

# **Storage & Handling of Fuel**

## **Volunteers**

# Table of Contents

|                                                   |           |
|---------------------------------------------------|-----------|
| <b>Purpose of the Document</b>                    | <b>3</b>  |
| <b>Key Terms</b>                                  | <b>3</b>  |
| <b>Storage and Containment</b>                    | <b>4</b>  |
| <b>Secondary Containment</b>                      | <b>5</b>  |
| <b>Approved Containers</b>                        | <b>5</b>  |
| <b>Precautionary Measures</b>                     | <b>6</b>  |
| <b>Signage</b>                                    | <b>7</b>  |
| <b>Personal Protective Equipment (PPE)</b>        | <b>8</b>  |
| <b>Health and Safety information</b>              | <b>9</b>  |
| <b>Refuelling and defueling – Endurance Races</b> | <b>10</b> |
| <b>Refuelling and defueling – Sprint Races</b>    | <b>11</b> |
| <b>Refuelling and defueling – Rally</b>           | <b>11</b> |
| <b>Refuelling and defueling – ClubSport</b>       | <b>11</b> |
| <b>Safe Refuelling practices</b>                  | <b>12</b> |
| <b>Defueling</b>                                  | <b>12</b> |
| <b>Refuelling equipment</b>                       | <b>13</b> |
| <b>Be prepared for an emergency</b>               | <b>14</b> |
| <b>Fire extinguishers</b>                         | <b>15</b> |
| <b>Spills and leaks</b>                           | <b>16</b> |

# Purpose of the Document

**This guide is for motorsport volunteer Event Organisers, Officials, Competitors, and their Teams.**

- It provides information to people organising and managing events on a volunteer basis. It covers the safe handling and storage of motorsport fuels during sprint and endurance circuit race events, rally events and other events where the refuelling and storage of fuel is permitted.
- It explains how to control the risks associated with the storage and handling of fuel for those involved in the event, including spectators.
- This document should be read in conjunction with the WorkSafe document Storage and Handling of Fuel at Motorsport Events, for guidance.
- Track owners and those that organise events on a reward basis, thus creating a “Place of Work” with employees should adhere to the WorkSafe document in its entirety.
- Transporting of fuel is covered under the Land Transport Rule: Dangerous Goods 2005. The New Zealand Transport Agency website has information on how these rules apply to you.

## Key terms used in this guide

| TERM           | DEFINITION                                                                                                                                                                                                                                                      |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sprint race    | Motorsport competition where the cars are expected to complete the prescribed distance without needing to refuel. Refuelling during the race isn't allowed.                                                                                                     |
| Endurance Race | A motorsport competition of long duration where refuelling during the race is allowed.                                                                                                                                                                          |
| Rally events   | An event held on a closed, public road, consisting of a series of competitive stages alternated with touring stages. Rally events vary between 1 to 4 day events and can have up to 130 cars entered.                                                           |
| Pit area       | A pit area is the area occupied by one competing vehicle either in a permanent garage, temporary garaging or in the open. If two or more competing vehicles are occupying a common space the pit area refers to the space immediately surrounding each vehicle. |

### Other relevant reference material:

- Health and Safety at Work Act 2015 (HSWA)
- Health and Safety at Work (Hazardous Substances) Regulations 2017
- Hazardous Substances and New Organisms (HSNO) Act 1996

# Storage and Containment

Follow these key controls to keep everyone on site, including competitors, volunteers, officials, and spectators safe.

## *Store only what you need*

Competitors should keep the amount of fuel in both the pit area and fuel storage area to a **minimum**.

- At a sprint race, competitors should only be storing a maximum of 40 litres in their pit area. If the team has more than one car then the fuel should not be all stored in one location but a minimum of 3 metres apart for every 40 litres stored.
- During an endurance race, competitors should only store a maximum of 200 litres of fuel in their allocated pit area at one time.
- During a rally, competitors should only store enough fuel to refuel their car during one service.

Fuel, other than those outlined in the paragraphs above, must be stored in the designated fuel area .

It is the organisers responsibility to ensure that a designated fuel storage area is set up. This area must be secured from unauthorised access, should the fuel area be unattended.

At the end of each day any remaining fuel, not in the car, must be removed from the pit areas and stored in the designated fuel area overnight. If there is no designated fuel storage area set up it is the competitor’s responsibility to ensure the fuel is stored safely offsite overnight.

