

Dyne pens vs contact angle: what each test tells you

Dyne pens and contact angle both check whether a surface is ready for coating, printing or bonding. A dyne pen gives a pass or fail at one threshold. A contact angle measurement gives a number in degrees from a defined method. Use this page to choose the right check for each step of your process.

	Dyne pens or test inks	Contact angle (Dropometer)
What you get	Pass or fail at one threshold, for example 38 mN/m	A contact angle in degrees; surface energy can be calculated from two or more liquids
How the call is made	You watch whether the ink beads up or wets out within about 2 seconds	Automatic edge and baseline detection fits the drop in a captured image
Operator dependency	Timing, viewing angle and how the ink is applied all change the call	The same image gives the same reading; drop placement still needs a consistent procedure
What is kept	Usually a pass or fail entry on a traveler	The reading and the drop image, saved in the project
Consumables	Inks degrade with age and exposure, so check the shelf life	Probe liquids such as water, plus the syringe
Best fit	A fast go or no go check where a rough threshold is enough	In process QC where you need a number you can trend and share

Where both can go wrong

A reading that depends on the person making it is hard to repeat. That is true of a dyne pen and of a manually read goniometer. Zeus, a polymer tubing manufacturer, saw readings vary by 5 to 10 degrees between operators on its manual goniometer. After moving to the Dropometer, Zeus ran its own Gage R&R study, and it passed.

The method behind the number

The Dropometer uses drop shape analysis, validated against a KRUSS DSA100E in two peer reviewed papers (Review of Scientific Instruments; Colloids and Surfaces A), with a published accuracy of 0.35 degrees. Setup takes about 2 minutes and the kit weighs 1 kg.

Next step

Send us a few parts and we will return contact angle values you can put next to your current dyne pen or goniometer readings. Book a 15 minute demo: calendar.app.google/xj3TbATtSQoiSWyJ6. Request a quote: dropletlab.com/flagship-quote/

Droplet Lab (Droplet Smart Tech Inc.), Brampton, Ontario. Contact angle, surface tension, surface free energy and sliding angle measurement. dropletlab.com