

# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Introduction

### Material Safety Data Sheet

#### Introduction

1. MATERIAL SAFETY DATA SHEET		
Product Name:		CAS #
Chemical Nature		
% Activity		

2. PHYSICAL DATA		
Boiling Point, 760 MM HG		Freeze Point
Specific Gravity		Vapor Pressure at 20 C
Vapor Density		Solubility in H <sub>2</sub> O
Per cent Volatiles By Weight		Ionic Nature
Appearance and Odor		

3. CHEMICAL INGREDIENTS		
INGREDIENT	%	TLV (Units)

4. FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower		Upper
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

5. Health Hazard Data		
Threshold Limit Value		
Effects of Exposure		
Symptoms and First Aid Procedures		

6. Reactive Data		
Stability	Conditions To Avoid	
Unstable	Stable	
Compatibility		
Hazardous Reconstitution Products		
Hazardous Polymerization	Conditions To Avoid	


7. Spill Or Leak Procedures	
Steps to be Taken, or Methods to be Used, or Solvents	
Waste Disposal Method	

8. Special Protection Information			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves		Eye Protection	
Other Protective Equipment			

9. Special Precautions	
Precautions Labeling	
Other Handling and Storage Conditions	

The United States Occupational Safety and Health Administration requires that companies that manufacture chemicals produce Material Data Safety Sheets (MSDS) to provide businesses, employees, and fire and police services with information about those materials. Each MSDS contains similar information specified for the related material. In this interactivity, click the **NEXT** and **PREV** buttons to learn more about the data found on MSDS.

The United States Occupational Safety and Health Administration requires that companies that manufacture chemicals produce Material Data Safety Sheets (MSDS) to provide businesses, employees, and fire and police services with information about those materials. Each MSDS contains similar information specified for the related material. In this interactivity, click the **NEXT** and **PREV** buttons to learn more about the data found on MSDS.



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# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Basic Information About the Material

#### Material Safety Data Sheet

#### Basic Information About the Material

1. MATERIAL SAFETY DATA SHEET			
Product Name		CAS #	
Chemical Nature			
% Activity			
2. PHYSICAL DATA			
Boiling Point, 760 mm Hg		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Isotopic Nature	
Appearance and Odor			
3. CHEMICAL INGREDIENTS			
PERCENT	X	TLV (Units)	
4. FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower	Upper	
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

5. Health Hazard Data			
Threshold Limit Value			
Effects of Exposure			
Symptoms and First Aid Procedures			
6. Reactive Data			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
7. Spill Or Leak Procedures			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
8. Special Protection Information			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves		Eye Protection	
Other Protective Equipment			
9. Special Precautions			
Precautionary Labeling			
Other Handling and Storage Conditions			

This area includes basic information about the materials including its name and chemical nature. In addition, this area includes Chemical Abstracts Service Registry Numbers (CAS numbers) established by the American Chemical Society.

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# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Physical Data

### Material Safety Data Sheet

#### Physical Data

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature			
% Activity			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 MM HG		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Toxic Nature	
Appearance and Odor			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	X	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume		Lower	Upper
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Symptoms and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves		Eye Protection	
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautions Labeling			
Other Handling and Storage Conditions			

This area includes data about the physical properties of the material include boiling point, freezing point, vapor pressure, solubility, specific gravity, and others.

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# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Chemical Ingredients

### Material Safety Data Sheet

#### Chemical Ingredients

1. MATERIAL SAFETY DATA SHEET		
Product Name:	CAS #:	
Chemical Nature		
% Activity		
2. PHYSICAL DATA		
Boiling Point, 760 MM HG		Freeze Point
Specific Gravity		Vapor Pressure at 20 C
Vapor Density		Solubility in H <sub>2</sub> O
Per cent Volatiles By Weight		Ionic Nature
Appearance and Odor		
3. CHEMICAL INGREDIENTS		
INTERNAL	X	TLV (Units)
4. FIRE AND EXPLOSION HAZARD DATA		
FLASH POINT (test method)	AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower	Upper
EXTINGUISHING MEDIUM		
SPECIAL FIRE FIGHTING PROCEDURES		
UNUSUAL FIRE AND EXPLOSION HAZARDS		

5. Health Hazard Data		
Threshold Limit Value		
Effects of Exposure		
Symptoms and First Aid Procedures		
6. Reactive Data		
Stability	Conditions To Avoid	
Unstable	Stable	
Compatibility		
Hazardous Reconstitution Products		
Hazardous Polymerization	Conditions To Avoid	
7. Spill Or Leak Procedures		
Steps to be Taken, or Material to be Released or Spilled		
Waste Disposal Method		
8. Special Protection Information		
Respiratory Protection		
Ventilation	Local Exhaust	Special
Protective Gloves		
Other Protective Equipment		
Eye Protection		
9. Special Precautions		
Precautions Labeling		
Other Handling and Storage Conditions		

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If the materials contains more than one substance, the data sheet requires that it lists all of the chemical ingredients.

