

Influence of Flexographic Printing Ink Viscosity on the Tonal Value Increase of Overprinted Plastic Films

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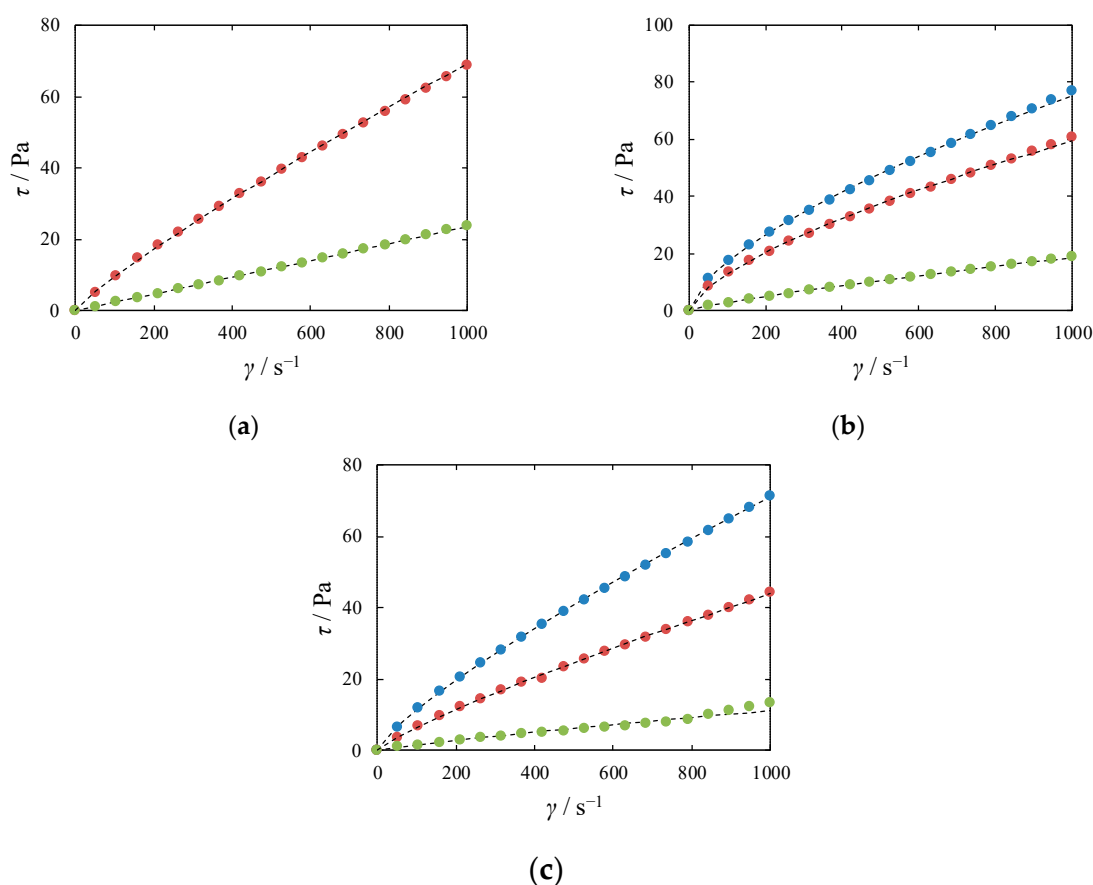


Figure S1 Shear stress (τ) versus shear rate (γ) dependencies measured for (a) cyan, (b) yellow and (c) black printing ink characterized by various flow times 15 s (green dots), 25 s (brown dots) and 35 s (blue dots) All experimental points are fitted by the Ostwald model.

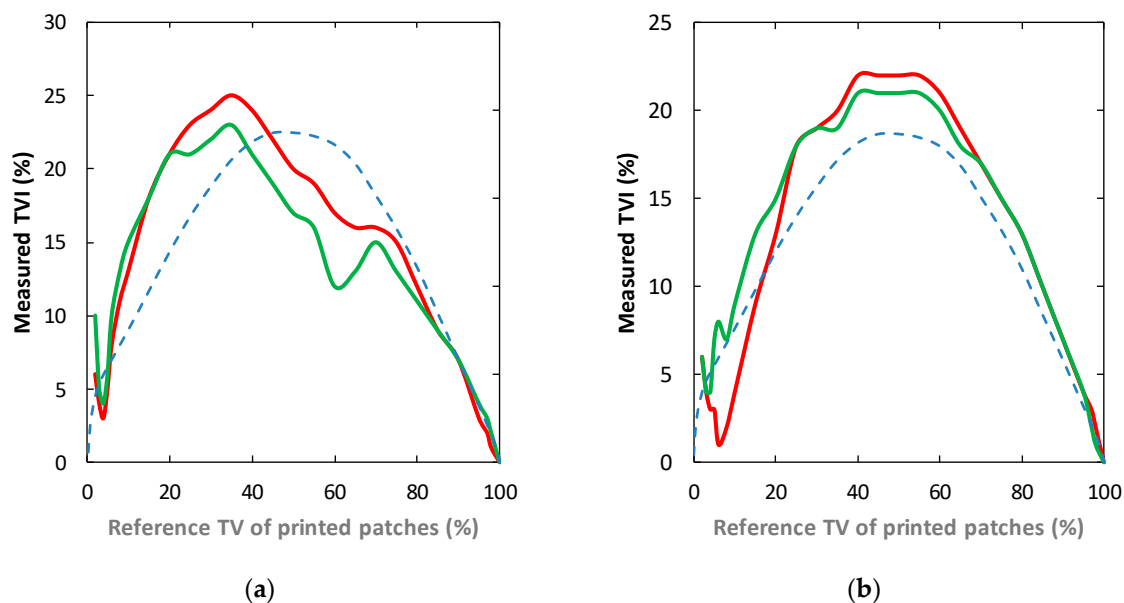


Figure S2 Measured TVI of the samples for overprinted BoPP with cyan printing ink using (a) FAST and (b) Kodak plate. Red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

