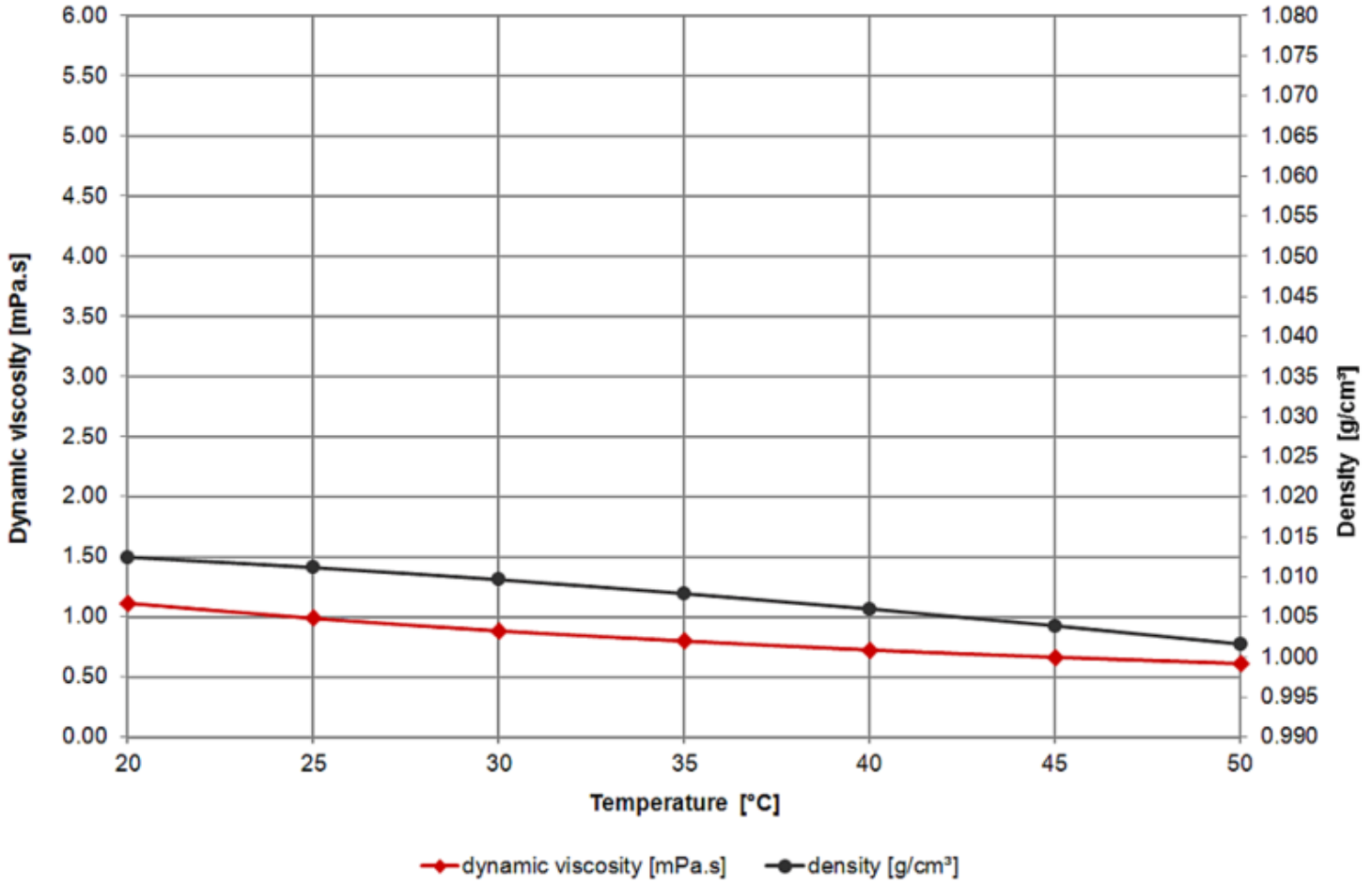
Valflow® VIC11 - Ink Temperature Stabiliser (ITS)

A.T.E. Enterprises Private Limited (Business Unit: AxisValence)

