

Safety Data Sheets : Are you sure ?

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Dordrecht - May 2022



Introduction & Goals

Safety Data Sheets (SDS) are the **passport** of a chemical substance

- Whether it is a raw material, an intermediate or a finished product.
- Applies for instance to solvents, cleaning agents, aerosols, lubricants, powders, ...

Goals of this talk :

- Draw your attention to some **classical issues with SDS authoring, usage and management**
- Highlight the importance of **using them with care** & your responsibility to provide them right (compliant)



SDS Legislation

- Pieces of such legislation are pretty old but really levelled off in the 50s
- More recently Europe has ‘shown the way’ with the introduction of the **REACH regulation** («Registration, Evaluation, Authorisation and Restriction of Chemicals») in 2007.
- Despite all these frameworks – which have led to very significant improvements over the past 20 years – **the reality on the ground in SDS remains worrying.**
- In a study completed by the European Chemical Agency in 2019 it was found that: "**44% of hazardous mixtures were not compliant with classification and labelling obligations**" [1]

1308971 - Epsom Salt with baking Soda and Peppermint Revision Date 22-Jan-2016

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Protect from moisture. Store locked up. Store away from other materials.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/face protection No special protective equipment required.

Skin and body protection No special protective equipment required.

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Hygiene Measures Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Property	Values	Remarks	Method
Physical state	Crystalline, Solid		
Appearance	White	Odor	Mint-like
Color	No information available	Odor Threshold	No information available
pH	No data available		
Melting / freezing point	No data available		
Boiling point / boiling range	No data available		
Flash Point	No data available		
Evaporation Rate	No data available		
Flammability (solid, gas)	No data available		



Example #1 : Warm-up

- Find the mistake below :

SECTION 9: Physical and chemical properties		
9.1. Information on basic physical and chemical properties		
Appearance:		
Physical state		Liquid
Colour		light yellow
Odour		characteristic
boiling point in °C at 101,3 kPa		200
Flash point (°C)		64 Method DIN 53213
Water solubility (g/L)		partially soluble
Minimum ignition temperature of a dust cloud:		275
9.2. Other information:		
Bulk density		
Drop point/drop range at °C:		
No data available		

Answer :

A Minimum Ignition Temperature (of a dust cloud) is odd for a liquid !

Example #2 : For the German-speakers

- Find the mistake below :

Answer :

Bottom part says “This product can explode” while the **H204 Fire, splinters, explosives and projectiles hazard** phrase says the contrary

2.1. Einstufung des Stoffs oder Gemischs

Gefahr durch Feuer (Unterklasse 1.4), H204

Risikogruppe 1.4S, Kategorie: P1

UN-Nummer: 0432. Nicht verpacktes Produkt, siehe Abschnitt 14.

Reizt die Augen (Kategorie 2), H319

Schädliche Langzeiteffekte für wasserlebende Organismen (Kategorie Chronisch 3), H412

2.2. Kennzeichnungselemente

Gefahrenpiktogramm



Signalwort

Achtung

Gefahrenhinweise

H204

Gefahr durch Feuer

Sicherheitshinweisen

P210

Von Hitze, heißen Oberflächen, Funken, offenen Flammen und anderen Zündquellen fernhalten.

Nicht rauchen

P234

Nur in Originalverpackung aufbewahren

Bitte beachten: Die obigen Signalwörter und Gefahrenhinweise wurden auf reduziert die aktuelle maximale Gefährdung, die das Produkt verursachen kann, falls zusätzlich Informationen werden benötigt, bitte kontaktieren Sie uns Dies gilt für die Abschnitte 2.1 und 2.2.

Dieses Produkt kann nicht explodieren oder Projektionsgefahr verursachen.

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Example #3 : Multiple SDS, same product

- The analysis of P. Amyotte reproduced there on 12 SDSs of the same substance - namely polyethylene - is a revealing example: **40% of the sample of SDS's analysed do not contain any mention of the danger of explosion of this powder when dispersed as a cloud**, one mentions it but not in the correct section relating to hazards; none of the SDSs reviewed contain information on polyethylene explosivity data.
- However, these data have obviously been **known for many years** - they are usually measured in specialized laboratories such as those of DEKRA.
- It was an explosion of polyethylene dust, accumulated in the false ceiling and then resuspended, that destroyed completely the **West Pharma plant (USA) in 2003 killing 6 employees**.

Table 13.8 Review of Polyethylene MSDSs According to CSB Criteria

MSDS No.	Hazard Stated Explicitly?	In Hazard Information Section?	Hazard Warning Repeated?	Dust Explosibility Data?	Reference to NFPA Standard?	Warning against Accumulation?
1	yes	yes	yes	no	yes	yes
2	no	no	no	no	no	no
3	no	no	no	no	no	no
4	yes	yes	yes	no	no	yes
5	yes	yes	yes	no	no	yes
6	yes	yes	yes	no	yes	yes
7	yes	no	no	no	yes	yes
8	yes	yes	yes	no	no	yes
9	no	no	no	no	no	no
10	yes	yes	yes	no	yes	no
11	no	no	no	no	no	no
12	no	no	no	no	no	no

Source: P. Amyotte, R. Domaratzki, M. Lindsay, and F. Khan, "The Role of Material Safety Data Sheets in Dust Explosion Prevention and Mitigation," to be presented at 13th International Symposium on Loss Prevention and Safety Promotion in the Process Industries (Brugge, Belgium, 2010).