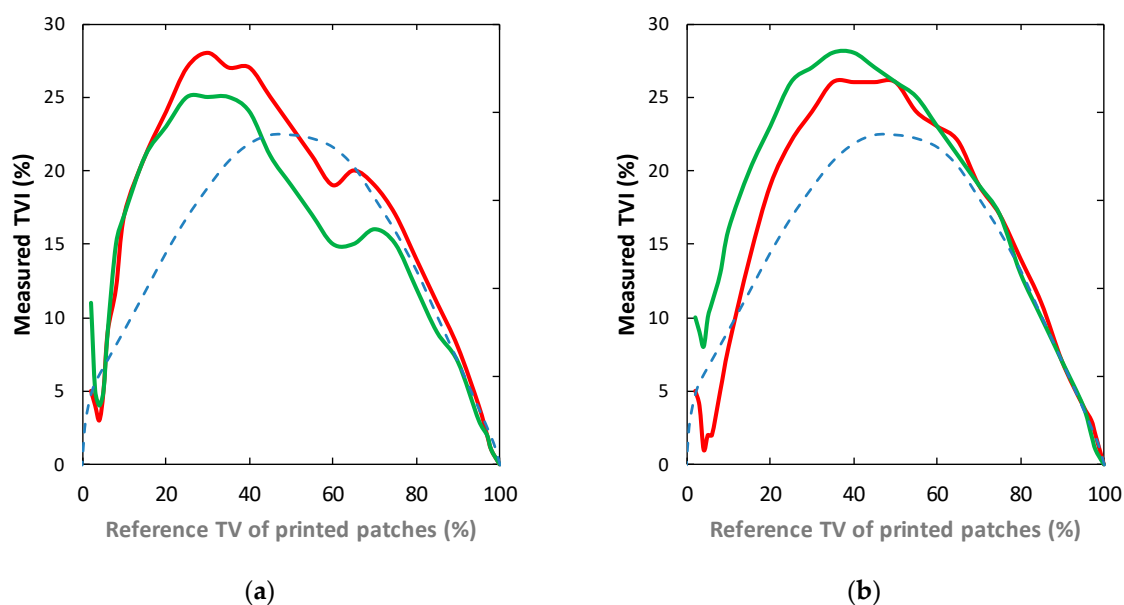


Figure S3 Measured TVI of the samples for overprinted PE with cyan printing ink using (a) FAST and (b) Kodak plate. Red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

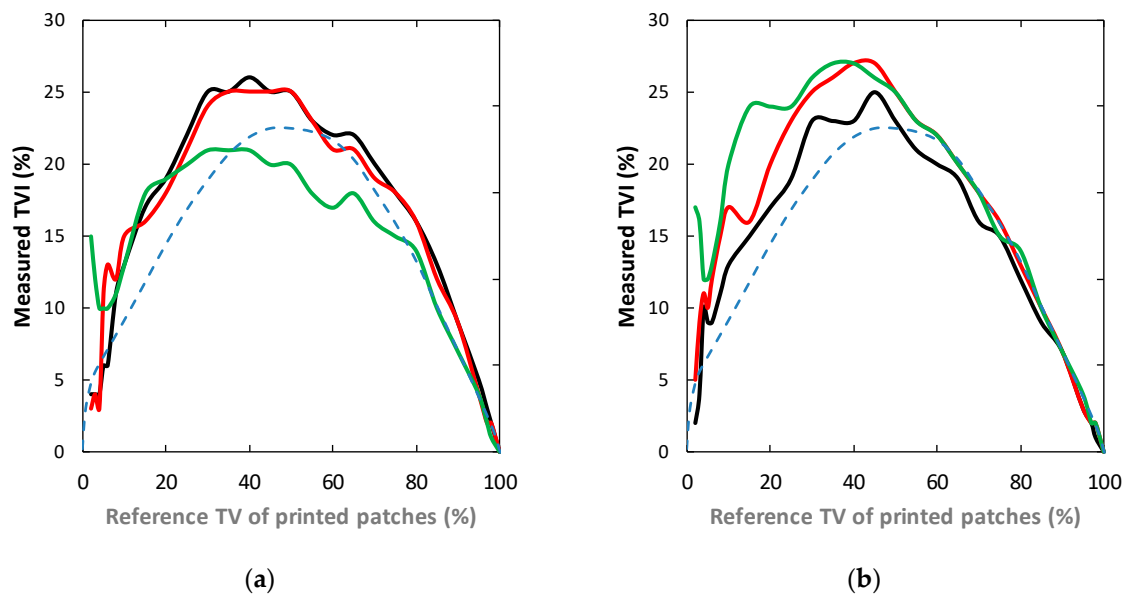


Figure S4 Measured TVI of the samples for overprinted PE with magenta printing ink using (a) FAST and (b) Kodak plate. Black line: 35 s flow time; red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

