\$ 1.35
	1.5 INCH OVERLAY	\$ 3.50	\$ 3.50
	+ 2 SEALCOATS	\$ 0.65	
TOTAL INSTALLATION & MAINTENANCE COST			
PER SQUARE FEET		\$ 16.25	\$ 23.80
FOR AN AVERAGE PARKING LOT OF 10,000 SQ. FEET		\$ 162,500.00	\$ 238,000.00
SAVINGS - FOR AN AVERAGE PARKING LOT OF 10,000 SQ. FT.			\$ 75,500.00



Conclusion of Analysis: Over a 20-year period, the sealcoated pavement scenario costs **\$16.25/sq.ft**, while the unsealcoated pavement costs **\$23.80/sq.ft**. This represents a significant saving of **\$7.55/sq.ft** (approximately 46.5% cheaper) by implementing a regular sealcoating regimen. The primary driver of this saving is the deferral of expensive repaving for an additional 10 years.

In conclusion, sealcoatings are far more than just a cosmetic application. They are a critical component of a comprehensive pavement management strategy. By understanding their types, benefits, and the compelling financial advantages demonstrated through life cycle cost analysis, property owners and municipal planners can make informed decisions that lead to longer-lasting, more resilient, and ultimately more economical asphalt infrastructure. Ignoring this unsung hero beneath our feet is a costly oversight.