Flash Point

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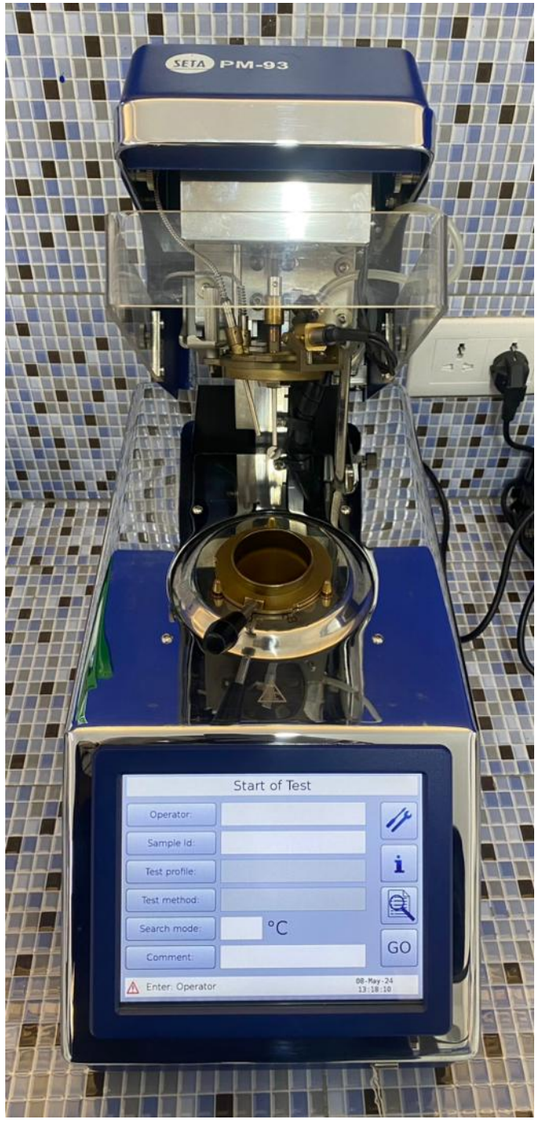
What is Flash Point?

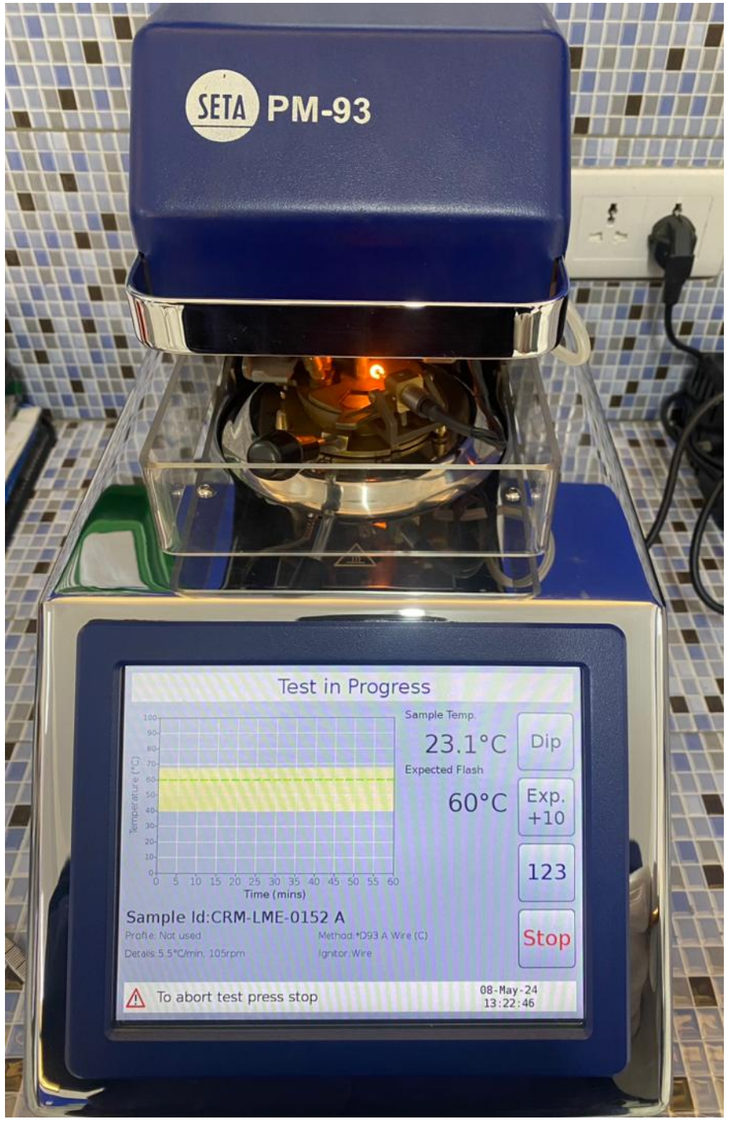
The flash point of a material is the lowest liquid temperature at which a liquid gives off vapours, under certain standardised conditions, in a sufficient quantity to be capable of forming an ignitable vapour/air mixture.