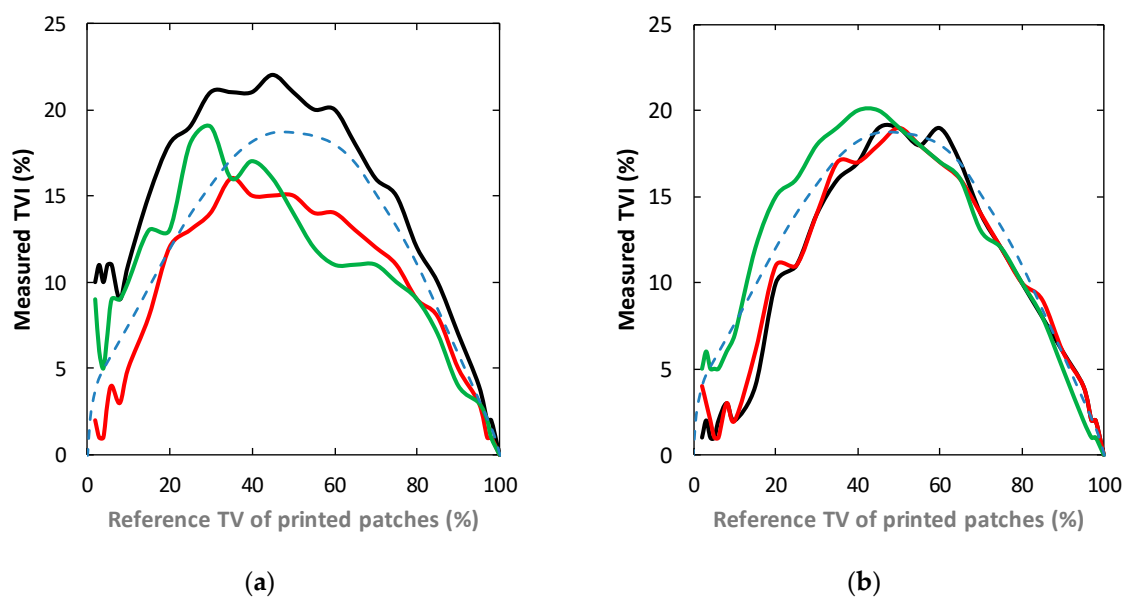


Figure S5 Measured TVI of the samples for overprinted BoPP with yellow printing ink using (a) FAST and (b) Kodak plate. Black line: 35 s flow time; red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

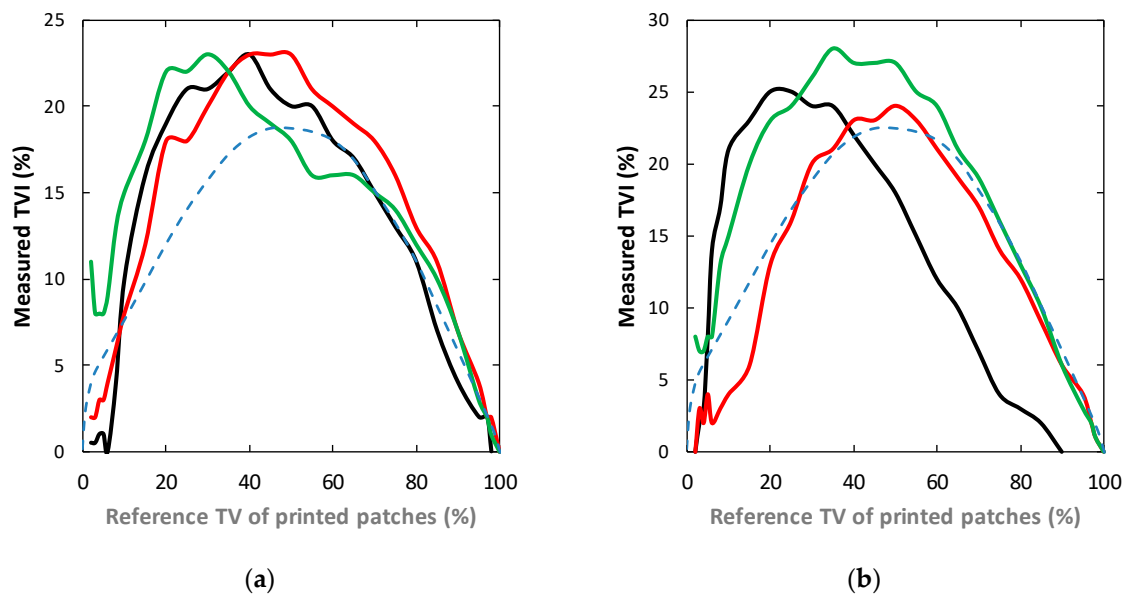


Figure S6 Measured TVI of the samples for overprinted PE with yellow printing ink using (a) FAST and (b) Kodak plate. Black line: 35 s flow time; red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

