

OSHA Hazard Communication Updates

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Overview

- HCS 2024 Final Rule
- Guidance Products
- Enforcement Updates & Resources
- Interesting Case(s)

Purpose of HCS Final Rule

- The Final Rule improves and enhances worker protection through:
 - Providing additional clarification of existing regulatory requirements
 - Incorporating new hazard classes and categories
 - Improving and streamlining precautionary statements
 - Facilitating international trade through increased alignment

Principles & Assumptions

- This final rule maintains the same basic framework of the HCS
 - Chemical manufacturers and importers are responsible for providing information about the identities and hazards of chemicals they produce or import
 - All employers with hazardous chemicals in their workplaces are required to have a hazard communication program, and provide information to employees about their hazards and associated protective measures and train workers on those hazards

Final Rule Updates

- Updates to Hazard Classification (maintain align with GHS - primarily revision 7)
- Updates to the Label
- Updates to the SDS
- Compliance Dates
- Guidance Materials

Health Hazards Updates (Appendix A)

- Revised health hazard definitions
 - e.g., update definition for Germ cell mutagenicity chapter
- Updated the Skin corrosion/irritation chapter to align with Revision 8 to promote alternate test methods
- General updates to hazard classes for example:
 - Acute toxicity chapter – clarification on use of data from human experience
 - Serious eye damage/eye irritation chapter – to reflect revision 7 and clarify the use of pH

Physical Hazards Updates (Appendix B)

- Flammable gases
 - Including: pyrophoric gases and unstable gases
- Desensitized explosives
- Aerosols/Chemical under pressure

New flexibility for labeling

- OSHA has added additional flexibility for updating labels when containers are released for shipment (f)(11)
 - Chemical manufactures/importers/distributers may opt not to relabel containers provided that:
 - They provide a label for each individual container
- Hazards Not Otherwise Classified (HNOC)
 - OSHA will now allow the use of the exclamation pictogram for HNOCs

New flexibility for labeling (Cont.)

- Bulk Shipment (f)(5) labels must be:
 - On the immediate container, or
 - Transmitted with the shipping papers or the bills of lading, or,
 - Transmitted by technological or electronic means so that it is immediately available to workers in printed form on the receiving end of shipment.
- Allow for the use of a HCS pictogram on the label along with a DOT pictogram when there is a DOT placard is on the container.

Small packages (f)(12)

- Abbreviated labelling requirements on immediate container when full label is infeasible for containers
 - Container with 100ml or less capacity:
 - Product Identifier; Pictogram(s); signal word; Chemical manufacturer's name and phone number and statement that the full label is on the immediate outer package.
 - Full label would still be required on outer package.
 - Containers 3 ml or less capacity:
 - No label required except the container must provide the product identifier
 - **Only where the label interferes with the normal use of the container**

Updated label elements (Appendix C)

- New or updated hazards
 - Updated from changes to Appendix A and B
- Updated guidance on the allocation of elements
 - e.g., combined statements (such as fire response and first aid measures)
- Updated precautionary statements
 - Updated conditions on when precautionary statements apply
 - Updated statements for select hazard classes (e.g., desensitized explosives, aerosols, flammable gases)

SDS updates (Appendix D)

- Section 2 – Hazard Identification
 - clarification presentation of chemical hazard information
 - section 2(a) – hazard classification including hazards due to a change in chemical’s physical form ((d)(1)(i)(A)).
 - Section 2(b) - Hazards classified chemical reaction products associated with known or reasonably anticipated uses or applications (d)(1)(i)(B).
- Section 3- Composition/Information on ingredients
 - Would allow for claiming a trade secret for concentration ranges by using prescriptive concentration ranges.

