

Module 4:

Preparing the goods – Unusual loads



Start Module



Learning objectives

At the end of 'Module 4: Preparing the goods – Unusual loads' you will be able to:

1

Identify the classes of dangerous goods

2

Describe the labelling and segregation requirements for dangerous goods



3

List the types of PPE commonly used when preparing loads

4

Describe the preparation requirements for common unusual loads

5

Match common unusual load types to appropriate vehicles

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Unusual loads

Previous module

How to prepare standard loads for loading

This module

How to prepare common unusual loads



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment



Always refer to the **Load Restraint Guide** for information and guidance on load preparation specific to your task and load type.






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What are dangerous goods?

Substances with hazardous properties, which have the potential to cause **harm** to:

-  **Dangerous goods**
-  Cylindrical loads
-  Long loads
-  Flat loads
-  Contained loads
-  Large loads
-  Vehicles, mobile equipment



Come in the form of **gases, liquids or solids**

May be **explosive, combustible, flammable, toxic, corrosive, radioactive or infectious**

Potential to cause:

Immediate harm

Long term harm:



You may **handle** dangerous goods in a **range of situations** during the storage and transport of goods. You must **identify** dangerous goods each time you **handle** goods and **load** or **unload** goods.

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What are the dangerous goods classes?

Dangerous goods are grouped into different '**classes**'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.

[Class 1](#)[Class 2](#)[Class 3](#)[Class 4](#)[Class 5](#)[Class 6](#)[Class 7](#)[Class 8](#)[Class 9](#)[Replay](#) [Prev](#) Page

What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes' Represented by a distinctive **diamond shaped label**

Click each class to find out more.

- Class 1
- Class 2
- Class 3
- Class 4
- Class 5
- Class 6
- Class 7
- Class 8
- Class 9



1.1
Explosives with a mass explosion hazard



1.2
Explosives with a projectile or fragmentation hazard



1.3
Explosives with a fire hazard and either a minor blast hazard or minor projection hazard or both



1.4
Explosives which present no significant hazard



1.5
Explosives with a mass explosion hazard that are also very insensitive



1.6
Explosives with no mass explosion hazard that are also extremely insensitive



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.



2.1
Flammable gas that can
ignite in air and cause a
fire and explosion
hazard



2.2
Non-flammable,
non-toxic gas that may
cause asphyxiation in
confined spaces



2.3
Toxic gas that may
cause death or injury
when inhaled



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.



3

Liquids or mixtures of liquids and solids which produce vapour that can be ignited in air on contact with a suitable ignition source



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.

Class 1 ✓

Class 2 ✓

Class 3 ✓

Class 4 ✓

Class 5 ✓

Class 6 ✓

Class 7 ✓

Class 8 ✓

Class 9 ✓



4.1

Substances that are easily ignited and may cause fire through friction heat or other ignition sources



4.2

Substances that are liable to spontaneously heat up and ignite under normal transport conditions or in contact with air



4.3

Substances that in contact with water emit flammable or toxic gases

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What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.



5.1

Substances that are not necessarily combustible but may create oxygen which then causes or contributes to the combustion of other materials



5.2

Substances that are thermally unstable and likely to react dangerously with other substances



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.



6.1

Substances liable to either cause death, serious injury or harm human health if swallowed, inhaled or absorbed through the skin



6.2

Substances that are known or reasonably expected to contain pathogens



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.

- Class 1 ✓
- Class 2 ✓
- Class 3 ✓
- Class 4 ✓
- Class 5 ✓
- Class 6 ✓
- Class 7 ✓**
- Class 8 ✓
- Class 9 ✓



7

Radioactive materials includes substances (either solid or liquid) that spontaneously emit ionising radiation.

Substances are categorised into Category 1, 2 or 3, depending on the radiation level of the transport package, with level 1 representing the lowest level of radiation.



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.



8
Solids or liquids that will
cause severe damage to
living tissue, steel or other
materials on contact



What are the dangerous goods classes?