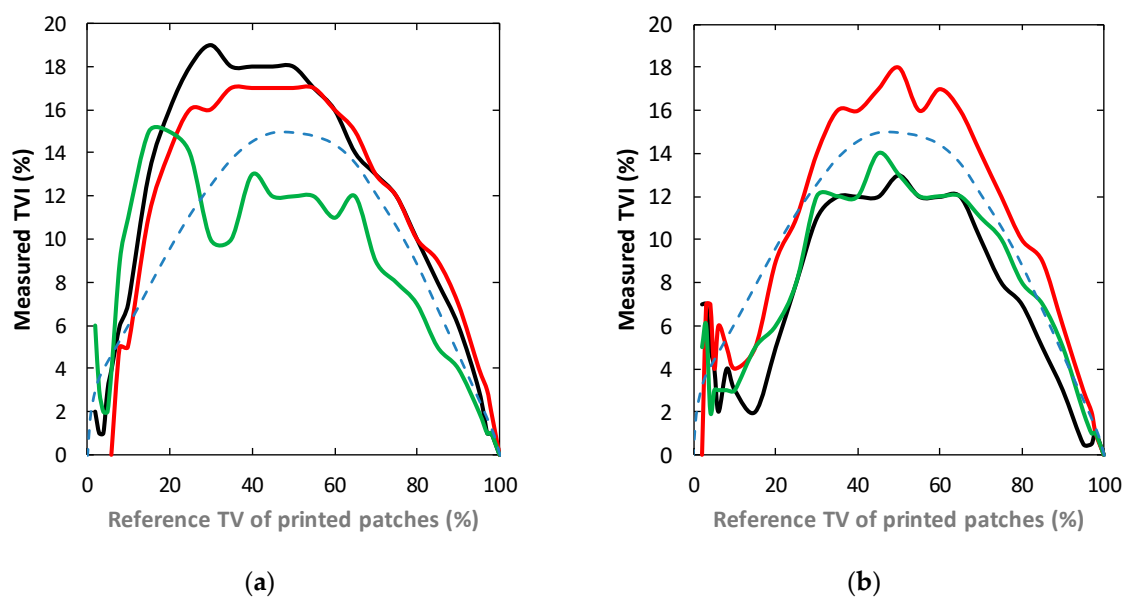


Figure S7 Measured TVI of the samples for overprinted BoPP with black printing ink using (a) FAST and (b) Kodak plate. Black line: 35 s flow time; red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

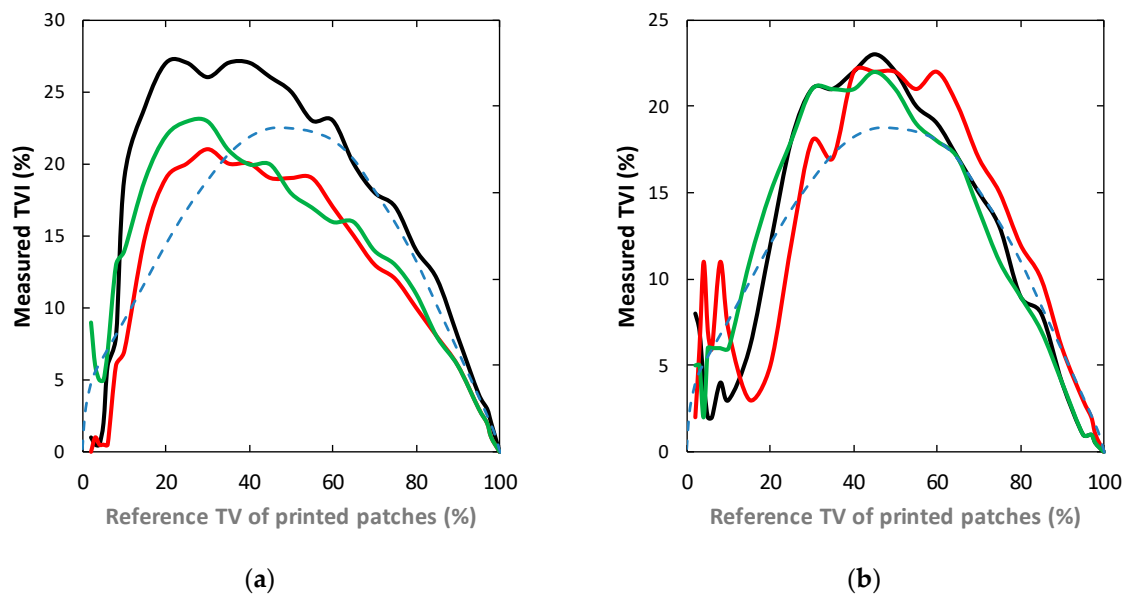


Figure S8 Measured TVI of the samples for overprinted PE with black printing ink using (a) FAST and (b) Kodak plate. Black line: 35 s flow time; red line: 25 s flow time; green line: 15 s flow time; dashed line: ISO TVI (ISO 12647-6).