SDS Updates (Appendix D)

- Section 8 – Exposure controls/Person protection
 - clarification on inclusion of PEL, TLV, or other exposure limits for individual ingredients or constituents in mixtures
- Section 9 – physical and chemical properties
 - e.g., inclusion of particle characteristics (e.g., size)
- Section 11
 - e.g., inclusion of interactive effects and use of SAR/QSAR/read across

Compliance Dates

Compliance Date	Requirement(s)	Who
July 19, 2024	Effective date of standard	Chemical manufacturers, importers, distributors, and employers – substances and mixtures
January 19, 2026	Update labels and SDSs for substances	Chemical manufacturers, importers, and distributors – for substances
July 20, 2026	Update workplace labels, hazard communication program and training as necessary	Employers – for substances
July 19, 2027	Update labels and SDSs for mixtures	Chemical manufacturers, importers, and distributors – for mixtures
January 19, 2028	Update workplace labels, hazard communication program and training as necessary	Employers – for mixtures
Transition Period - May 20, 2024, to the effective completion dates noted above	May comply with either 29 CFR 1910.1200 (this final standard), or the current standard, or both	Chemical manufacturers, importers, distributors, and employers as indicated above

OSHA Guidance

- OSHA has updated guidance documents to aid in implementation of the Final Rule
 - Redline Strike out
 - Label Fact sheet/Quick Card
 - SDS Fact Sheet/Quick Card
 - FAQs
- Final rule can be found at: [Hazard Communication - Overview | Occupational Safety and Health Administration \(osha.gov\)](https://www.osha-slc.gov/hazard-communication-overview)

Enforcement

Top 10 Most Frequently Cited Standards for Fiscal Year 2023 (Oct. 1, 2022, to Sept. 30, 2023)

1. Fall Protection, construction ([29 CFR 1926.501](#))
2. **Hazard Communication, general industry ([29 CFR 1910.1200](#))**
3. Ladders, construction ([29 CFR 1926.1053](#))
4. Scaffolding, construction ([29 CFR 1926.451](#))
5. Powered Industrial Trucks, general industry ([29 CFR 1910.178](#))
6. Control of Hazardous Energy (lockout/tagout), general industry ([29 CFR 1910.147](#))
7. Respiratory Protection, general industry ([29 CFR 1910.134](#))
8. Fall Protection Training, construction ([29 CFR 1926.503](#))
9. Eye and Face Protection, construction ([29 CFR 1926.102](#))
10. Machinery and Machine Guarding, general industry ([29 CFR 1910.212](#))

Fiscal Year 2023 HCS Inspections

- Federal OSHA inspections involving HCS violations:
 - Inspections **3,197**
 - Citations issued **1,746**
 - Total penalties **\$5,141,087**

See [Industry Profile for an OSHA Standard](#)

2023 Letter of Interpretation

- 1) Can an industrial marker be considered an article?
 - 2) Can you avoid classification and labeling under the Hazard Communication standard when a chemical is “certified nontoxic”?
- See [HCS applicability to an industrial marker containing liquid paint or ink](#)

Enforcement Resources

- OSHA Instruction, [CPL 02-02-078](#), *Inspection Procedures for the Hazard Communication Standard (HCS 2012)*, July 9, 2015. Updates to align with the HCS 2024 are in progress.
- [HCS Letters of Interpretation](#)