Dangerous goods are grouped into different 'classes'  Represented by a distinctive **diamond shaped label**

Click each class to find out more.



9

Those that present a danger during transport but are not covered by the other classes




Mixed Class Label

Used on transport vehicles that are transporting more than one class of dangerous goods. This is an alternative to displaying the labels for each type of dangerous good being carried.



Dangerous goods labels

All dangerous goods must provide **specific information** on the label.

AMMONIA ANHYDROUS		
UN No.	1005	
HAZCHEM	2RE	MSDS 115526
IN EMERGENCY DIAL 000 POLICE OR FIRE BRIGADE		SPECIALIST ADVICE CHEM SUPPLY PTY LTD PH: 07 1234 5678:
FIRST AID Obtain medical attention. Use artificial respiration if necessary. Do not induce vomiting.		
RISK PHRASES R26/28 Very toxic by inhalation/ if swallowed R35 Causes severe burns		SAFETY PHRASES S23 Do not breath gas or spray S24/25 Avoid contact with skin and eyes:

(Example for illustrative purposes)

Other information:

- Ingredients and formulation details
- Directions for use
- Expiry date



Material Safety Data Sheets (MSDS)

A document prepared by the **manufacturer** or **supplier** of a dangerous good that describes the **properties** and **uses** of a particular dangerous good

A **legal requirement** under the Work Health and Safety legislation

It is important that **everyone** in the workplace knows how to **locate**, **read** and **interpret** an MSDS

- | | | |
|--|-------------------------------------|-----------------------------|
| 1. Identification of the material/supplier | 6. Accidental release measures | 11. Toxicology information |
| 2. Hazard identification | 7. Handling and storage | 12. Ecological information |
| 3. Composition/information on ingredients | 8. Exposure controls and PPE | 13. Disposal considerations |
| 4. First aid measures | 9. Physical and chemical properties | 14. Transport information |
| 5. Fire fighting measures | 10. Stability and reactivity | 15. Regulatory information |
| | | 16. Other information. |

You must ensure you **understand** the safety requirements within the MSDS for **each** dangerous good you are handling

The MSDS should be **readily available** to you and if you cannot locate it easily, **ask your supervisor**



[Sample MSDS for Ammonia Anhydrous](#)



Segregation of dangerous goods

It is important to understand the dangerous goods **segregation rules**



Minimise the risk of **incompatible** dangerous goods **reacting** dangerously if they come into **contact** with each other



Prevent **food products** from being **contaminated** by dangerous substances



Segregation of placard loads

Dangerous goods must be segregated once their quantity reaches a 'placard load'.

A placard load refers to:

Any dangerous goods in a receptacle with a capacity of >500 L or mass of > 500 kg



Any load that has a combined total of >1000 kg/L of dangerous goods

A combined total of >250 kg/L

Any quantity



[Part 5 - ADG Code](#)

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Segregation rules

Class	1	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6	7 (7)	8	9	Food	Fire-risk or combustible
1 Explosives	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
2.1 Flammable gas	(1)	0	0	0	0	N	N	N	N	N	0	N	0	0	0	0
2.2 Non-flammable non-toxic gas	(1)	0	0	0	0	0	N	0	0	N	0	0	0	0	0	0
2.3 Toxic gas	(1)	0	0	0	N	0	N	0	N	N	0	0	0	0	N	0
3 Flammable liquids	(1)	0	0	N	0	0	N	0	N	N	0	N	0	0	0	0
4.1 Flammable solids	(1)	N	0	0	0	0	N	0	N	N	0	N	0	0	0	0
4.2 Spontaneously combustible	(1)	N	N	N	N	N	0	0	N	N	0	N	0	0	0	0
4.3 Dangerous when wet	(1)	N	0	0	0	0	0	0	N	N	0	N	N	0	0	0
5.1 Oxidizing substances	(1)	N	0	N	N	N	N	N	0	N	0	N	N	0	0	N
5.2 Organic peroxides	(1)	N	N	N	N	N	N	N	N	0	0	N	N	0	0	N
6 Toxic/ infectious substances	(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	N	0
7 Radioactive material (7)	(1)	N	0	0	N	N	N	N	N	N	0	0	N	0	N	0
8 Corrosive substances	(1)	0	0	0	0	0	0	N	N	N	0	N	0	0	N	0
9 Miscellaneous dangerous goods	(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Incompatible
N

Compatible
0

Exception
(No.)