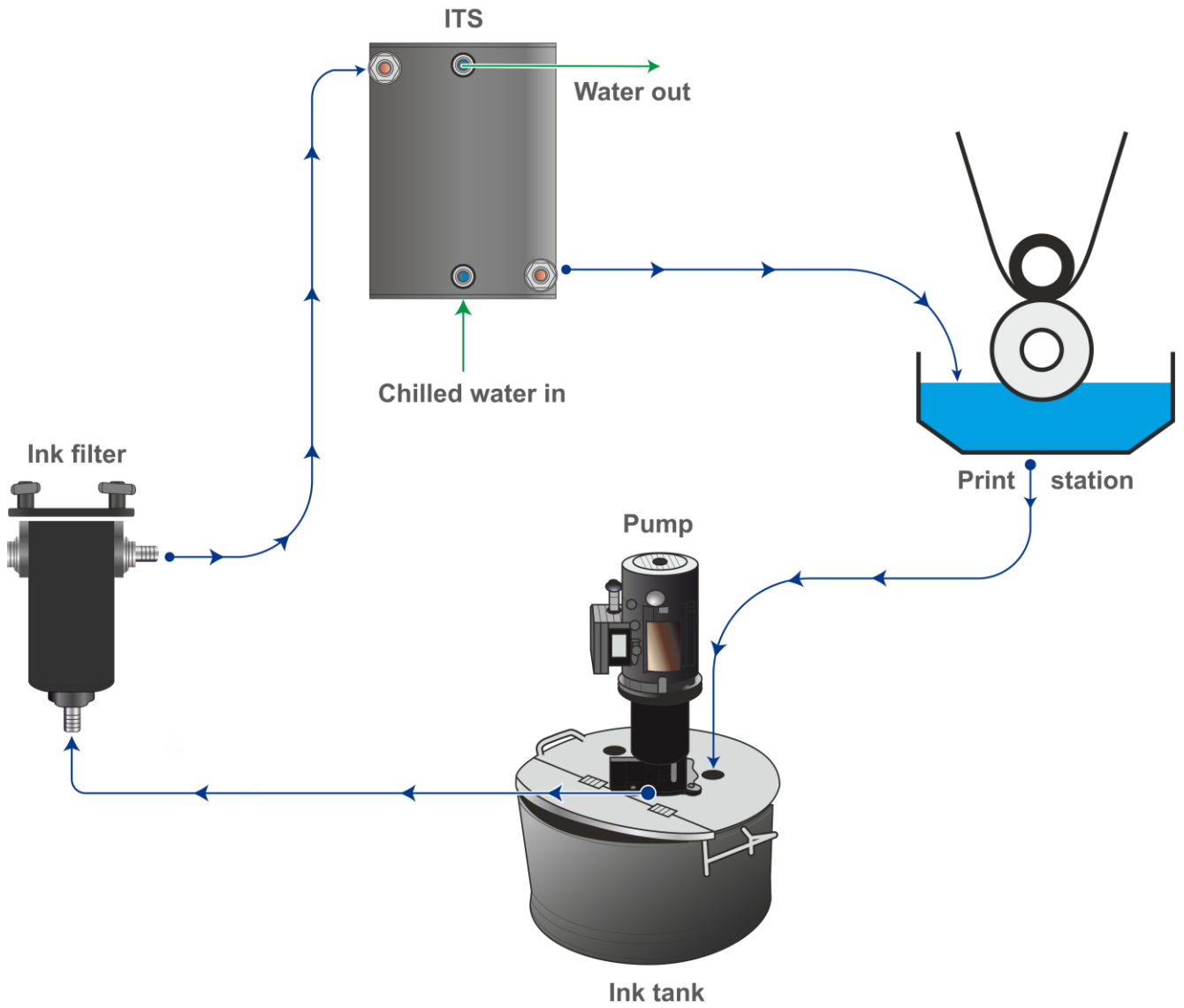
Date: 25-01-24

Ink Temperature influence on viscosity and density

In general, the viscosity of a simple liquid decreases with increasing temperature. As temperature increases, the average speed of the molecules in a liquid increases and the amount of time they spend "in contact" with their nearest neighbors decreases.