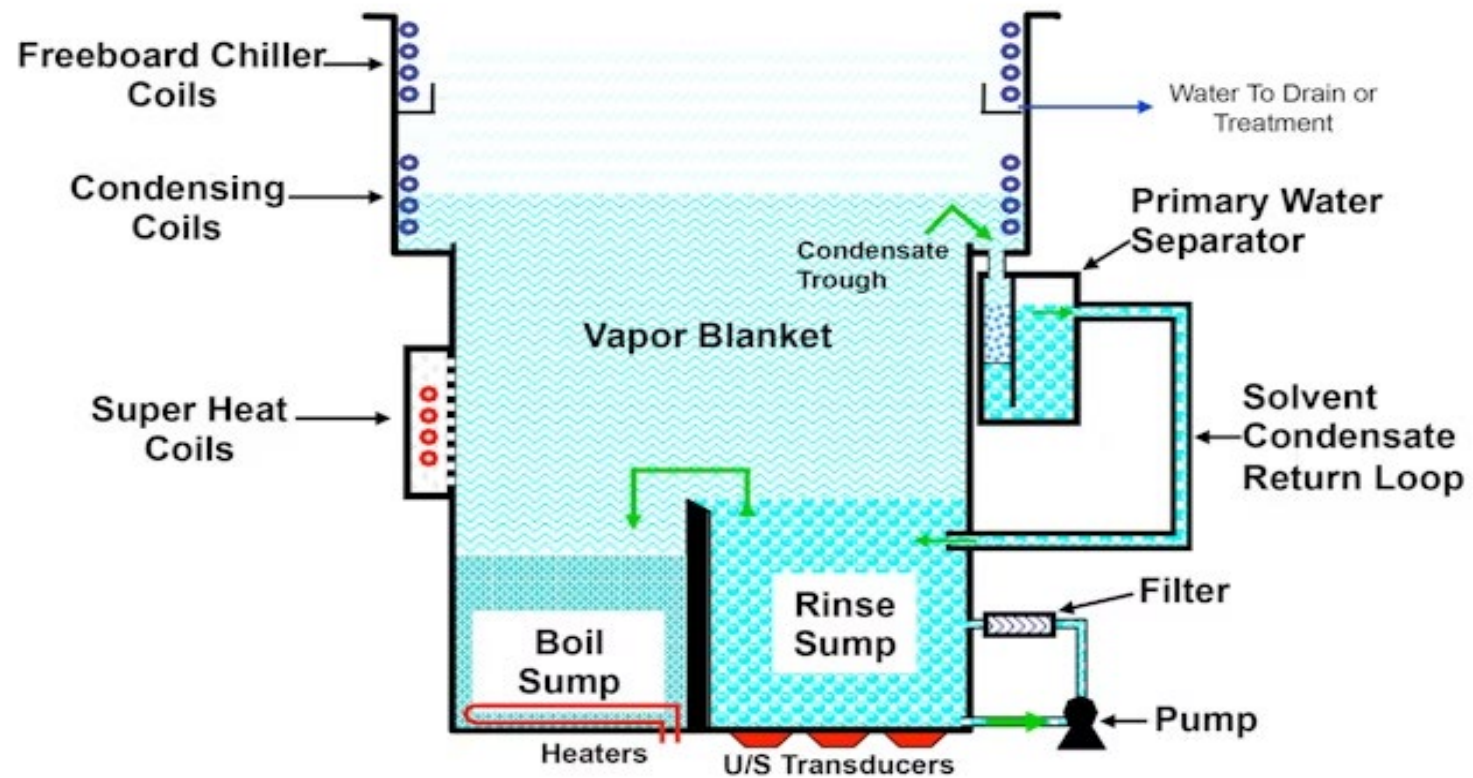
Interesting Cases

February 2023 – Fire at Vapor Degreaser (OSHA’s Boston Area Office)

- OSHA was notified of burn injury from a flash fire.
- Employee using a heat gun to speed the warm-up process.
- Employee received 3rd degree burns to the face when vapor in the room flashed.
- The solvent in the vapor degreasers stated “non-flammable” on the SDS and had no warnings of flammability



Vapor Degreasers – How they work



Factors contributing to incident

- 2 large vapor degreasers in a small space with poor ventilation.
- Air supply pushing vapors out of the degreaser into the room and settling.
- Employees were unaware the chemical vapors were flammable.



Vapor Degreasing Solvent Composition

- 85-95% Trans-dichloroethylene - CAS 156-60-5
 - This ingredient is a well documented flammable chemical
 - Flash Point 36 ° F
 - Boiling Point 118 ° F
 - GHS Classification: Category 2 Flammable Liquid
- 5-15% fluorinated compounds to act as fire suppressants/ retardant
- SDS stated the mixture's flash point: "Closed cup: > 93.3 ° C (>199.9 ° F)"
- Lower and upper explosive (flammable) limits (LEL/UEL) were: "Not Available"
- Marketed as a replacement solvent for 1-bromopropane (1-BP) degreasers

Citation Summary (Boston Case)

- 1910.124(g)(2) – No emergency shower or eye-wash
- 1910.145(f)(3) – No tags or signage to warn of flammable solvents in the work area
- 1910.1200(f)(6)(ii) – Container of hazardous chemicals in the workplace was not labeled with at least general information regarding the hazards of the chemicals.

