Gloss and metallic effects in packaging

Toronto’s Graphic Arts Day

Ryerson University

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Overview

- Why are gloss and metallic effects important for packaging?
- What can be used to increase gloss or the metallic effect?
- What is actually gloss and how can it be measured?
- Sphere vs. 0/45 (M3)
- Conclusion
Why are gloss and metallic effects important for packaging?

- High gloss and metallic effects attract consumers
- Perceived higher value of the product inside the package
- Perceived premium value
- Limited editions
- Premium content
What can be used to increase gloss or the metallic effect?

- Sharp contrast (matte/gloss) between background and element(s) that needs to be emphasized
- High gloss UV coating
- PMS colours with metallic pigments
- Foil stamping
- Embossing with foil stamping
- Landa’s nano silver (yet to come to market)
Landa nano silver

Foil stamping/high gloss coating
Metallic substrate

http://dieline.typepad.com/a/6a00d8345250f069e20120a8763843970b-550wi
Metallic inks

- Metallic pigments based on aluminum and bronze are used to create effect colours.
- Quite often the prints are water-based coated for protection which removes a lot the metallic effect.


Metallic digital inks

- [https://www.youtube.com/watch?v=lTwFrH07ELw](https://www.youtube.com/watch?v=lTwFrH07ELw) (Color Logic metallic inkjet inks)
- Gold and Silver are available for toner-based presses (i.e. Xerox, HP Indigo)
What is actually gloss and how can it be measured?

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Sphere vs. 0/45 (M3)

https://www.konicaminolta.com/instruments/knowledge/color/part3/01.html
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https://www.konicaminolta.com/instruments/knowledge/color/part3/03.html
Metallic flakes: "Cornflakes, silver dollar, vacuum film deposition

Rich et al, Colour Research and application, Vol. 42, No. 1, Feb 2017
Metallic inks are mainly measured with a sphere-geometry-based instrument.

In the graphic arts industry measurement instruments with 0°/45° or 45°/0° measurement geometry are used.

Metallic inks can be measured with the M3 measurement condition.

Instruments like X-Rite eXact and Techkon SpectroDens support this measurement mode (just to name a few).
Sphere vs. 0/45 (M3)

- Research has been done on how metallic prints are perceived by observers
- D. Rich, R. Marcus, V. Lovell and T. Kreutz used a sphere-geometry measurement device.
- Introduction of Specular reflection index (SPI)
  - SPIN = Specular component included
  - SPEX = Specular component excluded
  - \[ SPI = 100 \times \left( \frac{Y_{SPIN} - Y_{SPEX}}{Y_{SPIN}} \right) \]
Sphere vs. 0/45 (M3)

- I have done studies in 2010, 2016, 2017 in regards to measuring printed metallic inks with various 45/0 instruments.
- The latest studies show that instrument that support the M3 measurement mode can be used to measure metallic inks on press.
- Quite good inter instrument agreeability.
Conclusion

- There are many different ways on how to create special effect on packaging:
  - Metallic inks (conventional and digital, Landa nano silver)
  - Coatings with contrasting gloss levels
  - Foil stamping combined with embossing
Conclusion

- Metallic inks can be measured with an instrument that supports the M3 measurement mode.
- Gloss can be measured with a gloss meter (usually measured at a 60° angle).
Thank you for your attention!

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