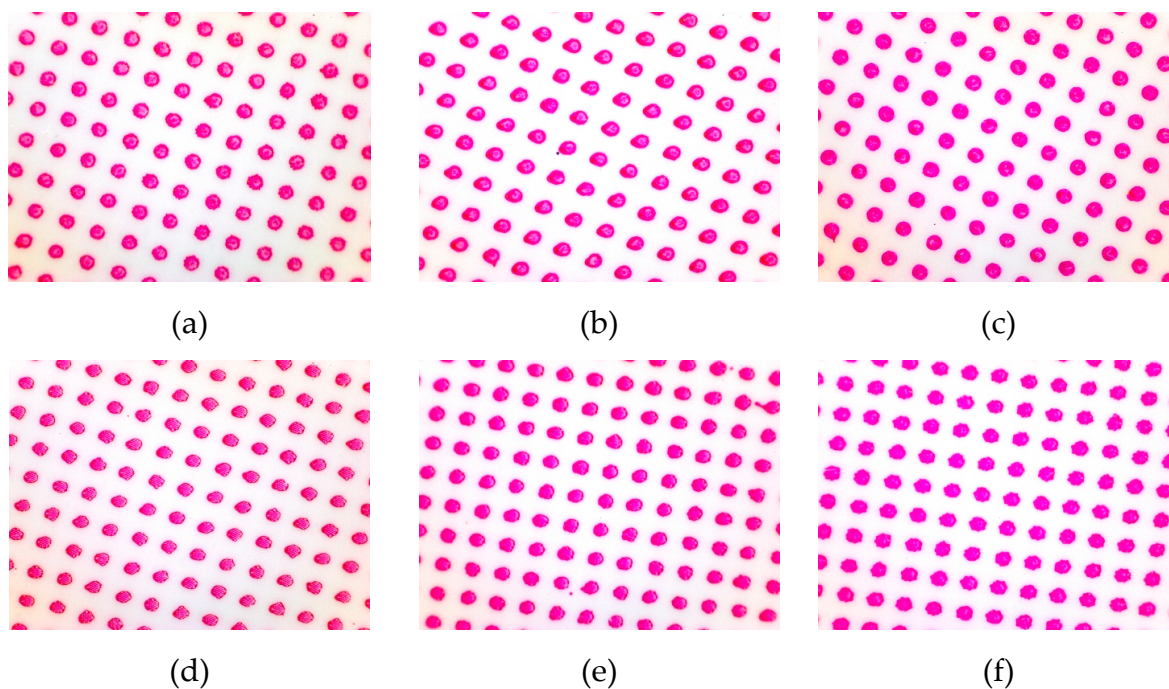


Figure S9 Microscopic images of 15% tone area for overprinted BoPP film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

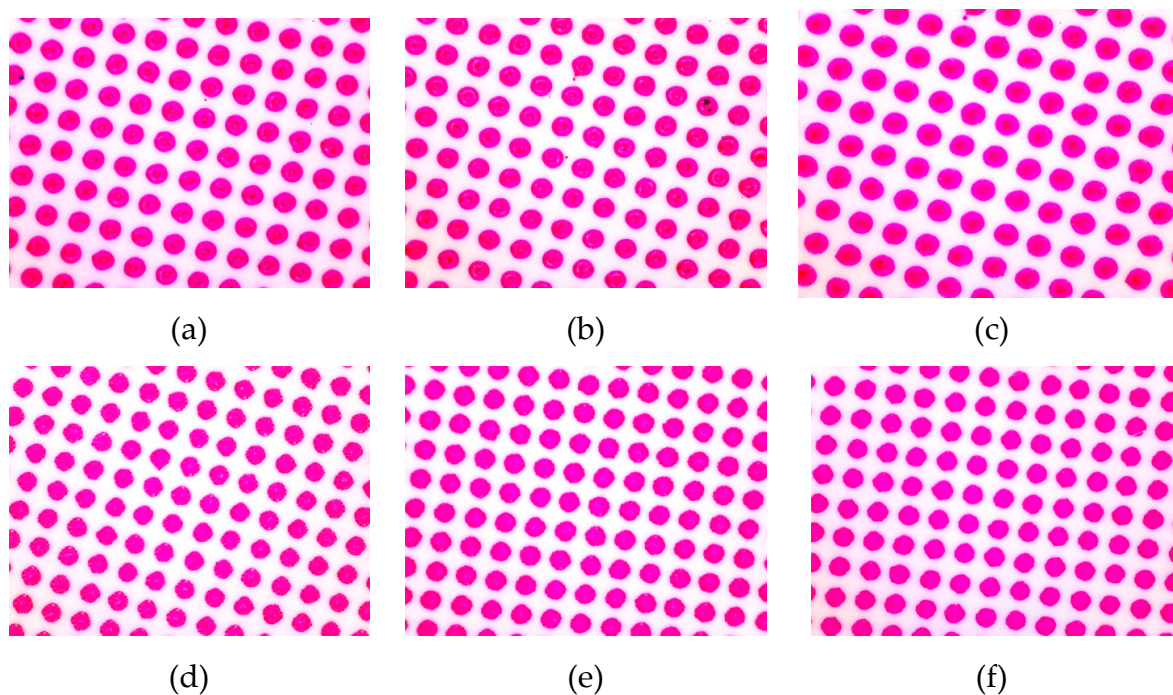


Figure S10 Microscopic images of 30% tone area for overprinted BoPP film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