- The employer did not contest the citations and all fines were paid
- The employer sent a letter to the chemical manufacturer and their local OSHA area office to inform them of the fire and injury and inform them that their product was indeed flammable.

Company Refers Manufacturer to OSHA's Atlanta West Area Office

- Referral received on July 3, 2023
- Site Visit and Opening Conference on July 17, 2023
- Company stated that it had this mixture tested for flash point by ASTM D-56 in June 2015 by a 3rd party lab. Results below:

TEST		METHOD D-56	SPECIFICATIONS	
MARKS		Flash Point, °C	MIN.	MAX.
33115-22I	6/12/15	No flash Point	XXX	XXX
33115-22II	6/12/15	No flash Point	XXX	XXX
33115-22III	6/15/15	No flash Point	XXX	XXX
33115-22IV	6/15/15	No flash Point	XXX	XXX
33115-22V	6/16/15	No flash Point	XXX	XXX
33115-22VI	6/16/15	No flash Point	XXX	XXX
33115-22VII	6/16/15	No flash Point	XXX	XXX

Closed cup flash point testing

- Solvent in closed test cup
- Monitor temperature
- Lower flame into cup

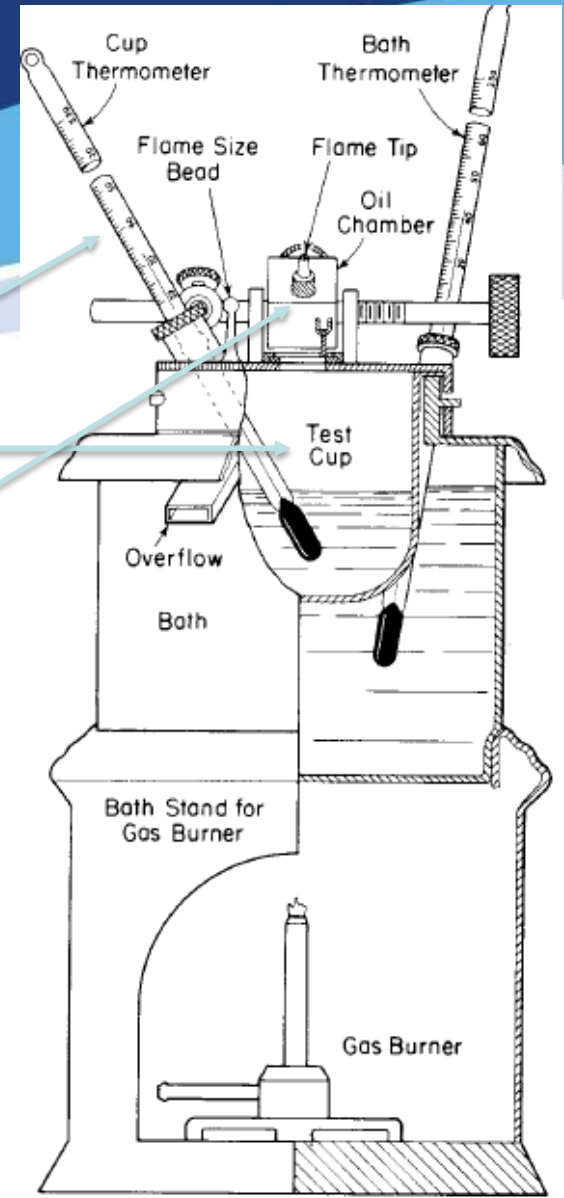


FIG. 1 Tag Closed Flash Tester (Manual)