Why do we test Flash Point?

Flash point temperature is one measure of the tendency of a test sample to form a flammable mixture with air under controlled laboratory conditions. It is only one of a number of properties which must be considered in assessing the overall flammability hazard of a material.

Flash point is used in shipping and safety regulations to define flammable and combustible materials. The applicable regulation involved should be consulted for precise definitions of these classifications.



Flash Point by ASTM D93 should be used to measure and describe the properties of materials or products in response to heat and an ignition source under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products, under actual fire conditions. However, results of these test methods may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use.

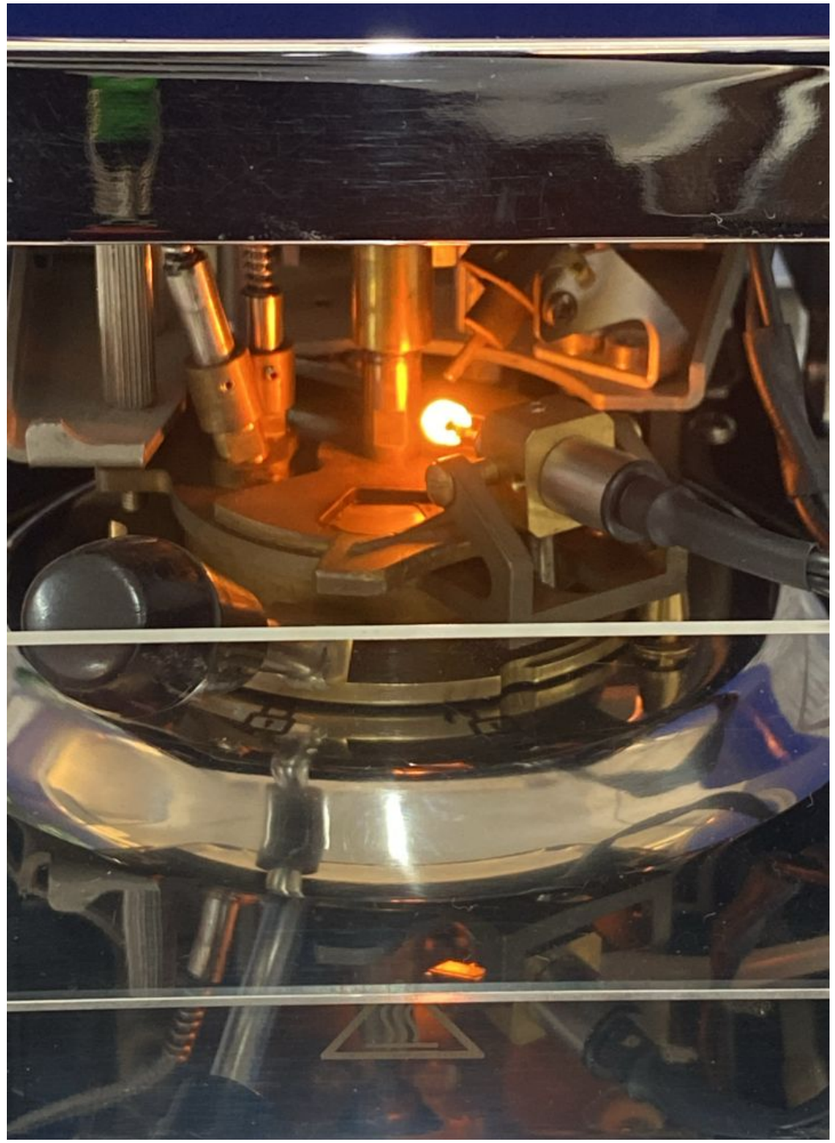
How Does It Work

A brass test cup of specified dimensions is filled to the inside mark with test sample and fitted with a cover of specified dimensions. The sample is heated, and the sample stirred at specified rates that are pre-programmed into the bench top Flash using one of three defined procedures (A, B, or C). An ignition source is directed into the test cup at regular intervals with simultaneous pausing of the stirring, until a flash is detected.