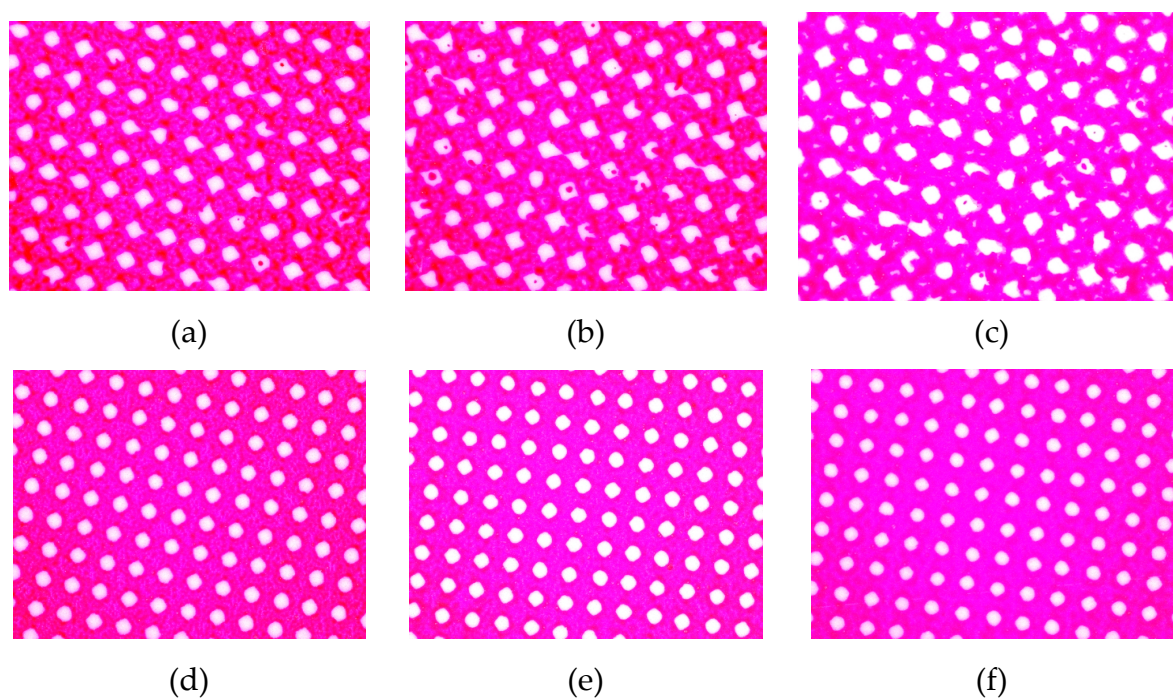


Figure S11 Microscopic images of 75% tone area for overprinted BoPP film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

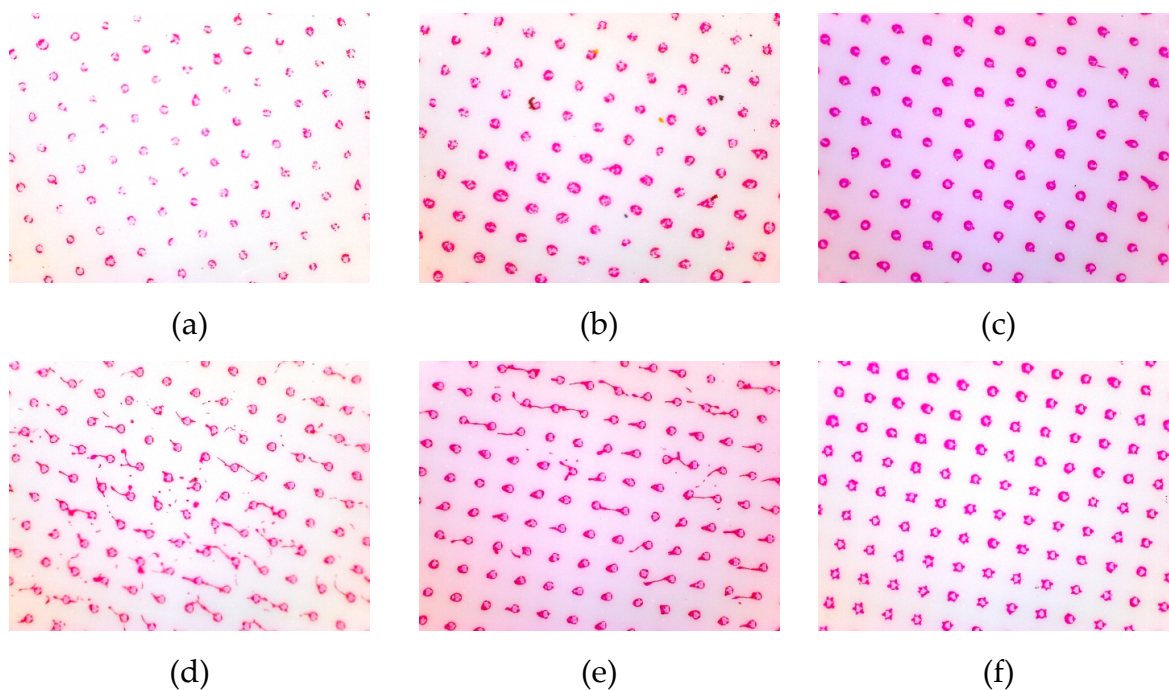


Figure S12 Microscopic images of 5% tone area for overprinted PE film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