Image Source: ASTM D56 Method

Lab Testing Notes

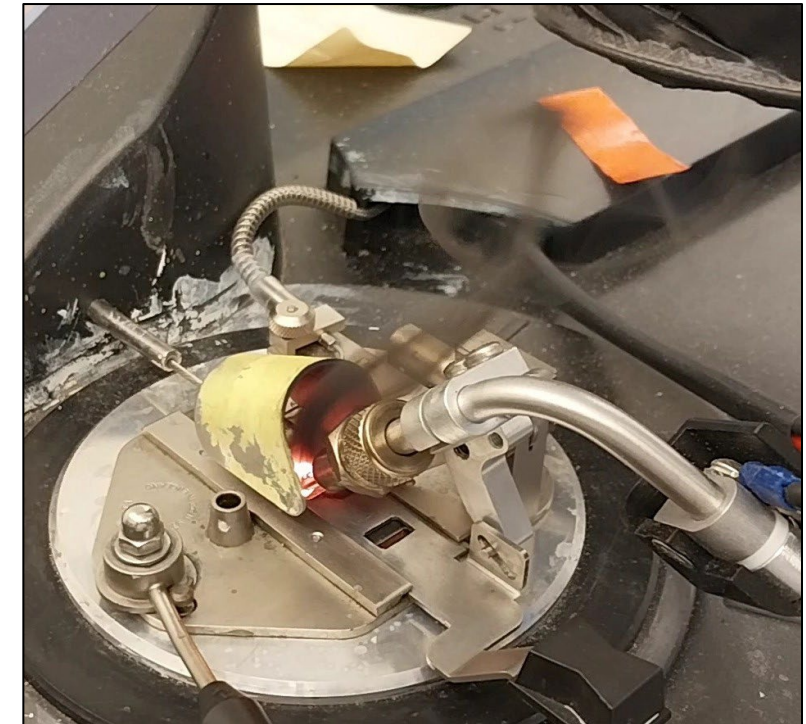
Comments:

Samples were first tested for flash Point at 25 °C. The Sample Vapor enhanced the test flame upward with yellowish/slight blue color and black smoke, But no actual Flash point. The Samples were Chilled to 5 °C Also the sample cup and the bath were also brought to 5 °C. The Sample Vapor enhanced the test flame upward with yellowish/slight blue color and black smoke, but no actual Flash point was observed as specified by ASTM D-56 in both Cases.

- Flash Point Masking Phenomenon (Described in ASTM D-56 Appendix X1, X2)
 - Occurs when ignitable liquids contain halogenated hydrocarbons.
 - No distinct flash is observed. Instead enlarged test flame and color change (blue to yellow-orange).
 - When mixtures contain flammable and non-flammable components, liquids can evolve flammable vapors and not exhibit a closed cup flash point.