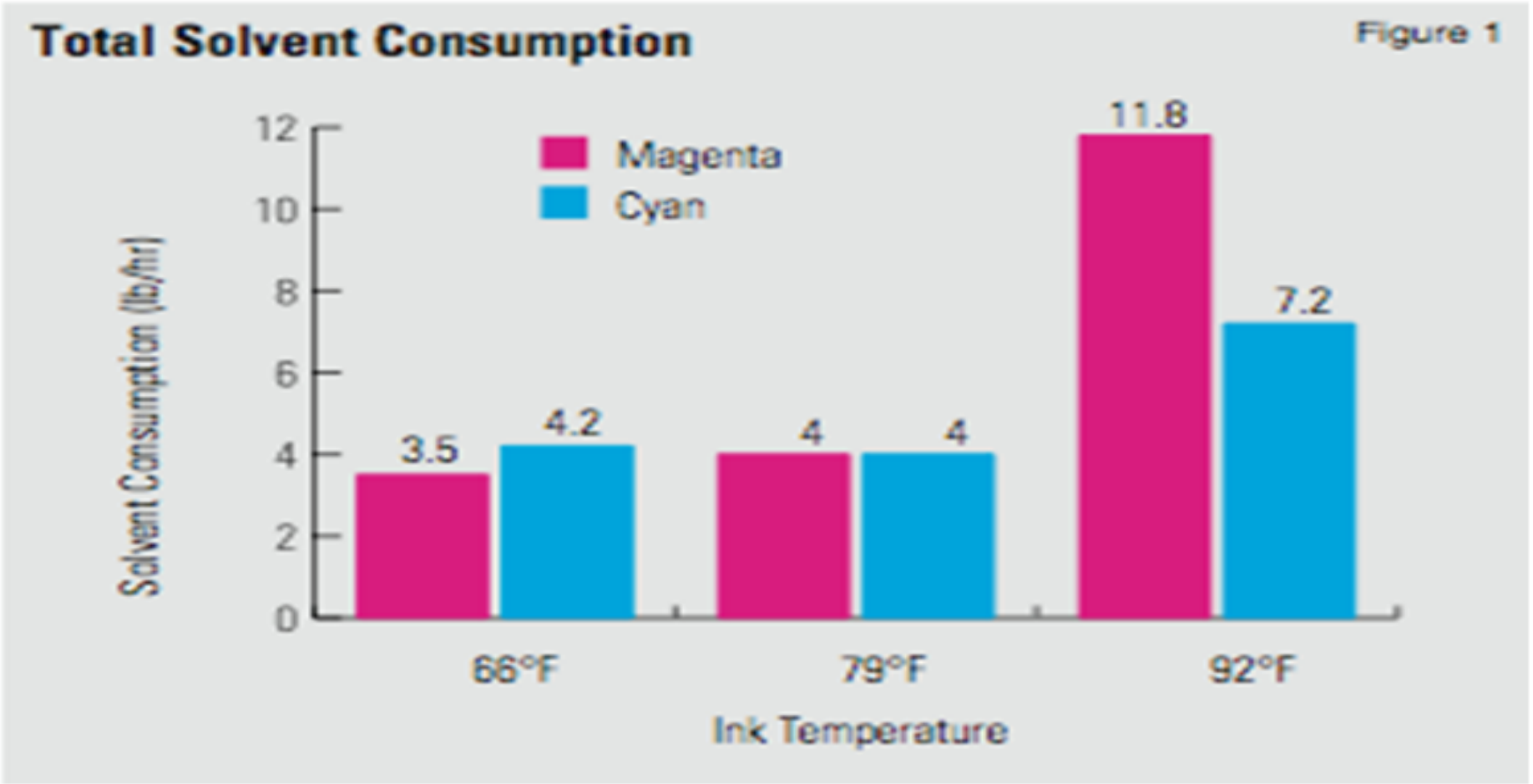
Ink Handling and Cooling - An Overview



Solvent consumption vs. Temperature - GAA / EPA Study

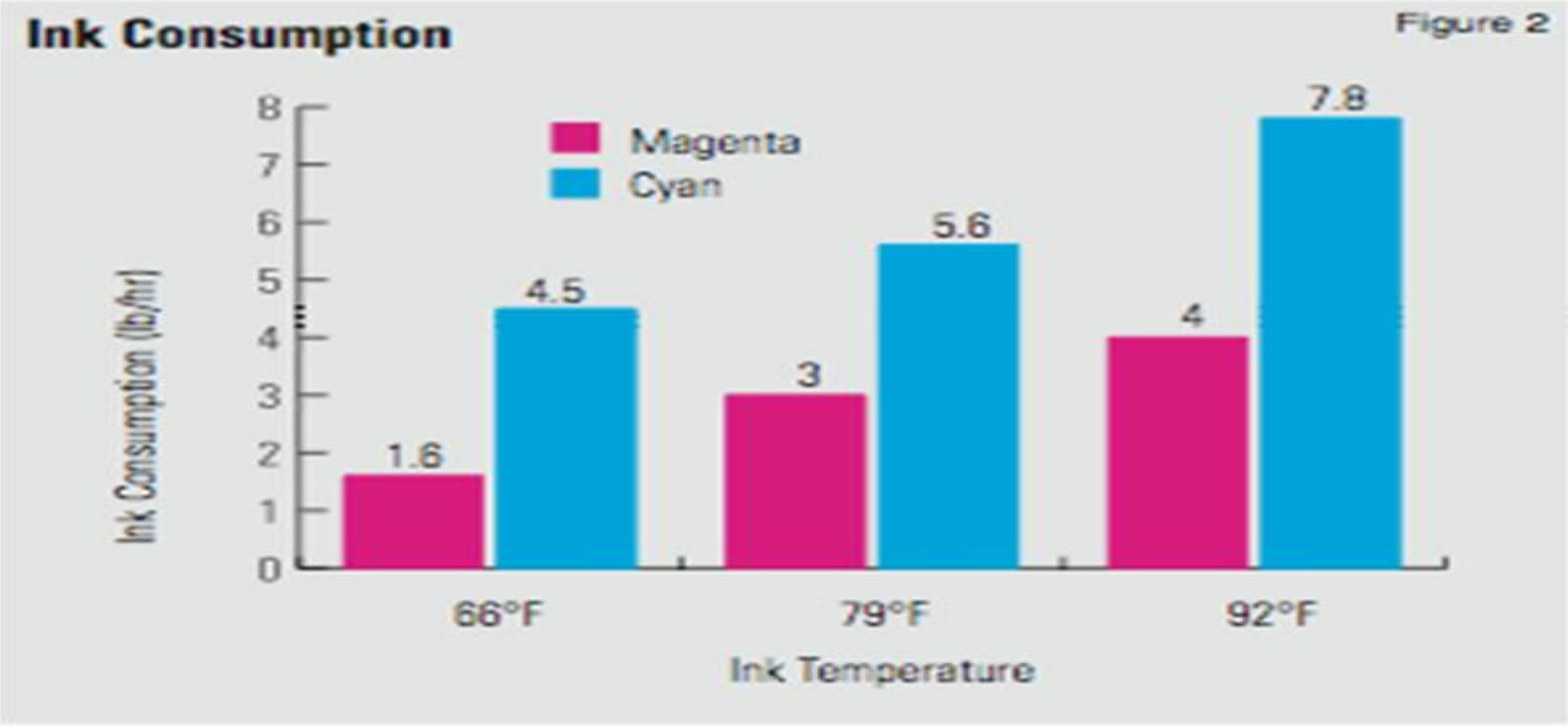
When ink is cooled, it becomes thicker and requires more solvent initially to achieve the desires viscosity. However, if it is kept cool (22-25C+/-), the loss of solvent during the print job is substantially reduced.

Celsius	Fahrenheit
0°	32°
5°	41°
10°	50°
15°	59°
20°	68°
25°	77°
30°	86°
35°	95°
40°	104°
45°	113°
50°	122°



Ink Consumption vs. Temperature - GAA / EPA Study

As ink warms up, it naturally gets thinner and viscosity test will indicate that it is too thin. As the solvent evaporates out, the warm ink may still measure as “too thin” and indicate the replacement of solvent is not needed. This results in applying a higher % of ink and causes the press to consume more ink.