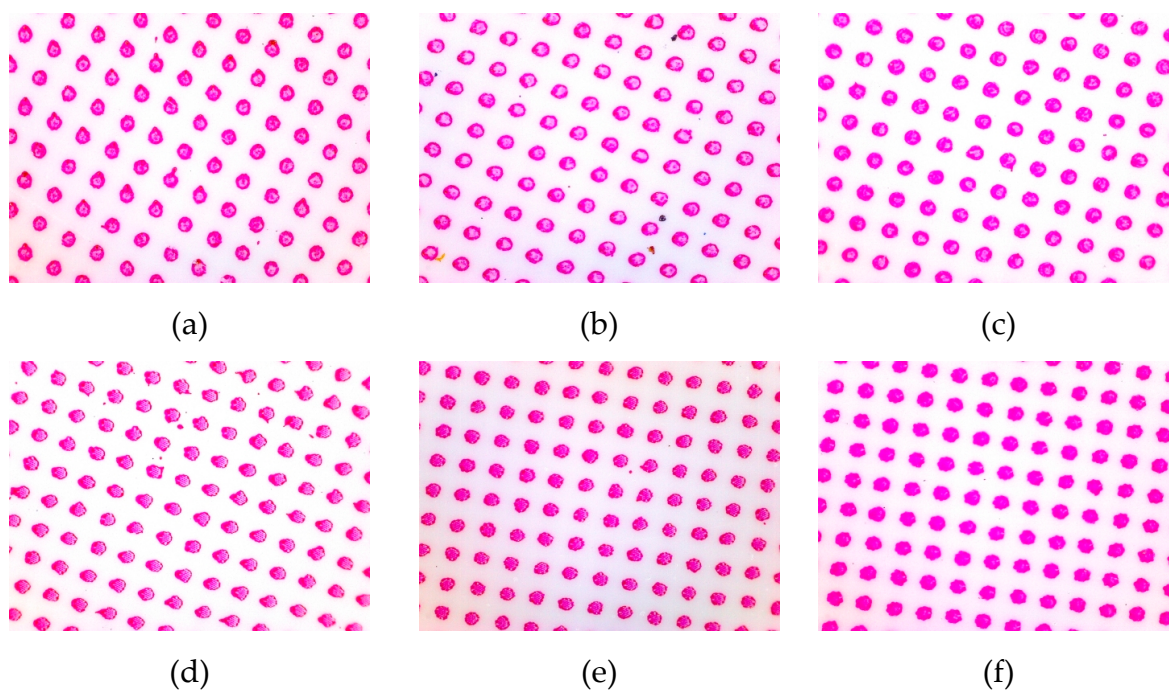


Figure S13 Microscopic images of 15% tone area for overprinted PE film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

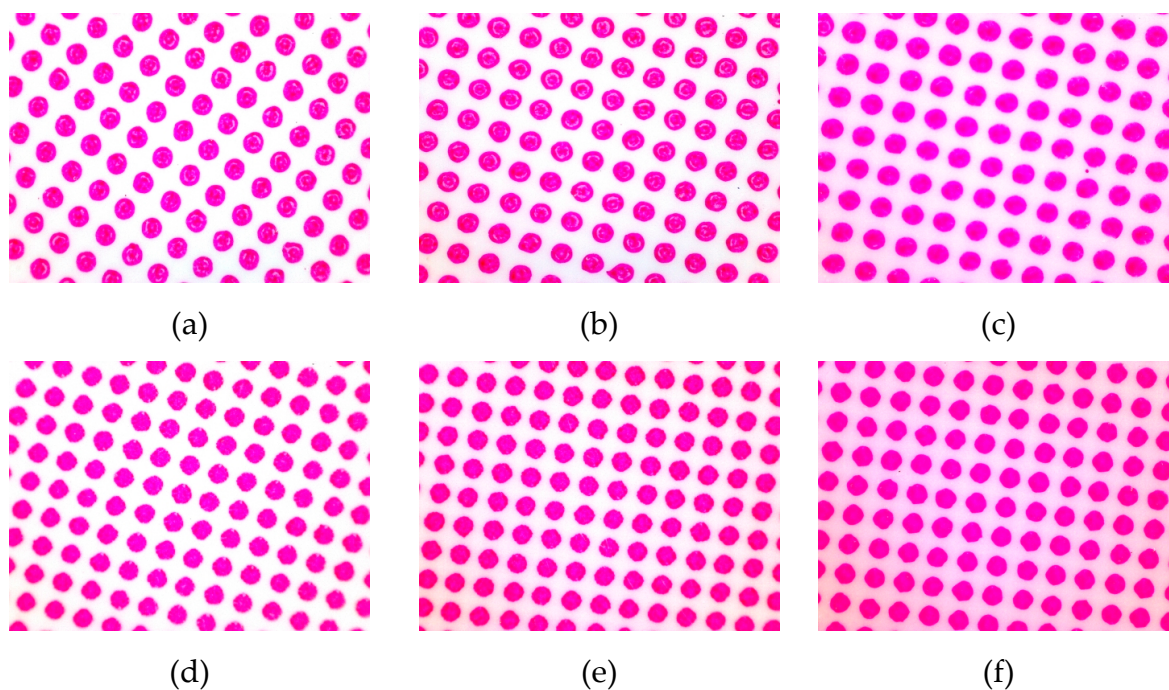


Figure S14 Microscopic images of 30% tone area for overprinted PE film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