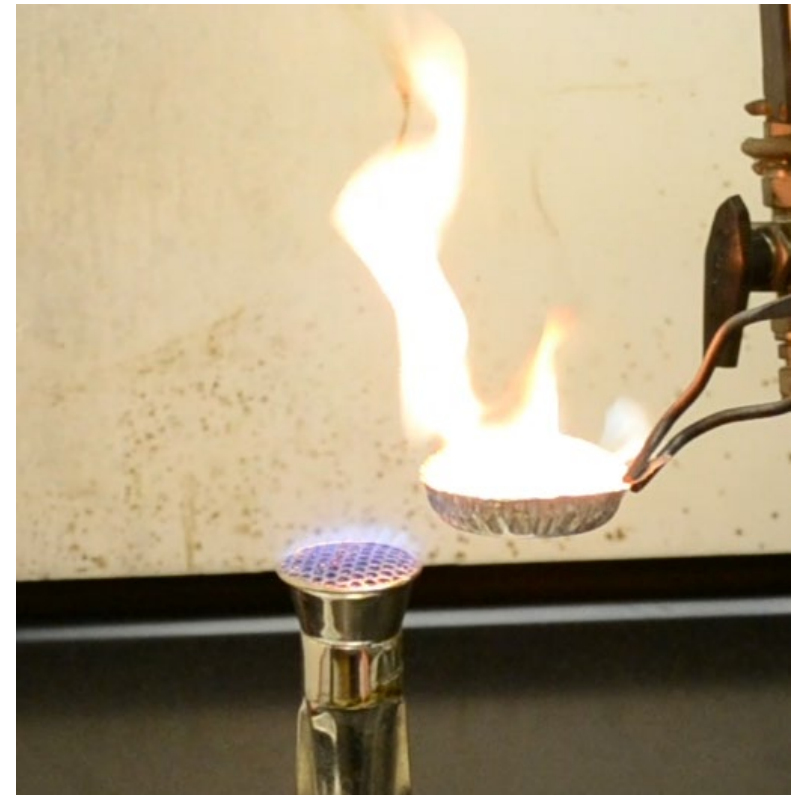
OSHA Technical Center Testing

- OSHA Technical Center Lab tested flash point.
- Initial flash point testing was done in a Setaflash 8 closed cup flash point tester
 - No flash was detected, but black smoke and burning smell was observed escaping the test unit.



Open Air Test

- Small sample was placed in aluminum pan and placed in contact with a test flame.
 - “The sample ignited vigorously, producing a substantial fireball”
 - Removing the sample from burner resulted in the material quickly extinguishing.
 - This process was repeated several times with the same result.



OSHA Technical Center Recommendations

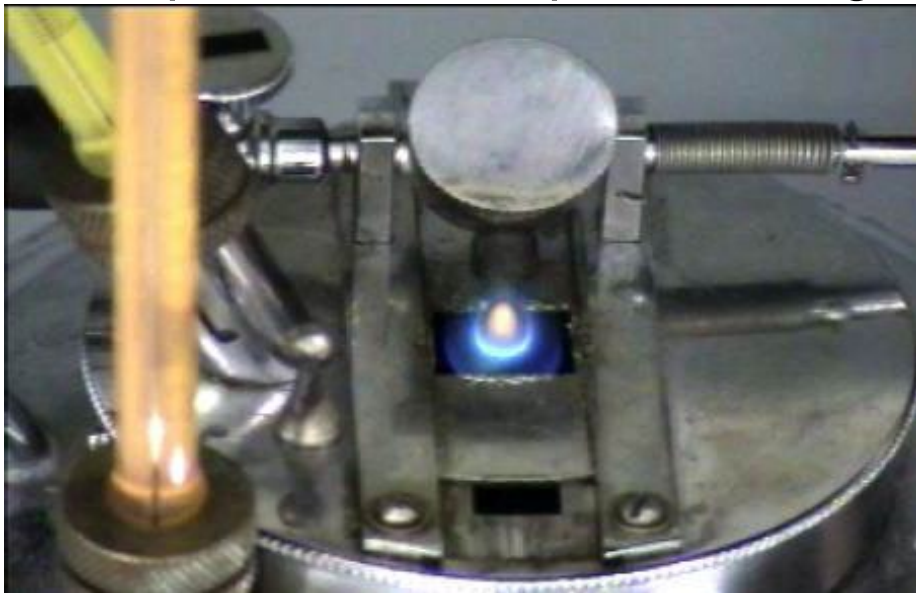
- The OSHA Lab cited several ASTM test methods about the issues of “Flash Point Masking Phenomenon” and “Flammability of Mixtures”
- Described issues testing in small volume (closed cup)
- Recommended using both closed and open cup testing

Citation Summary (Atlanta West Case)

