A Comparison of the Content of Early MSDSs, MSDSs Under HazCom 1994, and SDSs Under HazCom 2012

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Abstract

With origins in shipyard regulations from the 1960s by the Department of Labor Bureau of Labor Standards, transfer to the Occupational Safety and Health Administration (OSHA) in 1971, expansion under HazCom 1983 and 1994, and alignment with the Globally Harmonized System under HazCom 2012, Safety Data Sheets (SDSs) (formerly Material Safety Data Sheets (MSDSs)) as we know them today have developed considerably over time. This poster explores regulations and standards for MSDSs and SDSs during these periods, illustrating how each new addition changed the content of these documents and their distribution and use by chemical manufacturers, employees, and others.

Occupational Saf	18	Administration	Form Approved OMB No. 44-R1387	
Required under USDL Safety	y and Health Regula	ations for Ship Repairing,		SECTION V - HEALTH HAZARD DATA THRESHOLD LIMIT VALUE EFFECTS OF OVEREXPOSURE
Shipbuilding, and Ship	SECTION I			
MANUFACTURER'S NAME ADDRESS (Number, Street, City, State, and ZIP Code)		EMERGENCY TEL	EPHONE NO.	EMERGENCY AND FIRST AID PROCEDURES
CHEMICAL NAME AND SYNONYMS	I FORMULA	TRADE NAME AND SYNONY	MS	
SECTION II - H				SECTION VI - REACTIVITY DATA STABILITY UNSTABLE CONDITIONS TO AVOID
PAINTS, PRESERVATIVES, & SOLVENTS %	TLV ALLO	YS AND METALLIC COATIN	GS % TLV (Units	STABLE INCOMPATABILITY (Materials to avoid)
PIGMENTS CATALYST	ALLOYS	, <u>,</u>		HAZARDOUS DECOMPOSITION PRODUCTS CONDITIONS TO AVOID
VEHICLE SOLVENTS	FILLER ME	COATINGS ETAL TING OR CORE FLUX		HAZARDOUS MAY OCCUR WILL NOT OCCUR
ADDITIVES OTHERS	OTHERS			AFOTIONALL COLL OR LEAK PROCEDURES
HAZARDOUS MIXTURES OF OT	HER LIQUIDS, SOLII	OS, OR GASES	% TLV (Units	SECTION VII - SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
	-			
				WASTE DISPOSAL METHOD
	III - PHYSICAL	March Marchael Ma		
BOILING POINT (°F.) VAPOR PRESSURE (mm Hg.)	PERCENT, BY VOLUM	VOLATILE ME (%)		SECTION VIII - SPECIAL PROTECTION INFORMATION RESPIRATORY PROTECTION (Specify type)
VAPOR DENSITY (AIR=1) SOLUBILITY IN WATER		TION RATE =1)		VENTILATION LOCAL EXHAUST SPECIAL MECHANICAL (General) OTHER
APPEARANCE AND ODOR				PROTECTIVE GLOVES EYE PROTECTION
SECTION IV - FIRE FLASH POINT (Method used)	nd total statute interests with anticipation of	ON HAZARD DATA ABLE LIMITS	Lel Uei	OTHER PROTECTIVE EQUIPMENT
EXTINGUISHING MEDIA SPECIAL FIRE FIGHTING PROCEDURES				SECTION IX - SPECIAL PRECAUTIONS PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
UNUSUAL FIRE AND EXPLOSION HAZARDS				OTHER PRECAUTIONS
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	ued on reverse side)		Form OSHA-2 Rev. May 72	PAGE (2) GPO # 20.540 Figure 1 Form C Rev. May
(DoL, 1972)				
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MSDSs under HazCom 1983/1994 OSHA Form 174 Section VI—Health Hazard Data Health Hazards (Acute and Chronic) gnature of Preparer (optional) Section II—Hazardous Ingredients/Identity Information OSHA PEL ACGIH TLV Recommended % (optional) Hazardous Components (Specific Chemical Identity, Common Name(s)) Signs and Symptoms of Exposure Generally Aggravated by Exposu Emergency and First Aid Procedure Section VII—Precautions for Safe Handling and Use Section III—Physical/Chemical Characteristics Specific Gravity (H₂0 = 1 Vapor Pressure (mm Hg) Precautions to Be Taken in Handling and Storin Evaporation Rate (Butyl Acetate = 1 Vapor Density (AIR = Solubility in Water Appearance and O Section IV—Fire and Explosion Hazard Data Extinguishing Media Ventilation Local Exhaust Special Fire Fighting Procedures Mechanical (General Unusual Fire and Explosion Hazards Other Protective Clothing or Equipment Work/Hygienic Practices OSHA 174 Sept. 1985 (Reproduce locally) (OSHA, 1985) Occupational Safety and Health Administration, US Department of Labor Created by: Employees in manufacturing workplaces in SIC codes 20 through 39 (later extended) **Created for:** Proposed March 1982, adopted November 1983, revised September 1985 Dates: **Applicable regulation(s):** 29 CFR §1910.1200 (1983, 1994) Requirement: Non-mandatory form Chemical manufacturers and importers For preparation by: Eight main sections, distributed over two pages: Format: Manufacturer Information Hazardous Ingredients/Identity Information Physical/Chemical Characteristics Fire and Explosion Hazard Data Reactivity Data Health Hazard Data Precautions for Safe Handling and Use **Control Measures** Expanded health hazard data section; consolidated previous "Spill or Leak **Notable changes:** Procedures" and "Special Precautions" sections; marked % composition optional; added fields for other recommended exposure limits, date of preparation, and optional signature of preparer; otherwise maintained much of Form OSHA-20

