

The True Role of Infrared Thermometers in Screen Printing

Technical Standards for Surface Temperature Measurement

Based on technical data from ScreenPrintingNow.com

Thermodynamics and Chemical Requirements of Plastisol

Required Chemical Fusion Temperature

160°C
(320°F)



Underheating

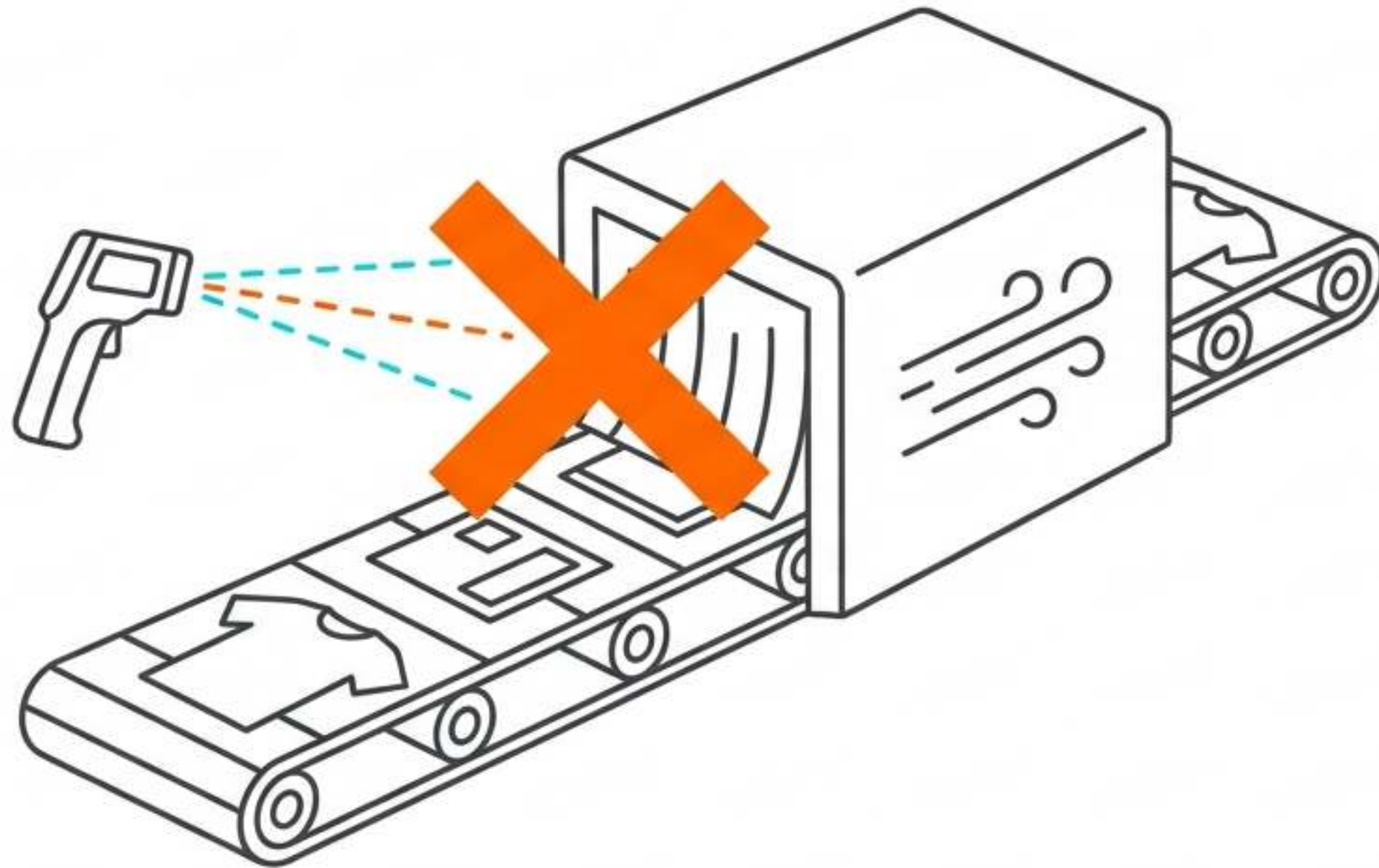
Leads to poor wash fastness
and bond failure.



Overheating

Triggers Dye Migration on
polyester substrates.

The Technical Limitation: The Dryer Tunnel Paradox



CORE TRUTH:

An IR thermometer measures exclusively surface temperature. It cannot capture air temperatures within a dryer tunnel.

CONSEQUENCE:

Invalid for validating Final Cure inside the tunnel.

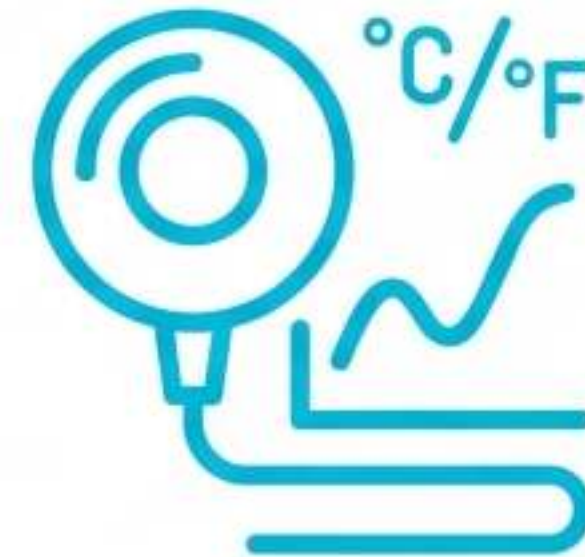
Corrective Measures for Tunnel Measurement

The Wrong Tool



IR sensors fail to capture hot air flow in the tunnel.