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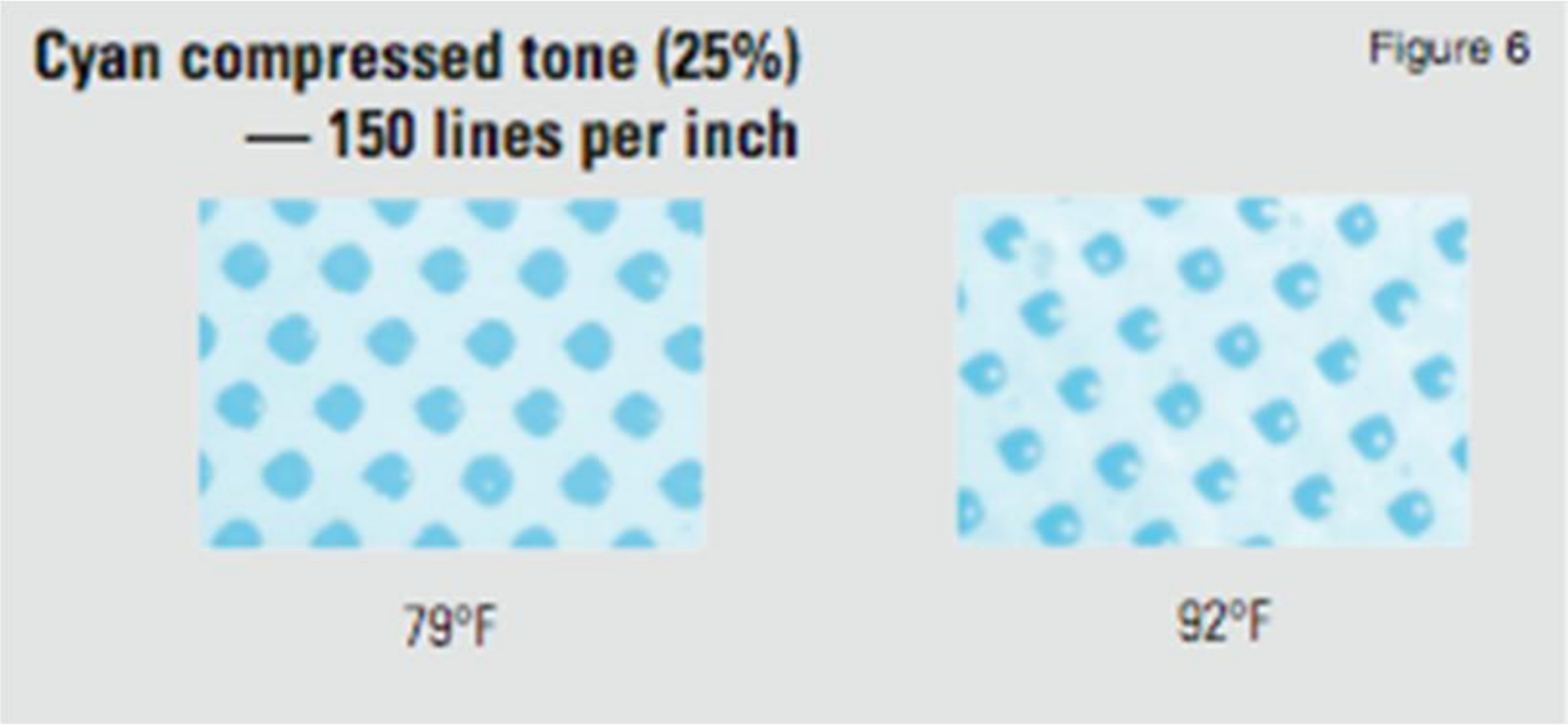
Cool Ink = Better print quality (GAA / EPA Study)

Screen and process printing are accomplished by printing small dots.

When ink gets warm and the % of solids increases (even though the viscosity reads correct) the droplet of ink are not as wet and do not spread uniformly. They dry before they have a chance to “wet out”.

What should print as small solid circles dry as “donuts”.

Warm Ink causes poor dot quality in screen and process printing (GAA / EPA Study)