[Part 9 – Australian Dangerous Goods Code](#)

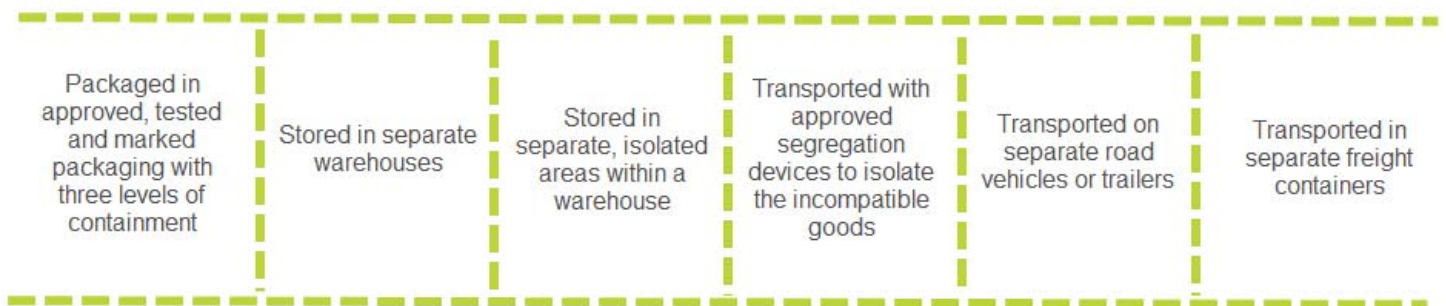
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Segregation methods

Specific rules around what **method** of segregation is appropriate for different incompatible dangerous goods



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Personal Protective Equipment (PPE)

Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



Personal Protective Equipment (PPE)

Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



- Variety of safety gloves that can be used to **protect** your **hands** from **hazards**:
 - Cuts, punctures, burns and chemicals
- Select the glove that best fits the **job** and the type of **goods**
- Always **inspect** gloves for any damage
- Should be stored in a **clean, dry** location

Personal Protective Equipment (PPE)

Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



- Protects the head from injury
- **Hardhats:**
 - Protect your head **falling** or **flying** objects or **impact** with other objects
- **Bump caps:**
 - Lightweight hardhat, designed only to protect you from **bumping your head** on protruding objects
- Always **inspect** your hardhat or bump cap before use
- **Replace** it if it has any hairline cracks or if it has been struck by a forceful object



Personal Protective Equipment (PPE)

Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



- Protects the eyes from flying **particles**, **chemicals**, **liquids** and **UV** radiation
- Safety glasses should:
 - provide appropriate protection against the **particular hazard** you are exposed to
 - be **comfortable**
 - **not interfere** with your vision.

Personal Protective Equipment (PPE)

Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



- Helps to protect your **toes** and **feet** from being:
 - **crushed** by falling or rolling objects of intermediate weight
 - **punctured** by sharp objects
 - **lacerated** by unguarded equipment
 - **burned** by materials of extreme heat or cold
- Ensure your safety footwear is:
 - **appropriate** for your task
 - fits your foot **snugly**
 - is well **maintained**



Personal Protective Equipment (PPE)

Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



- Worn to ensure you are **visible** and **noticed**
- The vests and clothing are usually:
 - made from a **bright, fluorescent** material and/or
 - incorporate **reflective stripes**

Personal Protective Equipment (PPE)