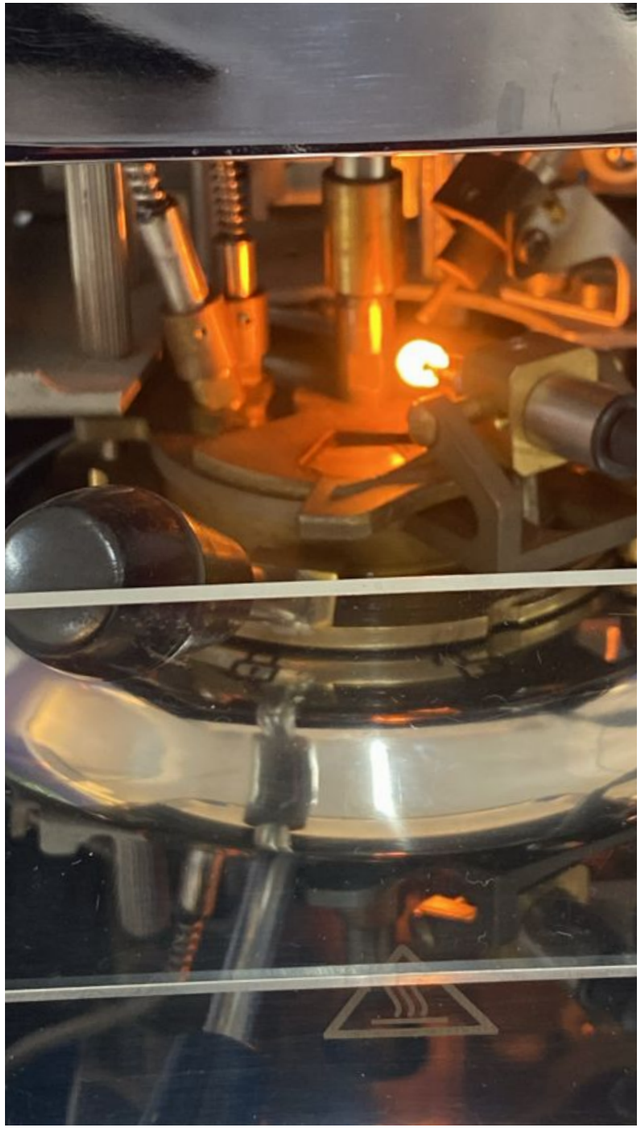
The observed flash point is recorded as the reading on the temperature measuring device at the time the ignition source application causes a distinct flash in the interior of the test cup. The sample is deemed to have flashed when a large flame appears and instantaneously propagates itself over the entire surface of the test specimen.

Potential Issues and Solutions:

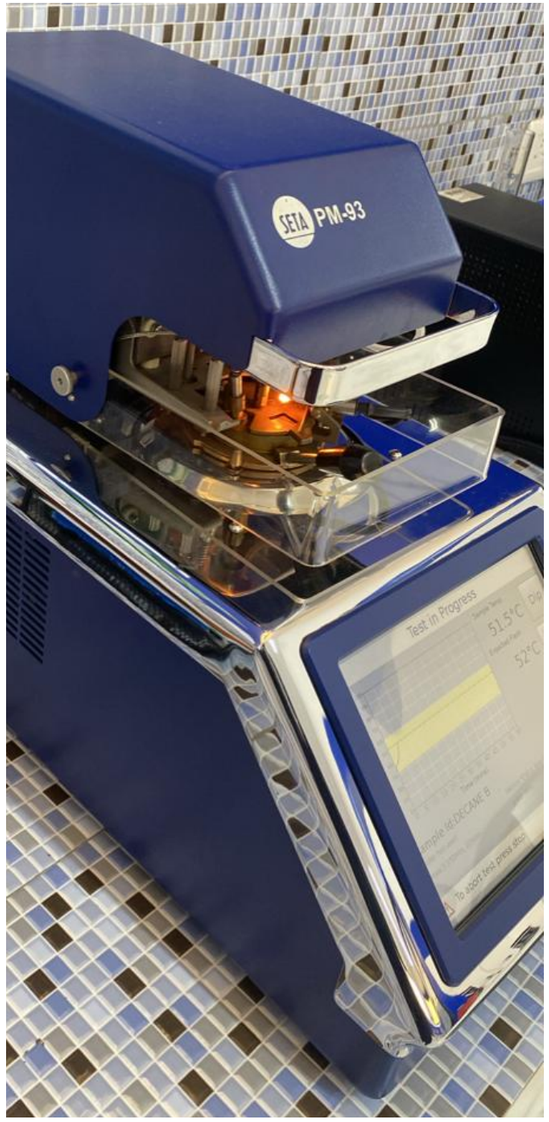
- When the ignition source is a test flame, the application of the test flame can cause a blue halo or an enlarged flame prior to the actual flash point. This is not a flash and shall be ignored. A solution to this is to use a wire igniter to replace the test flame as the ignition source.



- For certain mixtures containing halogenated hydrocarbons, such as, methylene chloride or trichloroethylene, no distinct flash is observed. Instead, a significant enlargement of the test flame (not halo effect) and change in colour of the test flame from blue to yellowish-orange occurs. Continued heating and testing of these samples above ambient temperature can result in significant burning of vapours outside the test cup and can be a potential fire hazard. Analysers should closely observe the test flame during analysis and discontinue testing if the test flame changes to yellowish-orange to prevent continued heating and prevent the risk of a potential fire.



- ASTM D93 specifies the ignition source, size of test flame or intensity of the electric ignitor, rate of temperature increase, and rate of dipping the ignition source into the vapor of the test specimen, the analyser must pay meticulous attention to all these factors for good results. Frequent Statistical Quality Control monitoring and calibration of these factors in addition to performing Certified Reference Material (CRM) checks ensure that good results are obtained.



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