If you need a location compliance certificate, you will need to arrange a Compliance Certifier to visit the motorsport venue.

| QUANTITY   | COMPLIANCE CERTIFICATION REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 > 50 L   | ✗                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 50 > 200 L | You don’t need a location compliance certificate if the fuel is: <ul style="list-style-type: none"> <li>- Stored for less than 14 days</li> <li>- Stored in one or more secure containers, each of which has a capacity of less than 250 L; and complies with the relevant packaging requirements</li> <li>- Stored at least 15 m away from any protected place</li> <li>- Stored either in the open or in a well-ventilated building, and,</li> <li>- In a compound or other place where any spills will not endanger any building or flow into any stream, lake or natural water</li> </ul> |
| > 2000 L   | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## Secondary containment

A secondary containment system is a physical barrier or container that can hold the contents of fuel containers in case they spill or leak.

If your designated fuel storage area contains less than 2000 litres you don't require secondary containment if:

- The fuel is contained in a tank wagon or in secure containers
- Each individual container has a capacity of less than 250 litres
- Located so that any spillage will not endanger any building or flow into any stream, lake or natural water and is
- Stored for a continuous period of less than 14 days.

If you are storing over 2000 litres of fuel, you will need secondary containment. The amount of secondary containment you need depends on the location of your storage area and the size of your container. As a guide, refer to the chart below:

Minimum secondary containment capacity for hazardous substances with flammable classification.

| QUANTITY – TOTAL POOLING POTENTIAL (TPP) |                                                        |                                         |
|------------------------------------------|--------------------------------------------------------|-----------------------------------------|
| CONTAINER SIZE CATEGORIES                | LESS THAN 5,000 LITRES                                 | GREATER THAN OR EQUAL TO 5,000 LITRES   |
| ≤ 60 litres                              | At least 50% TPP                                       | 2,500 L or 25% TPP whichever is greater |
| > 60 and up to 450 litres                | At least 100% TPP                                      | 5,000 L or 50% TPP whichever is greater |
| > 450 litres                             | At least 110% of the capacity of the largest container |                                         |

Total Pooling Potential (TPP) in relation to a place, means the aggregate quantity of all pooling substances, in this case fuel, held in the place.

## Use an approved container

Competitors bringing or storing fuel at an event in containers that are 25 litres or less the containers must meet Australia New Zealand Standard AS/NZS 2906:2001 or ASTM F852:08 or a standard referred to in a safe work instrument. Some of these containers will have a LAB registration marked on them.

Check that your containers aren't damaged and have a sealing cap in good working order. They also must be correctly labelled to identify they contain fuel and that it is flammable.



**FIGURE 1:**  
Pictogram showing the flammable classification of fuel

If the container is larger than 25 litres such as steel containers or drums with the appropriate sealing cap they must have UN packing labelling and clearly labelled that they contain fuel and the potential hazards.

Oil drums are not suitable fuel storage containers.

# Precautionary Measures

## **Separate motorsport fuel from ignition sources.**

Ignition sources are anything that could ignite fuel vapours, eg. naked flames, running engines, grinders, welding, tools that may cause sparking or static electricity.

**There is a no smoking policy around all pit areas.** This needs to be relayed by signage to competitors, spectators officials and marshals.

## **Maintain Separation Distances**

Motorsport fuel must be stored:

- at least 6 metres away from other combustibles e.g. other fuels and other hazardous substances such as oxidisers, fertilisers and poisons
- at least 6 metres away from property boundaries
- at least 15 metres away from any area of regular habitation and high intensity land use. Examples include:
  - houses and sleepouts
  - Schools
  - staff accommodation
  - 'smoko' rooms
  - wooden buildings, packing sheds, cool storage or hay sheds
  - other hazardous chemical stores
  - roads or railways
- Positioned so any spilt fuel will not contaminate streams, lakes or waterways
- Positioned away from possible contact from vehicles in a collision
- In an open well-ventilated area

# Signage

Warning signs are vital for the safety of Officials, Marshals, Competitors, their teams, spectators and emergency services. You must have warning signs at your event if you store over:

- 250 litres of petrol
- 1,000 litres of diesel.

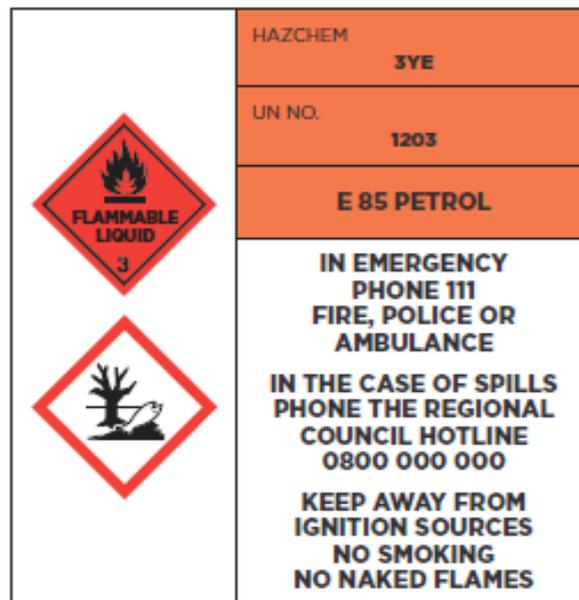
Signs must be displayed at eye level in all fuel store entrances, including vehicle access points. They must be close to the fuel store but not so close that people come across the fuel before being warned.