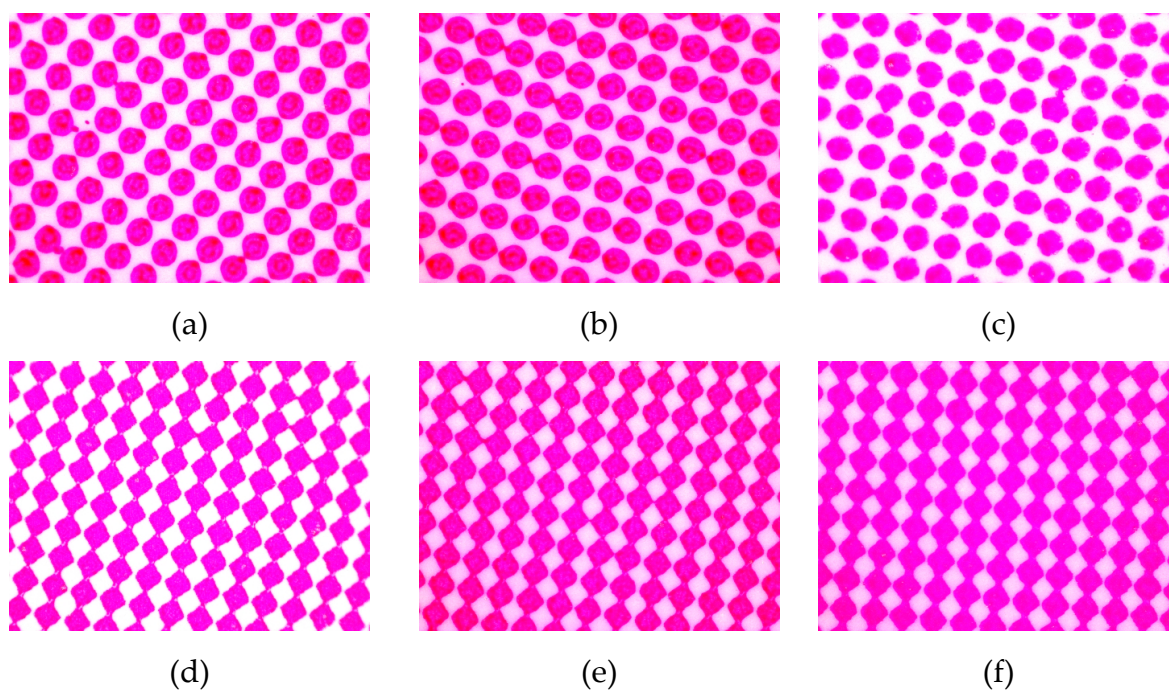


Figure S15 Microscopic images of 50% tone area for overprinted PE film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.

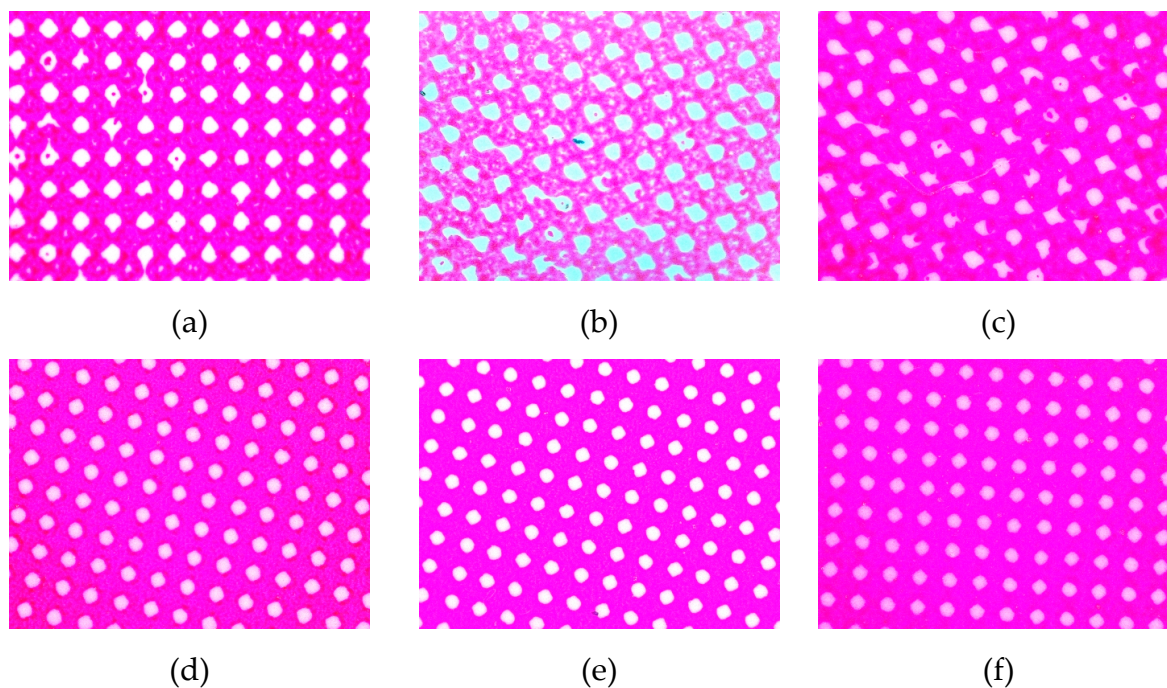


Figure S16 Microscopic images of 75% tone area for overprinted PE film with magenta printing ink for (a) FAST plate, 35 s flow time; (b) FAST, 25 s flow time; (c) FAST, 15 s flow time; (d) Kodak plate, 35 s flow time; (e) Kodak plate, 25 s flow time, (f) Kodak plate, 15 s flow time.