Ultra Durable Technologies
Lab Capabilities Overview

Quality Control

Every product at Ultra Durable Technologies (UDT) has been developed 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 consistent, reliable products are delivered with each order. This allows our customers to have confidence in material they receive. Through customer interaction and feedback, we continuously improve our process and testing capabilities to maintain these high standards of production with each batch of material produced.
To achieve these standards, we use instruments and testing protocols following the most up to date versions of the American Society for Testing and Materials (ASTM) for each test. Published technical data and testing 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

Beyond quality control testing performed to ensure consistent production with each batch, we have several additional instruments that allows us to provide technical support for specific customer needs. This 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, and to always strive for better products that better serve our customers.
Below is an outline of our current lab instruments and capabilities.

Viscometer

ASTM D445

Measures the viscosity (how thick a material) of a liquid.

Viscosity measurements allow us to ensure that customers get material that can be applied consistently when mixed in the field. If mixed materials are too thick, coverage rates can be difficult to achieve.

Also allows us to ensure products were properly produced and raw materials received are meeting specifications…. Increasingly important in a global economy.

Gloss/ROI/Haze Meter

ASTM D523, D1003, D8331

Measures the surface film properties of a cured coating. The sheen, does it have orange peel? How clear is the film?

Allows us to make sure cured coatings have a consistent appearance batch to batch. Variation in readings can also detect small changes in raw materials or production procedures and conditions.

Dry Time Recorder

ASTM D5895

Measures the different stages of drying for an applied coating. End of leveling, beginning and end of sol gel time (when the coating starts to get sticky until tack free) and cure-through times.

Ensures consistent dry times, can be used under various environmental conditions to estimate working and dry times. Allow customers to have confidence in return to service estimations.

Gel Timer

ASTM D2471

Automated method for measuring the time for a coating to “gel” or become so thick that the wire is no longer able to stir. Faster results than the dry time recorder

Good method for epoxies and faster curing high solids materials to estimate both working time and dry times. Can be correlated to Dry Time Recorder data.

Pendulum Hardness Tester

ASTM D4366

Uses a pendulum to measure either König Hardness or Perzog, for coatings we use König. Two ball bearings contact the surface of the coating and a pendulum is allowed to swing, the harder the surface the more swings generated by the pendulum. Reported in a time (seconds). #Swings x 1.4 sec

Very sensitive test that allows us to both detect small changes in raw materials as well as maximizing hardness development for each coating system. How does mixing time, or coating thickness impact the end hardness of an individual system, etc.

Pencil Hardness

ASTM D3363

Pencils with different lead hardness (typically 8B - softer to 8H - harder) are pushed across a coating surface until it deforms or scratches the coating. The number of the pencil lead which first damages the surface is reported as the hardness.

Correlates somewhat with other hardness testing methods such as König, can allow us to evaluate the scratch resistance of two coatings with similar hardness development. Can be used for comparison to competitors’ coatings.

Pull-off Adhesion

ASTM D4541

Measures the adhesion of a coating to a surface by pulling an aluminum “dolly” that has been glued to the surface until failure, ideally of the substrate. Very effective for cementitious flooring and terrazzo. Measure in PSI, dollies are typically 10, 20 or 50 mm. UDT standard is a 20mm dolly.

Allows us to accurately assess preparation methods, tolerance of contaminants and efficacy of coatings adhesion to substrates.

Environmental Chamber

ASTM D1640 and others

Gives steady state or changing environmental conditions to determine the failure points of a coating systems and how these conditions affect dry times and film appearance. Can be used for temps from freezing to 250 °F and relative humidity ranging from 15-100%.

Allows us to look at how changing environmental conditions impact the cure times and properties of our coating systems. Especially effective when correlated with real world data. Is less effective with water-based coatings, for these we typically acclimate a larger room. Can be used in conjugation with the dry time recorders.

BOT 3000E Slip Meter

ANSI A326.3 -2022

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

Worker safety concerns continue to be evaluated, especially in commercial and industrial settings. Using the BOT we can give general recommendations to our customers on additives to our coating systems that will give the applicators sufficient slip resistance for a particular environment. *

**Is dependent on conditions beyond the coating system as well, i.e. environmental factors, shoe type, etc.*

Taber Abrasion Tester

ASTM D4060

Measure 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 under a set weight. For floor coatings this is typically CS-17 Hard Abrasion wheels with a 1000 gram load for 1000 rotations. The film is weighed before and after to determine loss of material. Typically reported in milligrams (mg).

Especially effective when correlated with real world wear data, allows us to compare our coatings wear resistance to competitors and to evaluate changes in raw materials. Very effective to determine the ideal mix ratios and base raw materials to use in a coating system when developing new products.

Shore D Hardness

ASTM D2240

Measure the hardness of a coating by depressing a needle on a stiff spring into the coating. Requires a thickness of 1/8” minimum (125 mils), preferably ¼”. Typically used for high build systems such as epoxy and polyaspartic.

Gives us the ability to accurately predict drive-on times for industrial systems and evaluate raw materials prior to production.

Scrub and Abrasion Tester

ASTM D2486 D4828

Measure the abrasion resistance as well as resistance to cleaning solutions, solvents, and corrosives. Variety of abrasive materials can be applied to applicators and has automatic feeds for solvents and cleaners to be introduced with each pass. Instrument works by sliding the abrasive material or sponge across and applied film under a set weight (typically 2 lbs) for a set amount of passes

Can evaluate which cleaning films and solvents will impact film appearance and integrity. Allows us to estimate service times of floors when correlated with real world data. This gives us the ability to fine tune a coating for a particular environment by adding fortifiers or improving the coating formula.