CATZper™ Practical Applications:

- Color tolerancing of specific match colors such as Pantone® Colors, corporate colors, often repeated PMS colors, and a printing companies “standard” colors.
- Color tolerance benchmarking of the internal color matchers perception.
- Defining acceptable deviation from zero and then converting the data to numeric values to remove the subjective variance of human vision.
- Benchmarking the equipment variation.
- Defining print device variation.
- Color tolerance benchmarking of external perception. (Clients)
- Color approval on press by using perception data.
- Provide numeric match data that will indicate the print is an acceptable color match and eliminate the objective of “absolute zero”.

Images in this brochure are not intended to be color correct or accurate. They are intended to support the concepts being outlined. Request actual CATZper™ prints to measure and compare.

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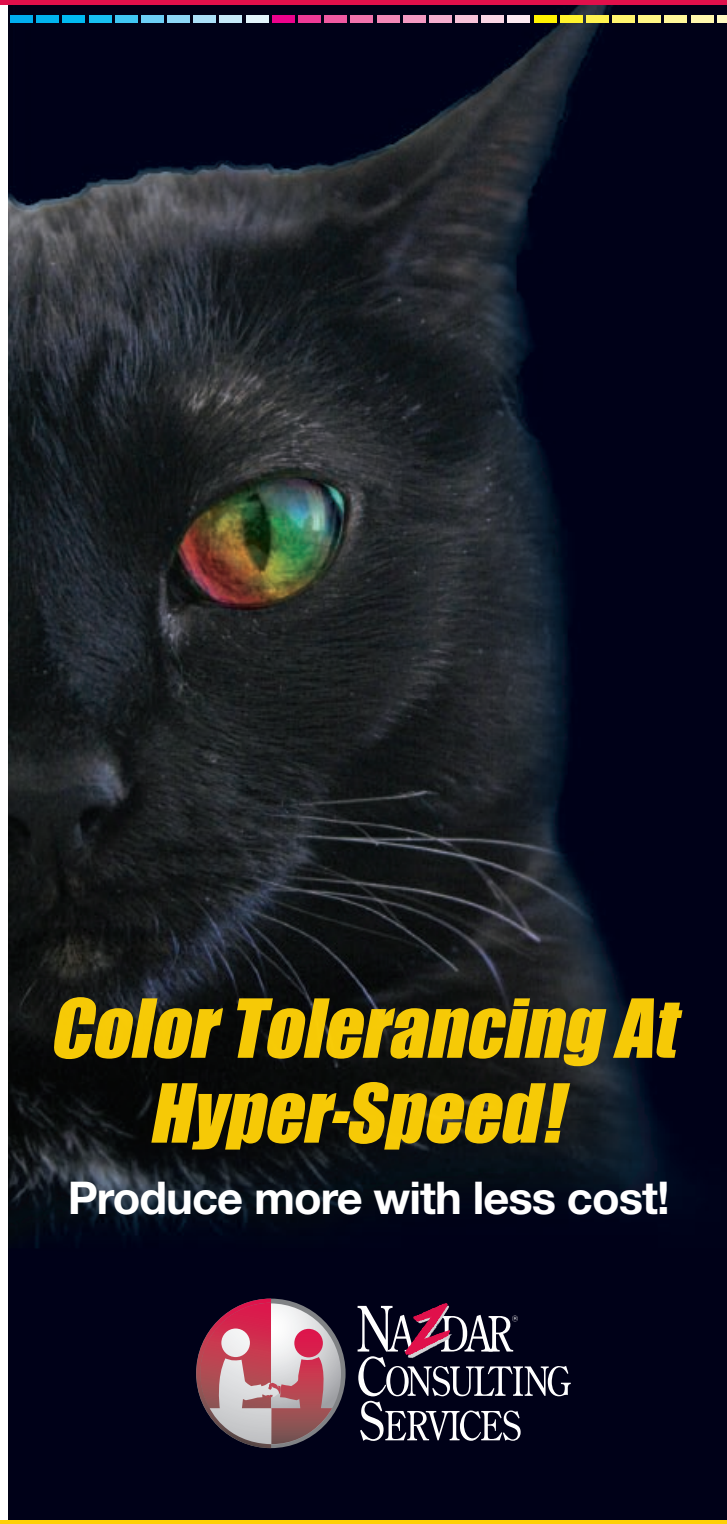