SDSs under HazCom 2012 29 CFR §1910.1200 Appendix D Initial boiling point and boiling range g) Flash point; Describe any hazards not otherwise classified that have been identified during the (h) Evaporation rate; classification process:) Flammability (solid, gas); (d) Where an ingredient with unknown acute toxicity is used in a mixture at a Upper/lower flammability or explosive limits; oncentration ≥1% and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute Vapor pressure; (I) Vapor density; Except as provided for in paragraph (i) of §1910.1200 on trade secrets: (m) Relative density; . Composition/information on ingredients n) Solubility(ies); (o) Partition coefficient: n-octanol/water a) Chemical name; (p) Auto-ignition temperature; Common name and synonyms; (q) Decomposition temperature CAS number and other unique identifiers (r) Viscosity. f) Impurities and stabilizing additives which are themselves classified and which 10. Stability and reactivity (a) Reactivity; ontribute to the classification of the substance (b) Chemical stability; (c) Possibility of hazardous reactions: n addition to the information required for substances: (a) The chemical name and concentration (exact percentage) or concentration ranges d) Conditions to avoid (e.g., static discharge, shock, or vibration); (e) Incompatible materials: of all ingredients which are classified as health hazards in accordance with paragraph (d) of §1910.1200 and Hazardous decomposition produc Description of the various toxicological (health) effects and the available data used to Are present above their cut-off/concentration limits; or 11. Toxicological information identify those effects, including Present a health risk below the cut-off/concentration limits (a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye (b) The concentration (exact percentage) shall be specified unless a trade secret claim is made in accordance with paragraph (i) of §1910.1200, when there is batch-to-batch Symptoms related to the physical, chemical and toxicological characteristics; variability in the production of a mixture, or for a group of substantially similar mixtures Delayed and immediate effects and also chronic effects from short- and long-term (See A.0.5.1.2) with similar chemical composition. In these cases, concentration ranges may be used. For All Chemicals Where a Trade Secret is Claimed (d) Numerical measures of toxicity (such as acute toxicity estimates) statement that the specific chemical identity and/or exact percentage (concentration) of Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest omposition has been withheld as a trade secret is required. edition), or by OSHA. 4. First-aid measures (a) Description of necessary measures, subdivided according to the different routes of 12. Ecological information (Non-mandatory) (a) Ecotoxicity (aquatic and terrestrial, where available); exposure, i.e., inhalation, skin and eye contact, and ingestion (b) Most important symptoms/effects, acute and delayed Persistence and degradability (c) Indication of immediate medical attention and special treatment needed, i Bioaccumulative potential Other adverse effects (such as hazardous to the ozone layer) 5. Fire-fighting measures (a) Suitable (and unsuitable) extinguishing media. (b) Specific hazards arising from the chemical (e.g., nature of any hazardous Disposal considerations (Non-mandatory escription of waste residues and information on their safe handling and methods of isposal, including the disposal of any contaminated packaging Special protective equipment and precautions for fire-fighters 14. Transport information (Non-mandatory) UN proper shipping name Accidental release measures Personal precautions, protective equipment, and emergency procedures Transport hazard class(es Methods and materials for containment and cleaning up. Packing group, if applicable; 7. Handling and storage Precautions for safe handling Environmental hazards (e.g., Marine pollutant (Yes/No)); Conditions for safe storage, including any incompatibilities 8. Exposure controls/personal protection) OSHA permissible exposure limit (PEL), American Conference of Governmenta dustrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure Special precautions which a user needs to be aware of, or needs to comply with mit used or recommended by the chemical manufacturer, importer, or employer onnection with transport or conveyance either within or outside their premises. Regulatory information (Non-mandatory) Safety, health and environmental regulations specific for the product in question 16. Other information, including date of preparation or last The date of preparation of the SDS or the last change to it. Appropriate engineering controls. c) Individual protection measures, such as personal protective equipment. (OSHA, 2012) Occupational Safety and Health Administration, US Department of Labor; from the **Created by:** United Nations' Globally Harmonized System of Classification and Labeling of Chemicals Employees in all OSHA-covered workplaces subject to 29 CFR §1910.1200 **Created for:** Proposed September 2009, adopted March 2012 Dates: **Applicable regulation(s):** 29 CFR §1910.1200 (2012) Mandatory headings and subheadings, except for Sections 12 through 15 **Requirement:** Chemical manufacturers and importers For preparation by: Identification Format: Hazard(s) Identification Composition/Information on Ingredients First-Aid Measures Fire-Fighting Measures **Accidental Release Measures** Handling and Storage **Exposure Controls/personal Protection** Physical and Chemical Properties Stability and Reactivity **Toxicological Information Ecological Information (Non-Mandatory)** Disposal Considerations (Non-Mandatory) **Transport Information (Non-Mandatory)** Regulatory Information (Non-Mandatory) Other Information, Including Date of Preparation or Last Revision

Mandated specific headings and subheadings; mandated disclosure of concentrations

(exact percentages) of ingredients classified as health hazards; added non-mandatory

ecological, disposal, and transport sections

Notable changes:

References

US Department of Labor (DoL). (1972). Material Safety Data Sheet, Form OSHA-20, OMB No. 44-R1387. May. | Occupational Safety and Health Administration (OSHA), US Department of Labor. (1985). Material Safety Data Sheet, Form OSHA 174, OMB No. 1218-0072. | Occupational Safety and Health Administration (OSHA), US Department of Labor. (2012). Table D.1—Minimum Information on an SDS. 29 CFR §1910.1200, Appendix D. Available at https://www.osha.gov/hazcom/appendix-d.