The Correct Tool



Use Donut Probes or thermal measuring strips to measure core temperature over time.

Optimization at the Station: Flash Curing



- ① ✓ **MEASURE:** Check ink temp during flash cycle. 

- ② ✓ **TARGET:** Identify the Gel Point. 

- ③ ✓ **PREVENT:** Ensure ink does not overheat before final cure. 

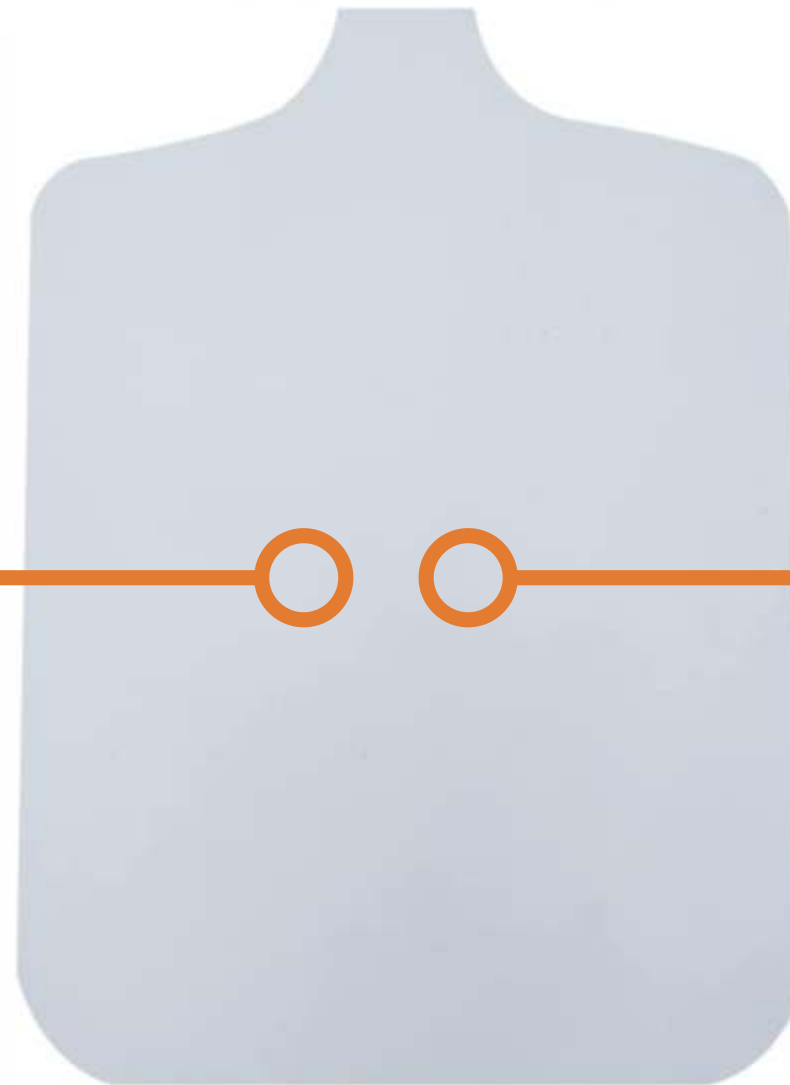
Benefit: Prevents fabric scorching and prepares underbase for next color.

Optimization at the Station: Platen Management

Application: Continuous monitoring of printing plate temperature.



Too Hot: Water-based inks dry prematurely (Clogging).



Too Cold: Cure issues on flash.

Action: Adjust press settings based on IR readings to maintain a consistent platen ecosystem.

Optimization at the Station: Transfer Press Diagnostics



- ✔ **APPLICATION:** Compare digital display vs. actual IR reading.
- ✔ **GOAL:** Identify Hot Spots or thermal deficits.
- ✔ **STATUS CHECK:** Ensures uniform heat for transfer consistency.

Specifications for Professional Infrared Instruments

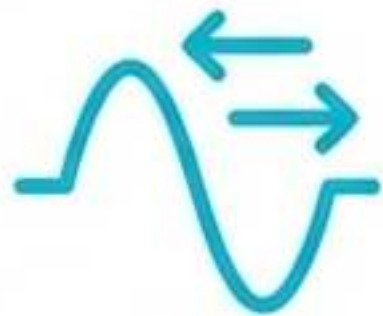
Minimum Technical Requirements for Industrial Use



Range: 30°C to 300°C
(86°F to 572°F)



Precision: Max
deviation of $\pm 1.5\%$



Emissivity: Adjustable
0.1 to 1.0



Resolution: D:S Ratio
of at least 12:1

The Physics of Precision: Distance-to-Spot Ratio (D:S)