CATZper™.... How it works!
Color Approval and Tolerancing by Perception

Primary Objective:
"Absolute Zero" is a term coined by NCS referring to "No deviation from a color target is accepted". An "Absolute Zero" color match is not likely for any of the printing processes. And yet it is still common practice to stop the press while printers chase an unrealistic objective. This directly affects productivity and profitability. All print devices have tolerances. Therefore "Absolute Zero" color tolerancing is the enemy of profitability. The primary objective to speed up production is to eliminate "absolute zero" as the defined match and replace it with a defined tolerance from "absolute zero". By doing this, we eliminate unnecessary press and ink adjustments and build confidence in daily print production accuracy. Then realistic color tolerancing can be moved upstream to the client.

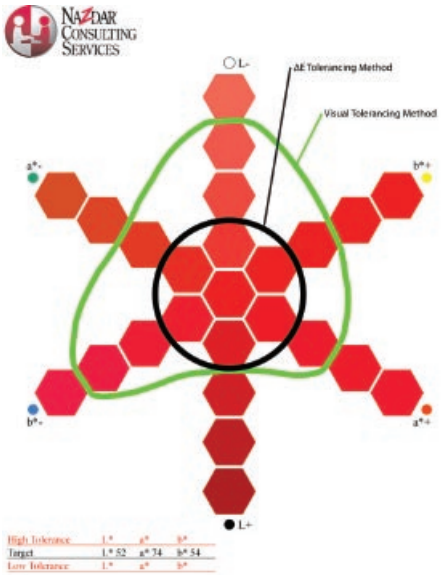
The Absolute Zero color matching method.

Profits of printers are often drained by color tolerancing and color approval by three very powerful challenges.

1.) The subjectivity of opinion influenced by many factors beyond the control of the printer.
2.) Clients, designers and even printers that have no understanding or a false perception of what delta E represents.
3.) Digital print devices can produce the same L*a*b* color differently.

CATZper™ Solutions:

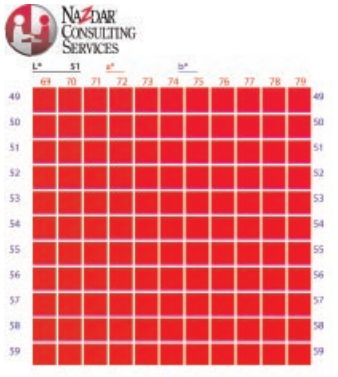
Challenge One:
Delta E is the differences in the deviations of a color as measured on a three axis system. It works well in some colors and not in others. CATZper™ will map human color tolerance on the three L*a*b* axis individually and by actual perception, not an arbitrary number known as "Delta E". When acceptable color variance is determined visually first, then the unique characteristics of the observer, lighting, and sample are taken in to account at the beginning. Delta E tolerancing will typically agree with your eye in the more saturated colors and many times not agree with your eye in lighter or neutral colors.



CATZper™ Color Tolerancing

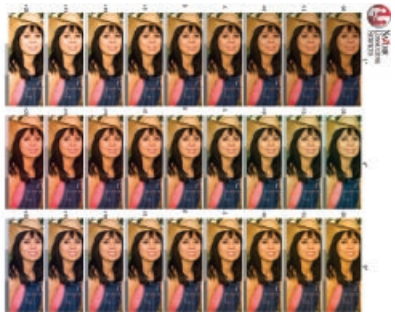
Challenge Two:
A client's color perception and approval tolerance can be mapped. Most of the time this mapping results in a broader acceptance range of color deviation than is accepted by the printer. This allows less down time on press in chasing "perceived" client acceptance. CATZper™ identifies a numeric tolerance for each of the three axis which can be used on press so color tolerance is visually defined and numerically controlled.

Challenge Three:
L*a*b* values are device dependent on press. Actual output results in matching spot colors are just a starting point and normally have to be adjusted after the first output. The challenge is to hit the color after the first output. Most print devices use look up tables to match PMS colors but we all know one device rarely matches another devices version of the PMS Output. The CATZper™ Visual Test Grid allows the print device operator to quickly output a grid of hundreds of measured variations and match it visually and numerically after the first output.



CATZper™ Visual Test Grid

Challenge Four:
Full color or Perceptual Images can be set up in the image shift Mode to produce very controlled color variations on a process color image. This creates a visual representation of how an image may look when printed within commercially accepted tolerances.



CATZper™ Image Shift Grid