Signs must also be big enough so they can be read from 10 metres away. They must tell people, in plain English or pictograms:

- that the storage area contains hazardous substances
- the hazards of each product in the storage area
- the precautions needed to manage them safely
- what to do and who to contact in an emergency.

Even if you aren't required to have signage it is highly recommended that you have them.

An example of fuel signage which are available from most safety outlets



## Put a lid on it

Keep lids on your fuel containers when not in use. It stops flammable vapours from escaping and mitigates the risk of spillage.

# Wear the correct Personal Protective Equipment (PPE)

Marshalls, Officials, Crew and Volunteers working in the pitlane or service areas in the vicinity where refuelling or defueling is taking place should wear the correct PPE. People without the correct PPE should stay well clear of any fuelling operation.

Make sure the PPE is suitable.

It is recommended that competitors should not carry out refuelling or defueling while wearing the competition safety apparel they are using for the event. Fuel splashes and vapours that contaminate safety apparel will reduce the fire resistance and effectiveness of the garments.

The following PPE items are recommended when handling fuel:

- **Overalls** Fire resistant overalls or clothing made from non-flammable material such as those outlined under **Schedule A, Article 4.3** or as set out in the relevant Regulations for the event should be worn.
- **Gloves** Competitors, service crew members, marshals and officials should wear fire and fuel resistant gloves when working with fuel. This helps prevent burns and fuel coming into contact with the skin.
- **Footwear** Competitors, service crew members, marshals and officials should wear closed toe boots or shoes with fuel resistant soles.
- **Balaclavas** Crew members involved in refuelling vehicles during endurance races must wear balaclavas or full face helmets to reduce the exposure to fuel vapours and injuries from possible fires
- **Goggles** Competitors and crew members involved in refuelling should wear fuel resistant safety goggles or a full face crash helmet.

Remember that PPE is the least effective control measure - it should not be the first or only control measure used to manage risks from fuel.

PPE only works if it is used correctly. If the wrong sort is used or it does not fit correctly, it won't do its job. You must ensure it is kept clean, maintained, or repaired and replaced so it continues to be in good working order to minimise the risks to health and safety.

## Provide Health and Safety information

Persons involved with the motorsport event( organisers, officials, marshals, competitors, and service teams) must be provided with information, training and supervision to protect themselves from Health and Safety risks. This can be done via a safety briefing.

Those that are involved with working with or near the fuel and its storage areas need to understand the risks involved, how to mitigate those risks and what actions to take in an emergency.

In addition, those directly involved with the handling and storage of the fuel must have training in:

- The harm that fuel can cause and how to keep themselves safe
- How to safely dispense, store and dispose of fuel
- Where the information about how to safely handle and store the fuel is kept including where the Safety Data Sheets (SDS) are kept.
- The actions they need to take in an emergency, whether it is a fire, a fuel spill, or a medical emergency.
- Using a fire extinguisher and knowing where they are located on site.

### Supervised Experience

An induction or supervised experience, specific to your event will need to be provided. This will include risks to health and safety, how to use refuelling equipment etc. Even if they have been trained previously it is good practice to involve people who have been trained previously.

### Spectator safety

If spectators are expected or likely at your event you will need to provide sufficient signage and warnings advising them of the presence of fuel and the associated risks.

Warning signs should be prominently displayed at all entrances to the event where spectators may arrive.

A public address system should be available at the event to communicate with spectators in the case of a fuel emergency

# Refuelling and defueling

## Endurance Races

All refuelling will take place in the designated refuelling area or the pit paddock or as set out in the supplementary regulations for the event.

Only refuelling equipment approved in the relevant regulations for the event can be used for refuelling the vehicle.

There must be at least two people involved in the refuelling /defueling, one doing the refuelling and the other responsible for the fire extinguisher. This person should not be involved in the refuelling or any other activity.

Those involved in the refuelling /defueling should be wearing the appropriate PPE as good practice.

Competitors are advised not to refuel/defuel in their competition safety apparel to prevent contamination and exposure to vapours.

In all races where refuelling is necessary all refuelling will be carried out either in the refuelling bay provided or in the pit lane under conditions specified in the Supplementary Regulations.

The Organisers reserve the right to inspect and if necessary, approve refuelling equipment prior to it being used.

There will be maximum of 6 crew members in pitlane servicing the vehicle during refuelling to minimise the risk of injury This includes the two crew members involved in the refuelling but excludes the car controller

Crew members shall only service the vehicle while refuelling the vehicle has a drybreak refuelling system. If there is no drybreak system, no work will be carried out on the vehicle until refuelling has been completed.