Example #4 : Special Dordrecht

- Usually, Dutch people speak good English ... **but not always**

<p>KUMHO PETROCHEMICAL</p> <p style="text-align: center;">SAFETY DATA SHEET</p>	<p>Product : ASA XC-500A Issue date : 2010.03.03 Rev. date : 2018.07.19</p>
<p>D. Ingestion :</p> <ul style="list-style-type: none"> - Rinse mouth with water. - Give large amounts of water. - Toxic by ingestion does not high. - If irritation or symptoms occurs, get a doctor's examination. 	
<p>E. Delay and immediate effects and also chronic effects from short and long term exposure :</p> <ul style="list-style-type: none"> - Steams by plastic processing at high temperature may cause eyes and respiratory irritation. 	
<p>F. Notice to Physician :</p> <ul style="list-style-type: none"> - Treatment may vary with condition of victim and specifics of incident. 	
<p>5. FIRE FIGHTING MEASURE</p> <p>A. Suitable (Unsuitable) extinguishing media :</p> <ul style="list-style-type: none"> - Extinguishing media : Carbon Dioxide, Dry Chemical, Water. - Unsuitable Extinguishing media : Do not use direct water. - Big Fire : Water spray, regular foam <p>B. Specific hazards arising from the chemical</p> <ul style="list-style-type: none"> - Combustion : Carbon monoxide, Carbon dioxide, hydrogen cyanide - Levels of fire hazard : Not available 	



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Physical/Chemical Hazards:	May cause mechanical eye irritation. Companied lacrimation, ache or dimness of vision. Long-term exposure to concentrations may cause xerosis cutis for sensitivity constitution.
Special Hazards	None
Main Symptoms:	if inhalation of duct may cause irritation of nose, throat, and lungs, leading to shortness of breath, coughing and difficulty in breathing.
Potential Health Hazards	Long term exposure to airborne concentrations have no effect on lungs and no contact dermatitis allergy.
Cardinogenic	any component of this material is not listed among NTP, IARC, ACGIH or OSHA as cancerogenic.

SECTION 4: FIRST AID MEASURES

General advice:	No hazards which require special first aid measures
Inhalation:	Escort person to fresh air. If signs continue, get medical attention.
Skin contact:	Wash off with soap and water.
Eye contact:	Rinse with plenty of water for at least 15 minutes.
Ingestion:	No specific intervention is indicated. Consult a physician if necessary.
Important Symptoms:	Irritant effects.
Protection of first aiders:	No special precautions are necessary for first aid responders.
Warning to Physicians:	No special protective equipment required.
	No specific intervention is indicated.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media/Fire Fighting Procedures:	Use the following extinguishing media when fighting fires involving this material: water fog, foam, dry chemical, or carbon dioxide.
Unusual Hazard:	Normal precautions for dusts should be provided. Avoid high concentrations of dust in air.
Specific hazards:	None.
Special protective equipment for firefighters:	No special protective equipment required.
Further information:	The product itself does not burn.

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What can we do then ?

- **Be vigilant with SDS !**
 - Some are counterfeits
 - Become competent on SDS inconsistencies spotting
 - Eg look at the dates of revision
- **Defer to expertise & competence**
 - EU 2020/878 requires "**competent person**", ECHA guidance clarified it somehow
 - Requires multidisciplinary skills at **the interface of the sciences** of chemistry, physics, environment, toxicology, industrial hygiene, process safety, sustainable development ...
- **Focus some audits on SDS management / compliance** (HazCom standard in US terms)

2.5.1 Definition of a competent person

No specific definition of the "competent person" is given in the Regulation. However, the term may usefully be defined in this context as meaning a person (or combination of persons) – or a coordinator of a group of people - who has or have, as a result of their training, experience and continued education, sufficient knowledge for the compilation of the respective sections of the SDS or of the entire SDS.

The supplier of the SDS can delegate this function to his own staff or to third parties. It is not necessary that the expert knowledge be provided in full by one single competent person.

It is understood that a single person very rarely has extensive knowledge in all the fields covered by an SDS. It is thus necessary that the competent person rely upon additional competences, either internal or external. The competent person should ensure the consistency of the SDS, especially if he acts as the coordinator of a group of people.

Conclusion

- **Not all SDS are right** despite clear globally accepted regulatory requirements and texts
 - Remain vigilant
- By nature, SDSs contains regulatory safety data but it is not sufficient to cover process safety in depth :
 - **Process safety information is not SDS but much larger !**



About the speaker



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A passionate process safety professional with extensive chemical and pharmaceutical sector experience.

Experienced lecturer in a wide range of process safety subjects in the last 20 years. He has given over 100 process safety trainings worldwide (France, UK, Spain, Netherlands, India, China) in French, English and Spanish

He's currently VP Global Sales at DEKRA Corporate looking after key accounts of the process industries and international tenders and contracts in that sector.

DEKRA would be delighted to discuss further any SDS-related question