

TURNING FLOORING MAINTENANCE INTO PROFIT:

**Demonstrating the impact of maintenance protocols on coated vs.
non-coated resilient flooring materials in acute-care facilities**

THE PAIN POINT

Our client partners are often confronted with industry misconceptions regarding different resilient flooring materials, their associated maintenance protocol, and their ability to sustain the demands placed on them in a high traffic acute-care facility.

- To best support their request to evaluate operational optimization, the ability to examine the “real-time” implications of Operations & Maintenance (O&M) from a first cost vs. total cost of ownership was needed specific to resilient flooring maintenance protocol.
- In support of client drivers, nora® undertook a peer-reviewed research initiative and partnered with four major acute care health systems to validate their “real-time” maintenance protocol and associated costs for various resilient flooring materials and how they sustain over their usable life.
- Flooring can substantially contribute to patient experience, safety and outcomes [1,2], and is a critical capital investment decision for healthcare facilities. It is crucial when making this design decision to evaluate a flooring material’s long-term cost effectiveness in relation to its initial costs [3].

Perspective

Resilient flooring materials continue to be the predominate flooring material choice for high-traffic areas in healthcare environments [4]. They come in a wide range of material compositions and aesthetic alternatives, many have “factory applied” or “no-wax” finishes that are applied during the manufacturing process to enhance the wear-ability of the surface.

- Our client partners are often inundated with conflicting product information, a lack of clearly defined maintenance requirements, expectations, and inevitably deficient of credible evidence necessary to support their evidence-based decision making.

Perspective

- Prior research suggests maintenance protocols can have a significant impact on the total cost of ownership, and that the flooring material with the lowest initial cost does not always exhibit the lowest life-cycle cost [5,6,3], to date nominal evidence exists evaluating the impact of coated and non-coated flooring maintenance protocols on resilient flooring materials.



INITIAL COST =
 Material + Adhesives + Freight + Install + Occupy

MAINTENANCE COST =
 Cleaning Frequency + Equipment Size + Cost of Labor
 + Cost of Cleaner + Cost of Downtime

Our Response

A peer-reviewed, empirically validated life-cycle cost analysis calculator to support our client partners in making informed decisions regarding the specification, purchasing and long-term cost implications of maintenance on coated and non-coated resilient flooring materials.

- nora® collaborated with healthcare client partners, industry leaders, independent researchers, and Environmental Services (EVS) knowledge experts to best inform a Life-Cycle Cost Analysis (LCCA) tool.
- The LCCA tool imparts the “real-time” maintenance data supplied by the health system to provide insight into the Total Cost of Ownership (TCO) of varying resilient flooring materials currently in place in the health system.
- It is unique in that its data analysis accounts for differences in maintenance protocol for rooms and hallways. The resulting data delivers actionable cost data based on current maintenance practices that can transform an organization’s current O&M protocol by diagnosing opportunities for long-term cost savings.

LCCA Tool Development

To further demonstrate the impact of O&M on the TCO for resilient flooring, the LCCA tool enables a third-party credible “deep-dive” to examine differences in costs associated with coated and non-coated flooring materials using the health system.

- Resilient flooring materials were categorized by definition of coated and non-coated based on the level of maintenance required to retain the products aesthetic quality and functional integrity.
- The foundation of the tool is third-party data provided by the International Sanitary Supply Association (ISSA) Cleaning Times and Tasks Standard 612, which is the leading industry publication for established baseline standards regarding maintenance staff workloads.
- These maintenance time standards, per 1,000 sq. ft. in minutes establish the industry standard time to complete each task in sq. ft./hr. for hard floor care maintenance protocol.
 - *Example: Scrub w/automatic scrubber 32” walk-behind wheel-propelled unit*
 - 1,000 sq. ft. at 4.04 minutes = 14,851 sq. ft./hr.
- To provide a benchmark for evaluating real-time maintenance practices and establish a maintenance protocol for ensuring product integrity and longevity, it was also essential to clearly identify manufacturer recommendations for maintenance protocols associated with coated and non-coated resilient flooring materials.

Coated	Resilient flooring materials that require coating per manufacturer recommendations during the material’s entire usable life to maintain aesthetic appearance and functional integrity.
Non-coated (factory applied finish, pre-coated or no-wax)	Resilient flooring materials that may require coating to maintain aesthetic appearance and functional integrity at some point during the material’s usable life when the factory applied coating no longer sustains.
Non-coated (no factory applied finish or never coated)	Resilient flooring materials that never require coating to maintain aesthetic appearance and functional integrity during the material’s usable life.

Real-time Data

Data was collected from four large acute-care health systems of varying geographic regions across the United States.

- The Director of Environmental Services for each facility completed a detailed questionnaire which outlined initial upfront costs of the flooring material, associated man-hours, equipment sizes and cleaning supply costs.
- This input coupled with ISSA data defined a true cost analysis of first cost versus lifetime cost for the varying resilient flooring materials currently in use within each area of the facility.

