



J4 Rubber (Hand) Stamps: A Long-Term Study Into Stamp Wear and Damage, Stamp Impression Variation, and Incompatible Inks

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After attending this presentation, attendees will be familiar with: (1) examples of stamping impression variation in addition to the progressive wear/damage to stamps over a long period of time; and, (2) the effect that an incompatible ink has on polymer stamping materials.

This presentation will impact the forensic science community by providing information concerning: (1) the preliminary results of long-term experiments regarding progressive wear/damage to rubber (hand) stamps; (2) the variation in stamp impressions; and, (3) the effects of incompatible inks on polymer stamping materials.

The topic of stamp wear/damage, stamp impression variation, and incompatible ink effects is described in different examination standards and some publications; however, there is less published on the documented progression of wear/damage to stamps and the degree to which variation in stamp impressions may occur from different stamping actions.¹⁻⁴ Similarly, there is little published on the progressive damage to stamp dies over a period of time when an incompatible ink has been used.

Part 1 of this study involves getting stamp impressions from different-sized stamps and from different individuals. Three different sizes and types of stamp were used: a large-area rubber stamp (38mm by 72mm), a self-inking round rubber stamp (diameter 24mm), and a mass-produced, factory-made stamp with a combination of date and selectable word (55mm by 5mm). Each of these stamps used a separate inking pad.

To obtain impressions with variation from the stamping process, a variety of volunteers were sought. The volunteers were attendees at two forensic science meetings: the Australasian Society of Forensic Document Examiners Inc. (ASFDE Inc.) Meeting held in Melbourne, Australia, during May 2017, and the International Association of Forensic Sciences (IAFS) Meeting in Toronto, Canada, during August 2017. Impressions were made by attendees of the meetings during different times onto pre-numbered and configured sheets designed for each stamp type. Variation was present due to the differences in the biomechanics of stamping from participants and from the number of impressions taken in a session. For example, in some stamping sessions, participants made many impressions in a short period of time; this is in contrast to when a single impression was made.

The collection of additional stamp impressions is ongoing, with an opportunity to participate at this meeting by making impressions. Only the number of impressions made on a given day will be recorded, with no information about anyone making impressions retained.

Part 2 of this study is an experiment to determine the effect of an incompatible ink on polymer stamping materials over a long period of time. Incompatible inks are those with chemical formulations that may degrade stamping materials for which they were not designed. This experiment involves different stamps that are not part of the wear/damage and variation study. One stamp and one unmounted die for both polymer and rubber-stamping materials were made using the same graphics. Impressions were made on a regular basis using a fast-drying (alcohol-based) ink. Alcohol-based inks are not designed to be used with polymer stamps but can be used with rubber-based stamps. An equal number of impressions were produced over the period of approximately one year with the polymer and rubber stamps; ink was applied to the unmounted dies, but no impressions were taken.

The presentation on Part 1 of the study will focus on the variation in impressions with secondary discussion on the observed wear/damage. For the Part 2 experiment, the degree of degradation for the polymer stamp compared to the rubber stamp will be presented and discussed.

Reference(s):

1. Jan Seaman Kelly. *Forensic Examination of Rubber Stamps*. (Springfield: Charles C Thomas, 2002).
2. Maureen A. Casey. The individuality of rubber stamps. *Forensic Science International*. 12 (1978): 137-144, doi:10.1016/03790738(78)90022-1.
3. A. Herkt. Rubber Stamps, Manufacture and Identification. *Journal of the Forensic Science Society*. 25 (1985): 23-38, doi:10.1016/S0015-7368(85)72359-6.
4. *SWGDOC Standard for Examination of Rubber Stamp Impressions*. Scientific Working Group for Forensic Document Examination, accessed 8 July 2017, <http://swgdoc.org/images/documents/standards/SWGDOC%20Standard%20for%20Examination%20of%20Rubber%20Stamp%20Impressions.pdf>.

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