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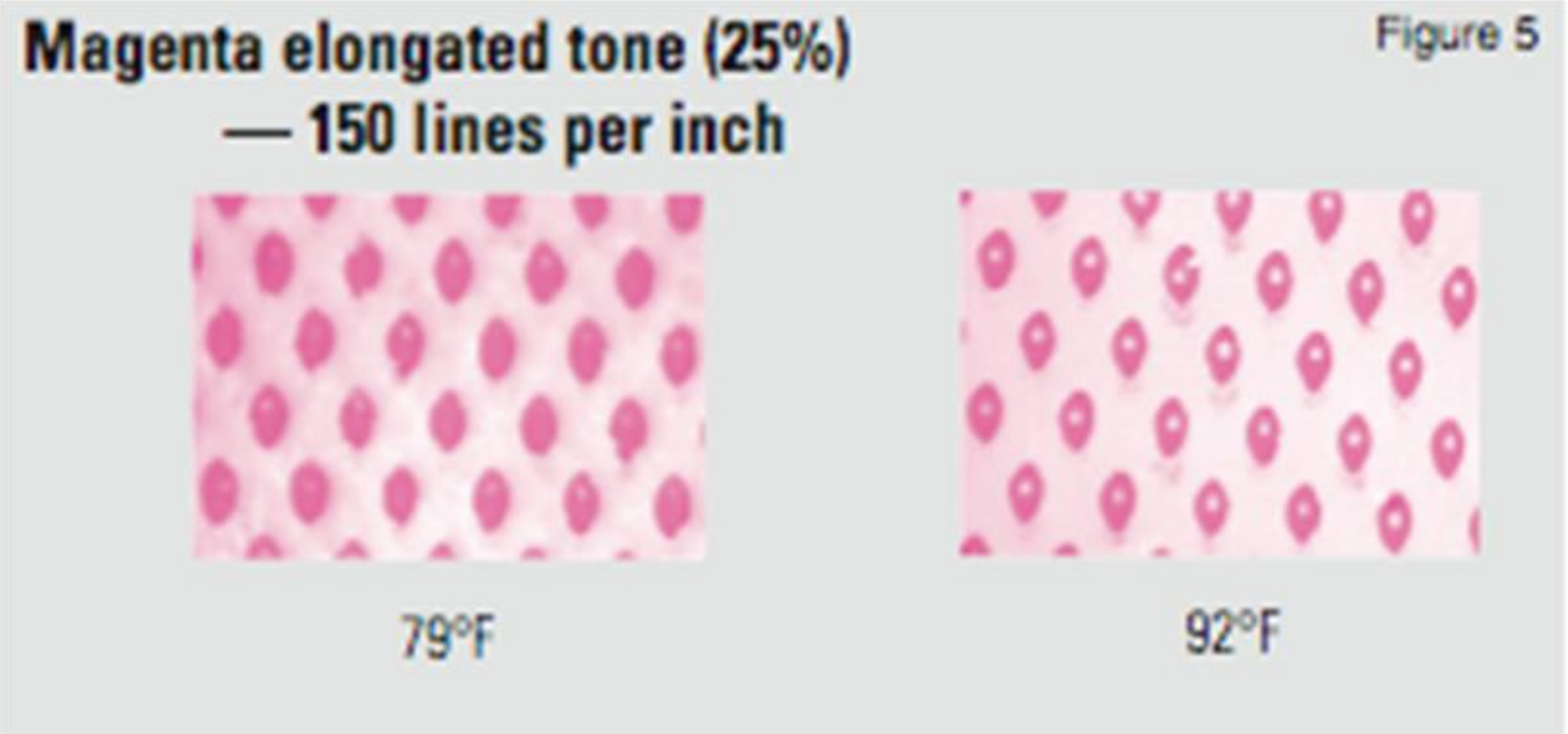
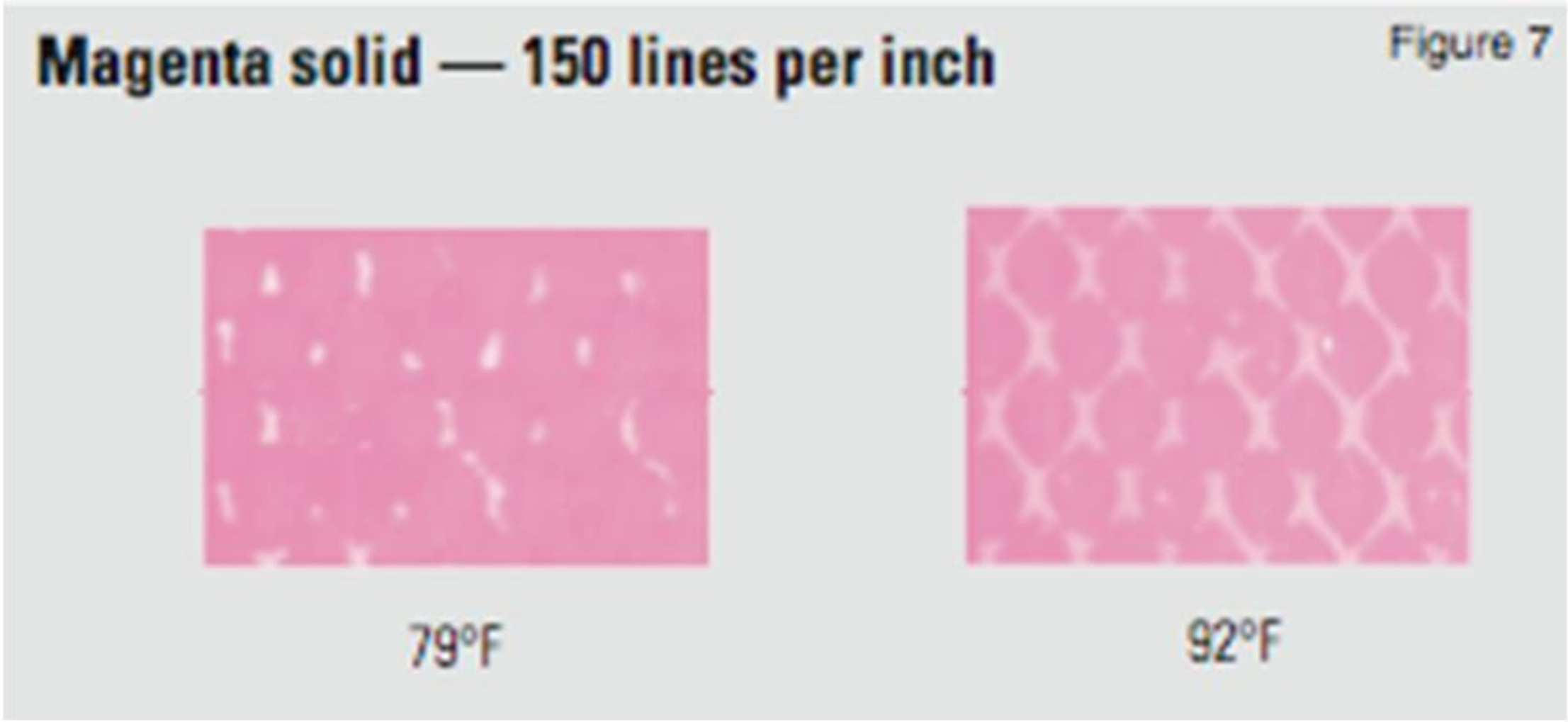


