CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 0

DateRun: 04/12/2022

Experimenters: Zoe Lawson, Tatyanna Moreland Junior

ClientType: Cleaner Manufacturer

ProjectNumber: Project #2

Substrates: Marble

PartType: Coupon

Contaminants: Calcium/lime

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate weight lost from marble block after sitting in supplied solutions for 1 min, 5 min, 20min, 60min and 72 hours.

Experimental Procedure: Two solutions were prepared at 40% concentration, one being NTA 100 and the other DS IDA. The 3rd solution was made from 100% of the EDTA. Several marble chips of similar size and shape were weighed to determine the baseline weight of each piece. The marble was then placed in small beakers, one for each solution, and immersed completely. The marble pieces were then taken out at the 1-minute mark, quickly rinsed, and then dried with paper towels. They were then taken out at 5 minutes, 20 minutes, and 60 minutes following the same process. They were immersed in the solution after the 60-minute mark and left over the weekend (72 hours) to soak. They were then taken out, dried, and their final weights were taken and recorded.

Results: 40% DS IDA was the only chemistry that did not exceed 1% and was not effective at removing calcium. All marble blocks had an ashy appearance with 40% NTA leaving the most residue in solution.

Cleaner	Concentration	Initial	1 min	5 min	20 min	60 min	72 hours	Total loss	% Loss
NTA	40%	9.0446	9.0436	9.0406	9.0321	9.0168	8.6464	-0.3982	-4.40
DS IDA	40%	7.8137	7.8130	7.8102	7.8039	7.7906	7.7723	-0.0414	-0.53
EDTA	100%	9.1239	9.1234	9.1210	9.1097	9.1097	8.8051	-0.3188	-3.49

Summary:

Conclusion: NTA at 40% concentration was more effective than EDTA at 100% concentration at removing calcium and lime. DS IDA at 40% concentration was not effective.