What We Found in Real-time

- Initial costs are not a direct indicator of life-cycle costs, as nora® premium rubber was found to have the highest initial cost, and had the lowest life-cycle costs across all four cases.
- Resulting data shows a “non-coated” never wax resilient floor best supports TCO.
- Evidenced that up to a 27% O&M cost savings per sq. ft. can be attained with nora.
- The tipping point is when the factory applied finish “fails” on a non-coated resilient flooring material; this is the critical indicator of the total cost of ownership.
- The research evidenced that the “real-time” maintenance solution when faced with issues of wear, scratching or scuffing for “factory applied” coatings was to make it a coated product.
- When the factory applied finishes “failed”, they exhibited similar increases in total life-cycle costs related to O&M as coated materials.
- Coated maintenance protocol can have a substantive impact on TCO.
- Additional loss of savings can occur when real-time maintenance practices deviate from recommended maintenance protocols.
 - Such examples include increased numbers of coatings reapplied to coated flooring after stripping and/or burnishing non-coated flooring to increase gloss level.



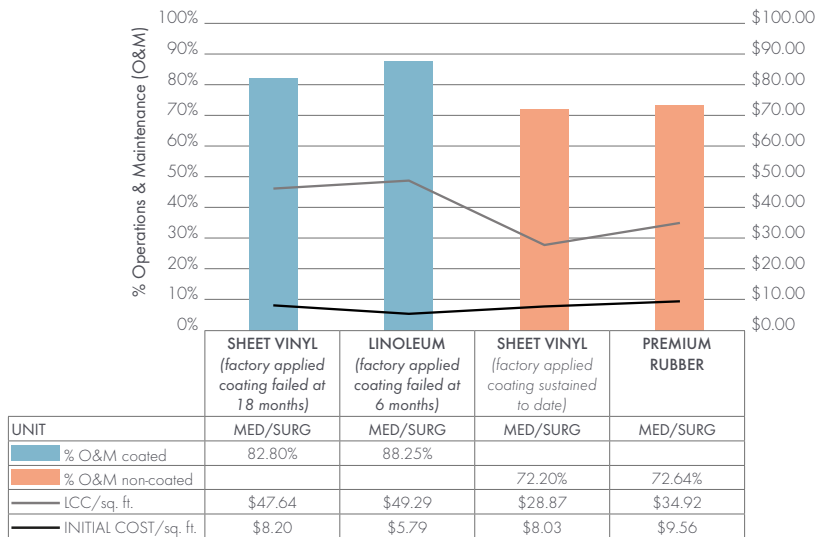
Resulting Real-time Operational Costs

Initial Costs, total life-cycle costs per sq. ft., and percent O&M of “coated” and “non-coated” resilient flooring materials in each inpatient unit evaluated.

NOTE:

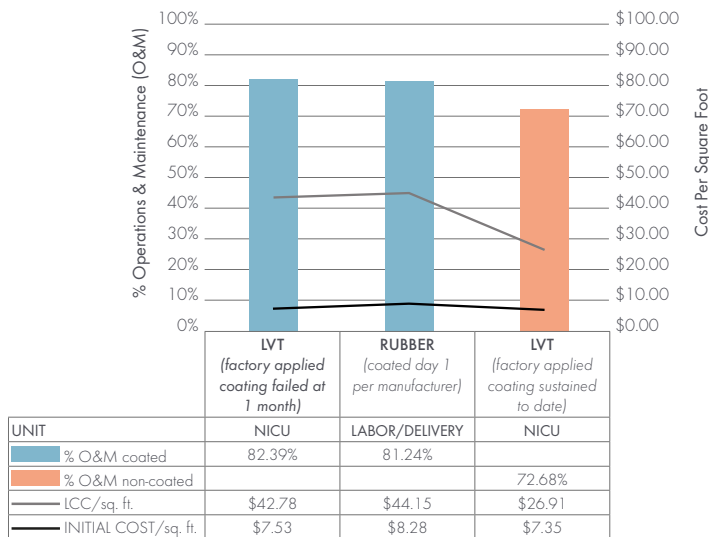
- Premium Rubber represents nora “never coated”
- Rubber represents a competitive rubber “requires coating”

Real-time Case Study Data and Findings



Case 1 Findings:

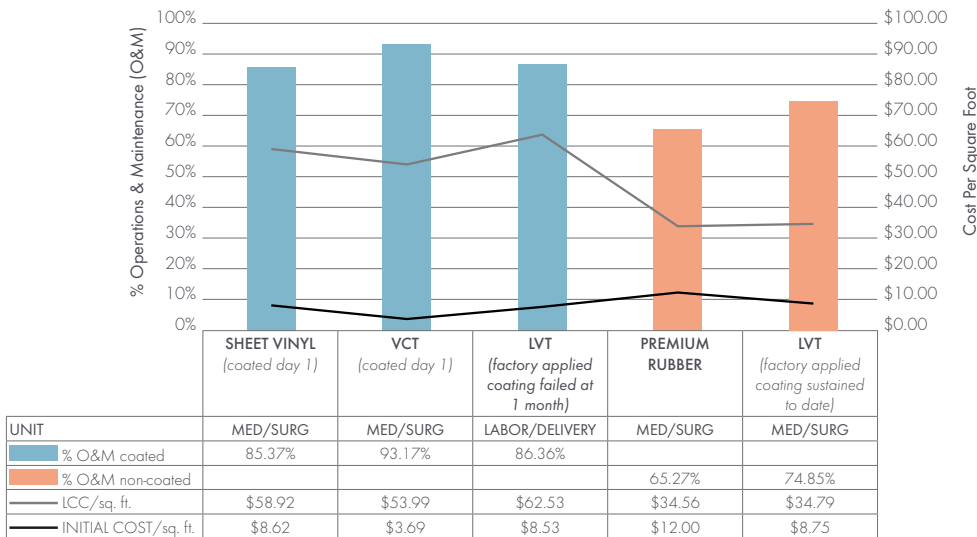
- Flooring materials other than VCT that required a coated maintenance protocol exhibited a 10% - 16% increase in O&M per sq. ft.
- These were non-coated or no-wax resilient flooring materials where the factory applied coating failed with the first two years



Case 2 Findings:

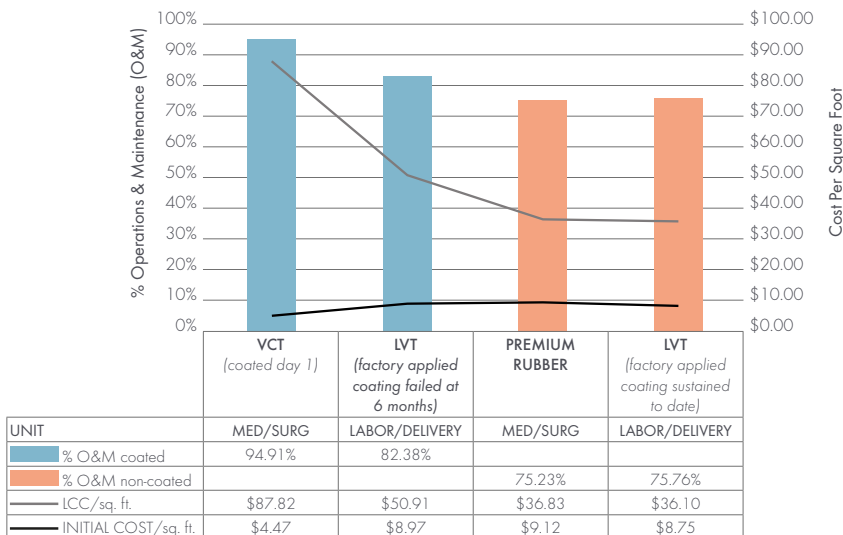
- Coated flooring materials exhibited an 8% - 10% increase in O&M per sq. ft. compared to non-coated flooring materials
- The flooring with a factory applied finish that failed at 1 month exhibited similar increases in O&M as coated materials

Real-time Case Study Data and Findings



Case 3 Findings:

- VCT exhibited an 18% - 27% increase in O&M per sq. ft. when compared to the non-coated flooring materials
- Flooring materials other than VCT that required a coated maintenance protocol exhibited a 10% - 21% increase in O&M per sq. ft., respectively, compared to non-coated resilient flooring materials



Case 4 Findings:

- VCT exhibited a 19% increase in O&M per sq. ft. compared to the non-coated flooring materials
- Flooring materials with a factory applied finish that failed in 6 months exhibited 6% - 8% increase per sq. ft. in the percent of total system costs related to O&M as compared to non-coated flooring materials

What Our Client Partners are Saying...

"From a productivity standpoint, you're able to increase man hours on our floor techs, and have them cover more areas with the appropriate machines."

"Having a total cost of ownership model is compelling for others to have. This model helps prove the business case for selecting nora, even though the initial cost outlay is more expensive upfront."

"It has dramatically brought cost savings into our organization, to where it's been reflected in our operating budgets."

"Having a simplified maintenance routine positively impacts patients and staff, because the smell of floor finish can be quite strong. You have to clear out a room completely. With nora rubber, you entirely eliminate that. It makes a significant difference in down time."

Building the Evidence Base

This research was conducted to further inform the impact of maintenance protocols on TCO for our client partners specific to resilient flooring materials.

- Through the use of an empirically validated life-cycle cost calculator, nora can provide credible cost savings, unique to our client partner's maintenance protocol to best support a value-based resilient flooring decision to transform your O&M into a profit center.
- To meet the challenges our client partners are faced with to align product selection with "real-time" maintenance costs given O&M budget constraints placed on health systems today.
- A one-time site visit was conducted to evaluate maintenance protocol on various resilient products currently in place.
- This research will continue to evolve with the intent to revisit these sites and re-evaluate product and maintenance protocol every two years to further inform the data base and the sustainability of "factory applied" coatings.

This research has been published in the Journal of Hospital Administration, an international, open access, and peer-reviewed scientific journal published by Sciedu Press. Devoted to publishing research papers in the fields of managing practice and research in all branches of hospital administration.

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