



PAO-4 GHS Aspiration Hazard Clarification

Introduction

When the ATI PAO-4 Safety Data Sheet, PN 1800101, was updated to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), it became classified as an Aspiration Hazard under A.10 Aspiration Hazard in OSHA's Hazard Communication Standard updated March, 2012.

Per the GHS classification requirements, ATI PAO-4 is an Aspiration Category 1 Hazard for the following reasons:

1. ATI PAO-4 is present at a concentration greater than or equal to 10% in liquid form.
2. ATI PAO-4 is a hydrocarbon that exhibits a kinematic viscosity less than 20.5 cSt (centistokes) at 40 C.

For these reasons, the following health hazard pictogram must be shown:





Background

The cited regulation applies when a worker is handling ATI PAO-4 directly in liquid form which includes adding it to an aerosol generator for filtration testing. Proper precautions must be taken to minimize worker exposure.

During filtration testing, ATI PAO-4 is diluted with air to produce a polydisperse sub-micron oil aerosol. This step dramatically reduces the concentration of ATI PAO-4 that workers are exposed to during filtration testing when inhalation is more likely.

The two most common aerosol generators manufactured by Air Techniques are either Laskin III-A nozzle based (TDA-4B) or thermal condensation (ATI 5C) generators.

For both types of generators, the maximum ATI PAO-4 concentration is found immediately at the aerosol exit point of the generator, before dilution by air entering the system under test.

In the case of Laskin III-A nozzle generators, the maximum concentration at full output capacity is 5.1 milligrams of ATI PAO-4 per liter of air.

For the Model ATI 5C thermal generator, the maximum output concentration is 2.6 grams of ATI PAO-4 per liter of air.

The typical exposure for an end-user, after dilution by system air flow upstream of the filter under test, should not exceed 100 micrograms of ATI PAO-4 per liter of air and is typically between 10 and 20 micrograms per liter of air.

A certifier downstream of the filter under test will be exposed to a level of ATI PAO-4 that is typically, at maximum, less than 0.1% of the upstream aerosol concentration. This means that the maximum likely exposure downstream is 0.1 micrograms per liter of air.

Conclusion

The ATI PAO-4 aerosol used in filtration testing is a mixture of ATI PAO-4 droplets suspended in air. Certifier exposure to ATI PAO-4 both upstream and downstream of the filter is significantly reduced to the point where the ATI PAO-4 concentration is far below 10% of the liquid/air mixture concentration requiring the Aspiration Category 1 Hazard listing.

Therefore, ATI PAO-4 is not an Aspiration Hazard for end-users in filtration testing applications and the health hazard pictogram need not apply for typical PAO-4 usage.