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Wildfire Damage Claims:

Soot and Char Testing Methods

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A growing concern in the insurance sector is soot and smoke damage claims due to wildfires. Some of these fires can affect properties hundreds of miles downwind, causing the potential number of claims to be astronomical. Besides the known risks for respiratory and other health problems, smoke, soot, and char can cause physical damage ranging from settled ash to property damage.

Depending on the type and amount of soot, the remediation can range from simple cleaning to professional cleaning and even replacement of soft goods (fabrics and carpeting) and/or electronic appliances.

Let's start with some common questions on the matter:

What is soot?

- Soot is the carbonaceous deposits remaining after incomplete combustion
- Soot is typically black or gray, whereas ash is typically white or light gray
- Soot can contain traces of the fuel that caused it, allowing the identification of the source
- Soot and the combustion byproducts associated with it can be harmful

Why is soot formed?

- A fuel burns with less than the optimum oxygen present
- A fuel burns in windy or turbulent condition
- A poor or contaminated fuel burns. Some products generate more soot when they burn than others (rubber tires vs. paper, for example)

What are the most common sources for residential soot?

- Smoking
- Candles
- Fire Places
- Cooking
- Heater malfunctions
- Wildfires nearby
- Interior fires (cooking, appliance etc)

A relatively inexpensive examination of the property can give a good assessment of the potential loss and possible sources of any observed soot. In most cases, the examination will collect enough information to evaluate the scope and validity of the claim. The onsite examination typically includes the following:

- Interview the residents for history and loss allegations
- Document the property and any visible smoke or soot damage with photographs
- Identify any specific locations of visible soot
- Collect surface samples
- Collect wipe samples in some cases
- Submit samples to the laboratory for analysis

Visual assessments are very important in the examination. For example, localized soot over stoves, fire places, heater vents, and used candles is explainable to those sources and is generally not a covered loss. Generalized soot observed over all surfaces is more consistent with wildfire or exterior soot sources. Even when the visual evidence is generalized, it is up to the microscopic examination of the surface samples to identify the materials present. EFI does not use the "chemical sponge" test which merely wipes off surface contaminates and makes unverifiable assumptions on color alone. Surface samples are collected with transparent tape and transferred to microscope slides to storage, shipping and testing. See image below.

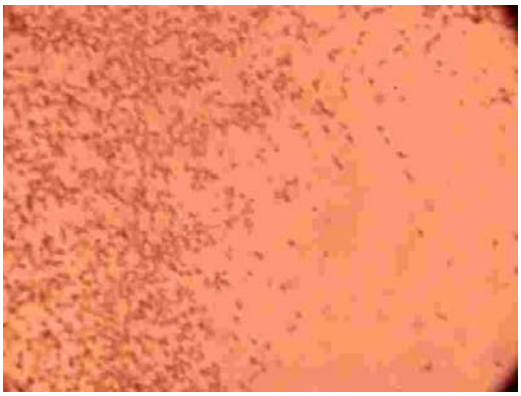
Surface sampling procedure

No soot around picture on the wall

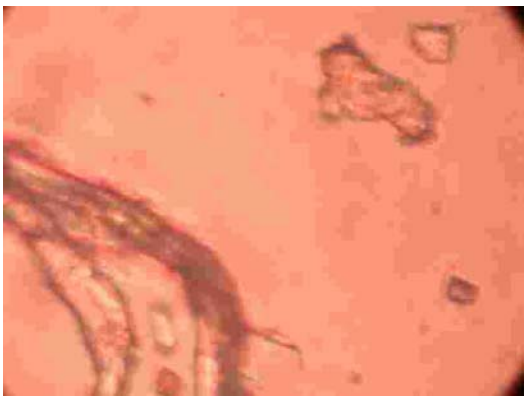
Microscopic analysis will show what is present in the sample. The most common particulates identified in surface samples include:

- Common household dust (mostly dead skin cells)
- Dirt and sand
- Pet dander and hair
- Pollen and exterior detritus
- Soot
- Mold

It is usually fairly easy to distinguish the types of particulates. An example of soot and household "dust" is shown in the images below.



Fine soot particles



Fibers, dirt, and skin cells

When high levels of apparent soot are present, or they are found in very localized areas, it is often prudent to collect a wipe sample for chemical analysis. The wipe samples are extracted in the laboratory and tested by Gas Chromatography/Mass Spectroscopy (GC/MS). The GC/MS analysis can often identify the source of the soot in wipe samples and the fuel sources. For example, a finding of paraffin wax or cooking oils in the soot is good evidence the source is candles or cooking related. Unfortunately, the GC/MS cannot always identify the fuel source because of unknown factors such as the efficiency of the combustion, time, and other household activities such as cleaning or construction.

When you are assigned an alleged claim for soot damage due to wildfires or other local fires, do not settle for a "proof" from a "chemical sponge" test. You need hard evidence and real samples that can be verified if necessary to properly handle the claim. In those cases, EFI Global has the resources and expertise to conduct the tests necessary to expedite your claim on soot damage.

For more information about soot and char testing methods, please contact:

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