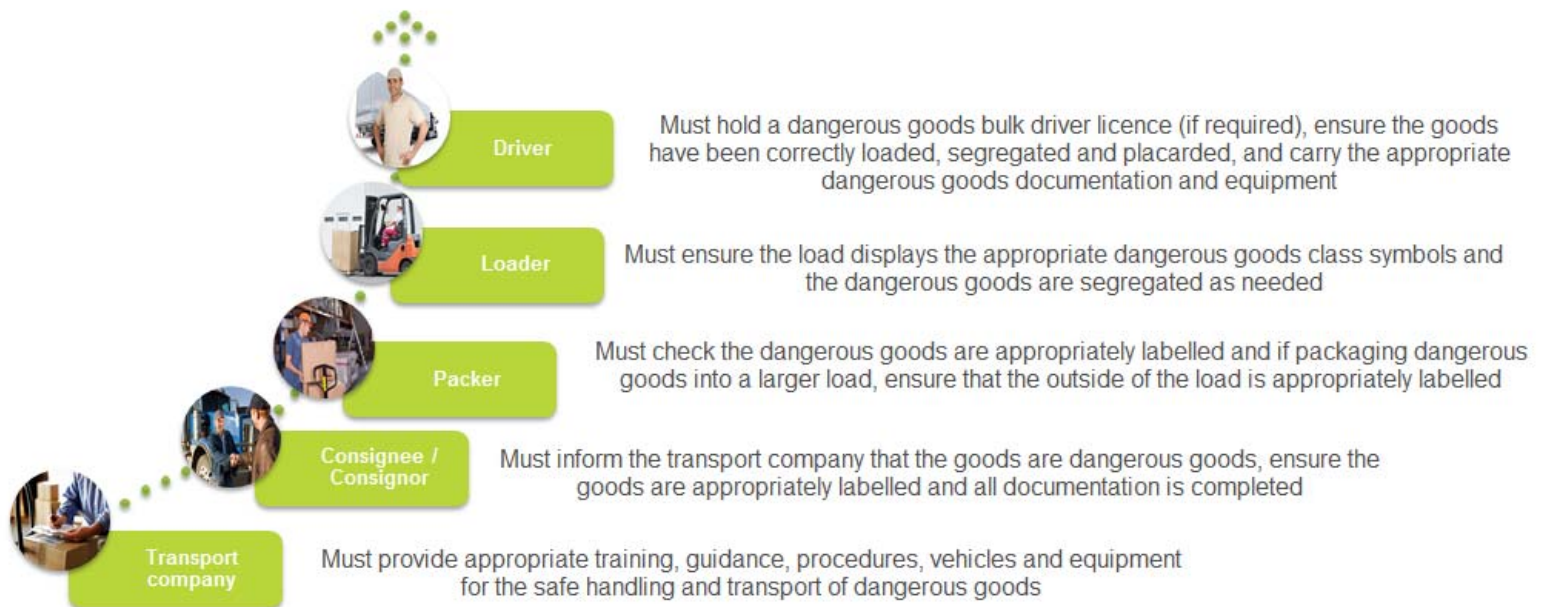
Must be used when preparing both **standard** and **unusual** loads (as needed)
Especially important when you are working with **dangerous goods**

Click each type of PPE to find out more.



- Used in environments where you are exposed to **high noise levels**
- Common types:
 - **ear plugs**, which sit inside the ear canal
 - **ear muffs**, which cover the ears from the outside.
- If you are working in an excessively loud area, hearing protection is necessary to **prevent noise induced hearing loss**
- Remember:
 - hearing protection may **reduce** your ability to **hear two-way radios, colleagues** or **machines** nearby

Who is responsible for dangerous goods?



