



Ultra Durable Technologies

Lab Capabilities Overview

Quality Control

Every product at Ultra Durable Technologies (UDT) has been developed according to specific standards. The quality control (QC) procedure for each product may vary slightly depending on end-use applications, but each is rigorously tested to ensure that consistent, reliable products are delivered with each order. This allows our customers to have confidence in the materials they receive. Through customer interaction and feedback, we continuously improve our process and testing capabilities to maintain these high standards of production.

To achieve these standards, we use instruments and testing protocols that adhere to the most up-to-date requirements set by the American Society for Testing and Materials (ASTM). Published technical data and testing that is beyond the capability of our laboratory is verified via an ISO 9000 certified

non-profit lab or academic labs such as Cal Poly. These collaborations keep us at the forefront of testing requirements and government regulations.

Additional Capabilities

In addition to quality control testing performed to ensure consistent production with each batch, we have several additional instruments that allow us to provide technical support for specific customer needs. Our focus on customer service and education sets us apart from many other manufacturers of floor coatings. This capability also allows us to develop new products that meet or exceed industry standards.

Below is an outline of our current lab instruments and capabilities.

Gloss/ROI/Haze Meter

ASTM D523, D1003, D8331

This test measures surface film properties of a cured coating, such as sheen, clarity, and texture.

The meter ultimately allows us to confirm that cured coatings have a consistent appearance batch to batch. Variations in readings can also detect small changes in raw materials or production procedures.



Taber Abrasion Tester



ASTM D4600

The Taber Abrasion Tester measures the resistance of a coating to abrasion. Two wheels of abrasive material are rotated across a film that had been previously cured on a standardized sample. Typically placed under a set weight (CS-17 Hard Abrasion wheels are set with a 1000 gram load for 1000 rotations), the film is weighed before and after to determine loss of material. Results are reported in milligrams (mg).

The test is especially effective when correlated with real world wear data because it allows us to compare the wear resistance of our coatings to that of our competitors and to evaluate changes in raw materials. Results are then used to determine the ideal mix ratios and base raw materials to use in a coating system when developing new products.

Scrub and Abrasion Tester

ASTM D2486 D4828

The Scrub and Abrasion Tester measures the abrasion resistance as well as resistance to cleaning solutions, solvents, and corrosives. A variety of abrasive materials can be applied to applicators and has automatic feeds for solvents and cleaners to be introduced with each pass. The instrument works by sliding the abrasive material or a sponge across an applied film under a set weight (typically 2 lbs.) for a defined number of passes.

The test can evaluate which cleaning solutions and solvents will impact film appearance and integrity. This allows us to estimate service times of floors when correlated with real world data. Results give us the ability to fine tune a coating for a particular environment by adding fortifiers or improving the coating formula.



Environmental Chamber



ASTM D1640 and others

The Environmental Chamber provides steady state or changing environmental conditions to determine the failure points of a coating system and how these conditions affect dry times and film appearance. It can be adjusted from 32°F to 250°F and relative humidity ranging from 15-100%.

The chamber allows us to examine how changing environmental conditions impact the cure times and properties of our coating systems. It is especially effective when correlated with real world data. To test the environment for water-based coatings, we typically acclimate a larger room instead of using the chamber because it is less effective. The chamber can be used in conjunction with the dry time recorders.

Dry Time Recorder

ASTM D5895

The linear dry time recorder measures the four stages of drying for an applied coating. It will accurately record the end of leveling, beginning and end of sol-gel (when the coating starts to get sticky until it is tack-free), and cure-through times.

The device ensures consistent dry times and can be used under various environmental conditions to estimate working and dry times.



BOT 3000E Slip Meter



ANSI A326.3 -2022

This is a test method for measuring dynamic coefficient of friction (DCOF) on hard surface materials. Automation ensures that applicators are meeting recommended slip resistance parameters of the American National Standards Institute (ANSI). The meter functions by sliding a small “shoe” across a surface that has a surfactant present. The test is repeated from several angles to ensure accurate readings.

Worker safety concerns continue to be evaluated, especially in commercial and industrial settings. By using the BOT, we can give general recommendations to our customers regarding additives to our coating systems that will provide the appropriate slip resistance for a particular environment. Refer to the ANSI A326.3 standard regarding DCOF thresholds.

Shore D Hardness

ASTM D2240

The Shore D Hardness Test measures the hardness of a coating by depressing a needle on a stiff spring into the coating. A thickness of 1/8” minimum (125 mils), preferably 1/4” is the desired measurement. This test is often used for high build systems such as epoxies and polyaspartics.

The test gives us the ability to accurately predict “drive-on” times for industrial systems and evaluate raw materials prior to production.



Pendulum Hardness Tester



ASTM D4366

The Pendulum Hardness Tester uses a pendulum to conduct both König and Persoz Hardness tests, though we only use the König test. Two ball bearings contact the surface of the coating and a pendulum is allowed to swing. The harder the surface is, the more swings are generated by the pendulum. Results are reported in seconds. (# of Swings x 1.4 sec)

This is a very sensitive test that allows us to both detect small changes in raw materials as well as maximize hardness development. The hardness tester is especially useful to determine how mixing time or coating thickness impacts the end hardness of an individual system.

Pencil Hardness

ASTM D3363

The Pencil Hardness Tester utilizes pencils with different lead hardness (typically 8B = softer to 8H = harder). Once a pencil is inserted into the tester, it is pushed across a coating surface until it deforms or scratches the coating. The pencil lead level that first damages the surface is reported as the hardness.

This test correlates with other hardness testing methods such as König, but it can allow us to evaluate the scratch resistance of two coatings with similar hardness development. It is used to compare different competitors' coatings.



Pull-off Adhesion



ASTM D4541

The Pull-off Adhesion Tester measures the adhesion of a coating to a surface by pulling an aluminum "dolly" that has been glued to the surface until failure of the substrate's integrity. It is effective for cementitious flooring and terrazzo. Measured in PSI (pounds per square inch), dollies are typically 10, 20 or 50 mm. UDT's standard is a 20mm dolly.

It allows us to accurately assess preparation methods, tolerance of contaminants, and efficacy of the coating's adhesion to substrates.

Viscometer

ASTM D445

This device measures the viscosity (thickness) of a liquid. Viscosity measurements allow us to ensure that customers receive finish that can be applied consistently when mixed onsite. If mixed materials are too thick or thin, however, coverage rates can be difficult to achieve.

It also allows us to verify that products and raw materials have been properly produced and meet specifications, which is increasingly important in a global economy.



Gel Timer



ASTM D2471

This is an automated method for measuring the time required for a coating to "gel" or become so thick that the wire is no longer able to stir. It yields faster results than the dry time recorder.

This timer serves as a good method for epoxies and faster-curing high solids materials to estimate both working time and dry times. Results can be correlated to Dry Time Recorder data.