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# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Fire and Explosion Hazard Data

### Material Safety Data Sheet

#### Fire and Explosion Hazard Data

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature			
% Activity			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 MM HG		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Ionic Nature	
Appearance and Odor			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	X	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower		Upper
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Symptoms and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves			
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautions Labeling			
Other Handling and Storage Conditions			

This area includes information about the ignition and flammability of the material.

This area includes information about the ignition and flammability of the material.

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## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Health Hazard Data

### Material Safety Data Sheet

#### Health Hazard Data

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature:			
% Activity:			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 MM HG		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Ionic Nature	
Appearance and Odor:			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	X	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower		Upper
EXTINGUISHING MEDIUM			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Emergency and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves			
Eye Protection			
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautionary Labeling			
Other Handling and Storage Conditions			

This area includes information about the hazards of the material as they relate to humans. Specific information in this section includes the lethal dosage, handling instructions, effects of exposure, and any related emergency and first aid procedures related to exposure.

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# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Reactive Data

Material Safety Data Sheet

### Reactive Data

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature			
% Activity			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 MM HG		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Isotopic Nature	
Appearance and Odor			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	X	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume		Lower	Upper
EXTINGUISHING MEDIUM			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Symptoms and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Social	
	Mechanical	Other	
Protective Gloves		Eye	Protection
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautions Labeling			
Other Handling and Storage Conditions			

This section includes information about how the material reacts with other chemicals, as well as its stability. It also includes information about any conditions to avoid with the material.

This section includes information about how the material reacts with other chemicals, as well as its stability. It also includes information about any conditions to avoid with the material.

# Introductory Module: Fundamentals of Science

## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Spill or Leak Procedures

Material Safety Data Sheet

### Spill or Leak Procedures

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature			
% Reactivity			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 mm Hg		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Toxic Nature	
Appearance and Odor			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	%	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		BOILING POINT TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower	Upper	
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Emergency and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability	Stable	Conditions To Avoid	
Unstable			
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken on Material Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves			
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautionary Labeling			
Other Handling and Storage Conditions			

This area includes information about spill or leak procedures, as well as information about disposing of the material in a safe manner.

This area includes information about spill or leak procedures, as well as information about disposing of the material in a safe manner.



# Introductory Module: Fundamentals of Science


## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Special Protection Information

### Material Safety Data Sheet

#### Special Protection Information

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature			
% Activity			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 MM HG		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Isotopic Nature	
Appearance and Odor			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	X	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume		Lower	Upper
EXTINGUISHING MEDIUM			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Symptoms and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves		Eye Protection	
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautions Labeling			
Other Handling and Storage Conditions			



This area includes information about any special precautions that need to be taken in relation to respiratory protection, appropriate ventilation, eye protection, and other protective equipment.

This area includes information about any special precautions that need to be taken in relation to respiratory protection, appropriate ventilation, eye protection, and other protective equipment.

# Introductory Module: Fundamentals of Science


## Topic 6 Content: Material Safety Data Sheet Presentation Notes

### Special Precautions

### Material Safety Data Sheet

#### Special Precautions

<b>1. MATERIAL SAFETY DATA SHEET</b>			
Product Name:		CAS #:	
Chemical Nature:			
% Activity:			
<b>2. PHYSICAL DATA</b>			
Boiling Point, 760 MM HG		Freeze Point	
Specific Gravity		Vapor Pressure at 20 C	
Vapor Density		Solubility in H <sub>2</sub> O	
Per cent Volatiles By Weight		Ionic Nature	
Appearance and Odor:			
<b>3. CHEMICAL INGREDIENTS</b>			
INTERNAL	X	TLV (Units)	
<b>4. FIRE AND EXPLOSION HAZARD DATA</b>			
FLASH POINT (test method)		AUTOIGNITION TEMPERATURE	
FLAMMABLE LIMITS IN AIR, % by volume	Lower		Upper
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
<b>5. Health Hazard Data</b>			
Threshold Limit Value			
Effects of Exposure			
Symptoms and First Aid Procedures			
<b>6. Reactive Data</b>			
Stability		Conditions To Avoid	
Unstable	Stable		
Compatibility			
Hazardous Reconstitution Products			
Hazardous Polymerization		Conditions To Avoid	
<b>7. Spill Or Leak Procedures</b>			
Steps to be Taken, or Material to be Released or Spilled			
Waste Disposal Method			
<b>8. Special Protection Information</b>			
Respiratory Protection			
Ventilation	Local Exhaust	Special	
	Mechanical	Other	
Protective Gloves		Eye Protection	
Other Protective Equipment			
<b>9. Special Precautions</b>			
Precautions Labeling			
Other Handling and Storage Conditions			



This area includes information about any other precautions, as well as storage, labeling, and handling information.

This area includes information about any other precautions, as well as storage, labeling, and handling information.