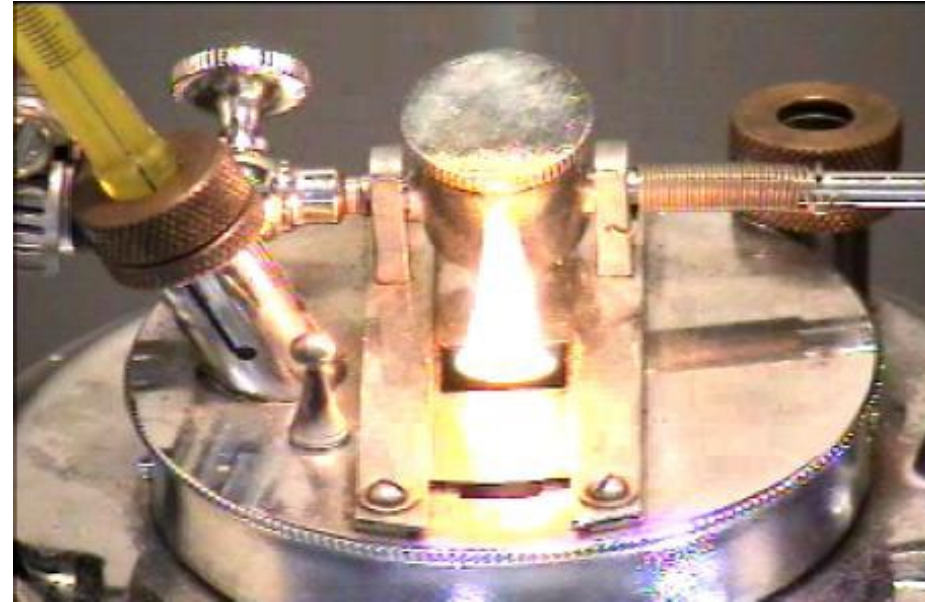
- 1910.1200(d)(2) - Chemical manufacturers, importers, or employers classifying chemicals did not identify and/or consider the full range of available scientific literature and other evidence concerning the potential hazards.
- The employer did not utilize proper test protocols to determine the flash point and flammability classification.
- As part of the abatement the company agreed to add a note to SDS about potential for the chemical to flash.
- Agreed to perform additional flammability testing including ASTM E681 for LEL & UEL determination.
- Currently the chemical is still being marketed as “non-flammable” on the company website.

Study on Masking Phenomenon/”Outgassing”

- A 2004 study looked at 3 commercial products with flammable ingredients and halogenated hydrocarbons.
- Used the term “Outgassing” to describe that the flammable component escapes the test cup and enlarges the test flame.



Normal Test Flame



Enlarged test flame due to
“Outgassing”/Masking Phenomenon

Study on Masking Phenomenon/”Outgassing” cont.

- The study found all mixtures produced “some form of outgassing”
- No Flash Points recorded on the Closed cup Tests
- Flash Points were recorded on all the TAG Open Cup Tests

Study Conclusions

- “A single test such as a flash point should not be completely relied upon to portray the definitive flammability danger of a material.”
- “The testing performed reveals that by adding these halogenated hydrocarbons to existing flammable liquids does not inert the flammability of the product, it only side-steps the tests.”

Halogenated Hydrocarbons

- Often regarded as non-flammable, but can still ignite
- 1983 fatal incident at a large vapor degreasing pit using 1,1,1 Trichloroethane (Methyl Chloroform)
- LEL & UEL Testing is an important for understanding flammability when a flash point cannot be detected.
- ASTM E681 or equivalent testing can help determine LEL & UEL
- Methylene Chloride Example: “Fire and Explosion Hazards: MC has no flash point in a conventional closed tester, but it forms flammable vapor-air mixtures at approximately 100° C (212° F), or higher. It has a lower explosion limit of 12%, and an upper explosion limit of 19% in air.”

Red Flags About Flammability Testing

- The mixture contain a known flammable ingredients
- Contains Halogenated Hydrocarbons (Fluorinated, Chlorinated, Brominated)
- Test Method (Single test, closed cup only, etc.)
- No data available on SDS for flammability parameters like Flash Point, Boiling Point, LEL, UEL, etc.
 - Lack of test results does not mean it is safe.

Conclusion – Lessons Learned

- Chemical Manufactures need to be cognizant of the intended use of their products
 - Ex. Vapor Degreasers - Designed to boil and create a vapor layer. Can that vapor ignite under any circumstance?
 - Also solid products that will be cut, sanded or grinded creating dust hazards
- Laboratory test methods have limitations
 - Halogenated mixtures produce a masking effect during testing
 - Both laboratories and customers need to communicate and understand the limitations of the test methods.
- The absence of a flash point does not ensure freedom from flammability

References

- ASTM D56-05 – Standard Test Method for Flash Point by Tag Closed Cup Tester
- Gorbett et. al. (2004) Outgassing Phenomenon in Flash Point Testing for Fire Safety Evaluation

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