Preparing cylindrical loads

Can include rolls, reels, coils and drums All **cylindrical** in shape

Can be transported either on their **side** or on their **end**



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment



Large cylinders

Often loaded and restrained **individually**



Do not require substantial preparation

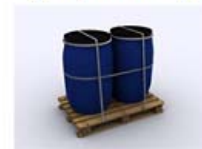


Small cylinders

Often **unitised** and **palletised**



Banding, strapping and wrapping methods










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Preparing long loads

Can include a range of goods such as pipes, tubes, rods, bars and logs

-  Dangerous goods
-  Cylindrical loads
-  Long loads
-  Flat loads
-  Contained loads
-  Large loads
-  Vehicles, mobile equipment

Smooth surfaces

- Unitised using the **banding** method
- Additional restraint methods will be required
 - Avoid spearing

- Strap them to **dunnage**
- Dunnage is **between** the **items** of the load or **between the base** of the load and the **surface** of the vehicle's loading deck

Non-smooth surfaces

- Unitised using belly strapping or belly wrapping
- Strap the load to dunnage to prevent side shifting

Flexible

- Loose or packaged using banding, strapping or wrapping

Extra Long

- Prepared in line with the Oversize & Overmass Regulations 2006

Log timber

- Specialised, purpose built vehicles

- Loop the banding or lashing over the top of the load



Preparing flat loads

Can include goods such as sheet, plate, stacked empty pallets and similar flat items



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment

Sheets and flat plate



- Do not usually require preparation as the key tasks are related to **loading** and **restraining** the load
- Sheets of **plywood** or building **boards** can be prepared by **unitising** them into packs

Empty pallets



- **Pre-stacking** them into stacks of no more than **15 pallets high**

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Preparing contained loads

Click each type of load to find out more.



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment

Freight container



Loose bulk loads



Live loads



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Preparing contained loads

Click each type of load to find out more.

Freight container



Loose bulk loads



Live loads



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment

- Ensure the stability of the vehicle is protected:
 - Arranging the goods so that the weight is **evenly distributed** over the area of the container
 - Placing light goods **on top** of heavy goods
- Uneven weight distribution:
 - Marked with a **centre of mass** cargo symbol
- Not full:



CENTRE OF MASS

- Load must be **restrained within** the container

- Make sure you are using the **correct** container

CSQU3054383

Owner/operator	Serial No.	Equipment category	Check digit
----------------	------------	--------------------	-------------

- Pre-loaded by the consignor?
- Provide an accurate **Container Weight Declaration, Packing and Weight List and Packing Declaration**

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Preparing contained loads

Click each type of load to find out more.



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment

Freight container



Loose bulk loads



Live loads



Can include:



Generally carried loose in **specialised** vehicles

Covered **later** in the course



Preparing contained loads

Click each type of load to find out more.

Freight container



Loose bulk loads



Live loads



Include any load that is expected to **move during transportation**:



Generally transported in **specialised** vehicles

Covered **later** in the course



Dangerous goods



Cylindrical loads



Long loads



Flat loads



Contained loads



Large loads



Vehicles, mobile equipment

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Preparing large and vehicles and mobile equipment loads

-  Dangerous goods
-  Cylindrical loads
-  Long loads
-  Flat loads
-  Contained loads
-  Large loads
-  Vehicles, mobile equipment

Can include a range of **large** items:



Can include a range of **mobile equipment**:



Generally restrained **individually**

Covered in more detail **later** in this course



Selecting the right vehicle for the load

Select the right vehicle for the load

Here are some **examples** of **unusual load types** and **appropriate vehicles**

Cylindrical loads



Skeletal semi-trailer / flatbed trailer

Flat loads



Long loads



Skeletal semi-trailer

Large loads



Skeletal semi-trailer / sidelifter

Large equipment



Drop-deck trailer /
low loader

Loose bulk



Open vehicle

Livestock



Livestock trailer

Hanging meat



Refrigerated truck

Bulk liquids



Tanker

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Summary

Congratulations! You have now completed 'Module 4: Preparing the goods – Unusual loads'.

You should now be able to:

-  List the classes of dangerous goods
-  Describe the labelling and segregation requirements for dangerous goods
-  List the types of PPE commonly used when preparing loads
-  Describe the preparation requirements for common unusual loads
-  Match common unusual load types to appropriate vehicles



You can now return to the home page and move on to the next module which will look at how to load standard loads.

