

A systematic review on restoration of obliterated numbers from Iron and Steel surfaces by Chemical Etching Process

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Serial numbers are mostly encountered in surfaces of iron, steel and metallic-alloy surfaces. These alpha-numerical codes stand to provide unique identity to itself but are obliterated by criminals to conceal the identity of the materials by various methods. This has been commonly seen on criminal cases including motor vehicle theft. The deciphering or restoration of erased number from the surfaces is one of the main challenges for the criminal investigator and quite difficult to restore on tougher obliterations. However, deciphering the obliterated unique codes using chemical reagents (chemical etching) has been proved of its ability to deciphering the mechanical erasures. The chemical etching agent may be a chemical compound that could provide a magical effect to the surface of obliterated part by restoring the removed numbers. This method found to be most practicing and successful method for restoration purpose. The ability of chemical etching agent is questioned in many surfaces and sometimes failed at different occasions as experiments despite of that it found successful in many scenarios. Most of the times we deal with different metals such as iron, steel, stainless steel, cast iron, aluminium, brass, copper etc. choice of chemicals depends on the surface and 'cold working'. The substrate is engraved with serial number by means of different methodologies including laser engraving and head stamp methods. Some engraving methods leaves the marks to the greater extend layers of the methods thus, removing the outer most surface to hide

the real identity may be reestablished easily by means of chemical method of restoration. The method of engraving and obliteration have a major role in deciphering the concealed serial number by means of chemical etching process. The restoration process may take time and recording by means of photography or videography is mandatory as may be restored number get vanished after the effect of chemicals on the metal. The most common chemical etchant is Fry's reagent and the substrate is Fe, steel and Al-alloys.

Here in this study we discuss about the ability and effect of particular chemical reagent on the surfaces of iron, steel and aluminum-alloy surfaces. These metallic surfaces have been proved of various applications in chassis of motor vehicles, railway iron rods, engine parts etc. The chemical reagent's properties on obliterated metal surfaces were studied using different types of Fry's reagent. Hence this study may have application relevance in criminal investigations involving erasures of identity serial number.

Biography: ABI KS has completed his Bachelor's in Forensic science and criminology from Jain University, India and currently pursues his Masters in Forensic science and Toxicology at Chandigarh University, India. He is been trained in various Forensic science departments. He's an individual member of World Federation against Drugs (WFAD) since November 2017.