Warm Ink also causes poor quality in solid coverage printing (GAA / EPA Study)



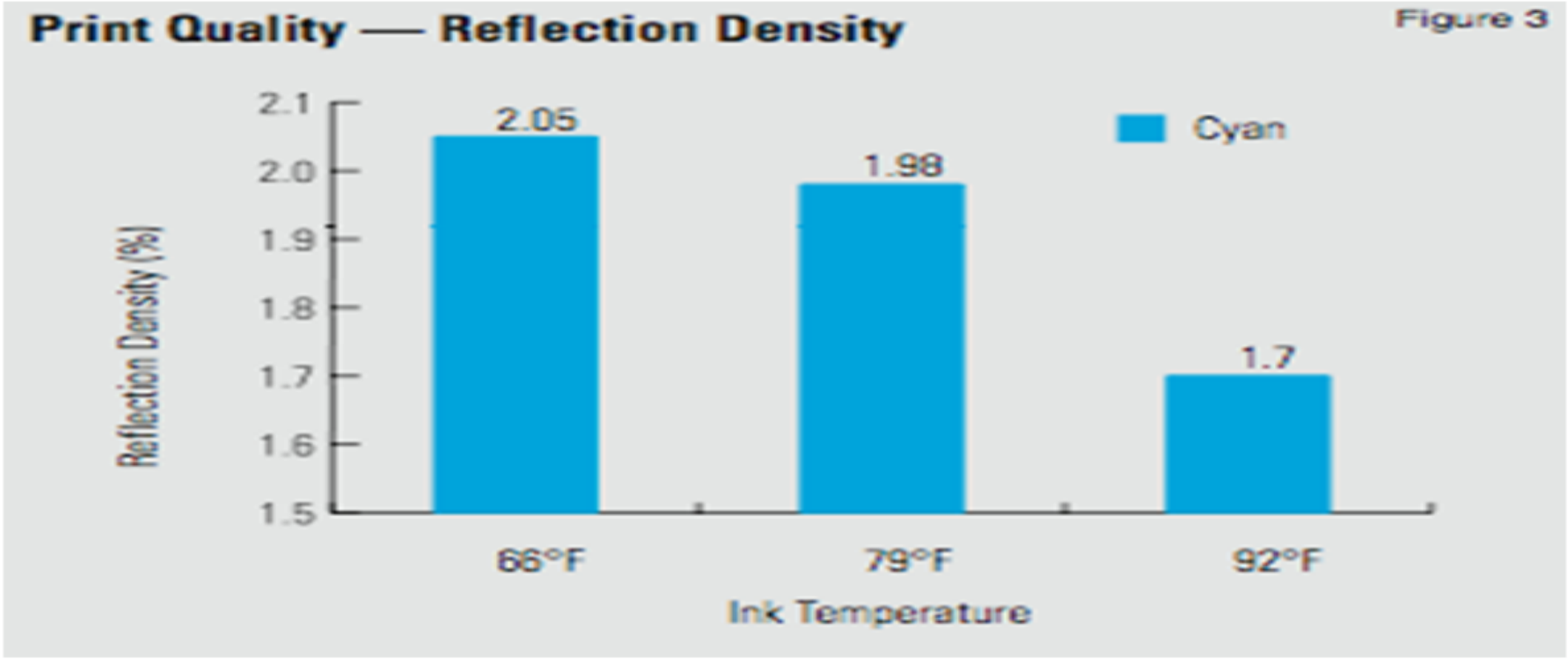
Correct viscosity does not equal correct color - GAA / EPA Study

Traditionally, we have acted as if a constant viscosity = constant color.

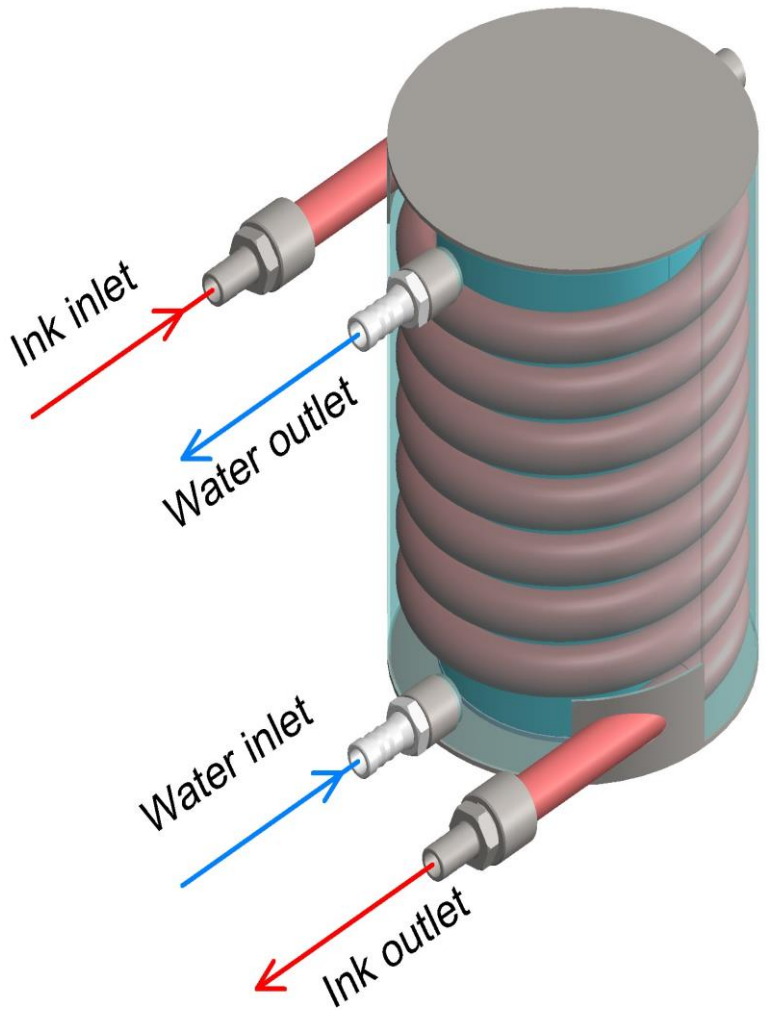
Remember that as ink warms, it becomes thinner, even though some of the solvent has evaporated and solid/solvent ratio has changed.

Warm inks typically print lighter in color, by as much as **15% even though the viscosity reads correct.**

Densitometer readings from constant viscosity inks - GAA / EPA Study



Ink temperature stabiliser (ITS)



Features and benefits

- The ITS system cools down the warm ink circulating in the press to a level that suits the process and the ambient conditions
- Ensures consistency of printing, reduces top-up solvent and, in some cases, even ink consumption
- Leak-proof shell and tube heat exchanger design
- Heat transfer is through chilled water
- Consistent print shade
- Saves up to 25% top-up solvent consumption
- High reliability, low maintenance
- Improves print quality (better dot quality)
- Reduces ring formation
- Reduced odour due to lesser fugitive (evaporative) losses
- Lesser solvent vapors ensures better safety and health

Contact us

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THANK YOU