Those involved in the refuelling process and those on the quarter of the vehicle where the refuelling is taking place will wear full Personal Protective Equipment (PPE) as outlined in section 4 of this document.

The refuelling crew will consist of 1 refueler, 1 fire marshal, with a fire extinguisher and one person in charge of operating the tap on the refuelling device, who is not included in the servicing crew number. These people will not be involved in any other activity during the refuelling process.

The vehicle's engine will be shut off during refuelling if the refuelling device isn't fitted with a drybreak system.

## **Sprint Races**

There will be no refuelling permitted in pitlane unless it is approved in the event's Supplementary Regulations. Should this be permitted, Endurance Race regulations will apply.

All refuelling will take place in the designated refuelling area or the pit garages /paddock, whichever is applicable.

The use of funnels and open vessels is not recommended, but where there is no other option precautions must be taken to prevent any spillage.

The vehicle's engine will be shut off until the refuelling is complete.

There must always be a fire extinguisher of the appropriate rating present whenever refuelling or defuelling.

There should be two people involved in the refuelling /defueling; one doing the refuelling and the other responsible for the fire extinguisher. The fire extinguisher person should not be involved in the refuelling.

Those involved in the refuelling /defueling should be wearing the appropriate PPE as good practice.

It is recommended that competitors do not refuel/defuel in their competition safety apparel to prevent contamination and exposure to vapours. Fuel splashes and vapours that contaminate safety apparel will reduce the fire resistance and effectiveness of the garments.

## **Rally**

Refuelling should be carried out in service parks or designated areas as outlined in the event's supplementary regulations.

There must be at least two people involved in the refuelling /defueling, one doing the refuelling and the other responsible for the fire extinguisher. This person should not be involved in the refuelling or any other activity.

The use of funnels and open vessels is not recommended, but where there is no other option precautions must be taken to prevent any spillage.

Those involved in the refuelling /defueling should be wearing the appropriate PPE as good practice.

It is recommended that competitors not refuel/defuel in their competition safety apparel to prevent contamination and exposure to vapours. Fuel splashes and vapours that

contaminate safety apparel will reduce the fire resistance and effectiveness of the garments.

## ClubSport

If refuelling/defueling is required it will be carried out in the pit area or garage away from activities.

Those involved in the refuelling/defueling should be wearing the appropriate PPE as good practice.

It is recommended that competitors not refuel/defuel in their competition safety apparel to prevent contamination and exposure to vapours. Fuel splashes and vapours that contaminate safety apparel will reduce the fire resistance and effectiveness of the garments.

## Safe Refuelling practices

Crew members involved in refuelling should always use a manual hand pump. These have a lower risk of spillage compared to funnels

Fuel should not be added or removed from a vehicle after it has left the designated refuelling area.

Marshals in charge of pitlane should:

- Check the vehicle's engine is switched off before allowing any refuelling to begin
- Check that anyone not involved in refuelling is at least 6 metres away from the refuelling area and
- Check no one is smoking in the pitlane or adjacent garages.
- When refuelling in pitlane, each team will have a fire marshal who is standing by with a fire extinguisher.
- Clean up all spills immediately if it is safe to do so.

## Defueling

We recommend crew members:

- Use a manual hand pump for defueling. If you are using an electric pump, check that it is intrinsically safe and suitable for use with fuel.
- Check and external manual pumps are earthed to prevent static electricity build up.
- During defueling, have a fire marshal with a fire extinguisher on standby. The fire marshal won't be involved with the defueling process.

# Refuelling Equipment

## Refuelling Towers

If you are using a refuelling tower (Figure 3), the tower should either be an approved FIA tower or be a Motorsport NZ approved system.

All parts of the tower (Including tank and stand) should be kept inside the pit garage or behind the pit working line area.

Towers will not:

- Hold more than 220 litres of fuel
- Be more than 2 metres in height from the pit bay floor. Only vents and fuel holding connections can be higher than 2 metres.

All towers will be fitted with a dead man handle valve, which is held open during refuelling. When pressure on the handle is released, it will close immediately and stop the flow of fuel.

Before competition, check all refuelling equipment to make sure it is safe working order. Check for leaks and makes sure all fittings are tight and sealed.

Secure your towers to minimise the risk of them falling over in an accident or emergency.

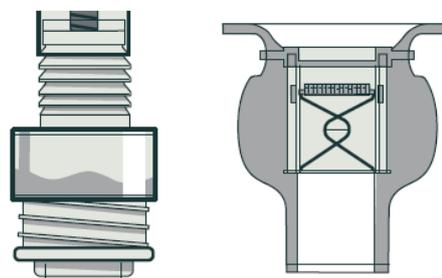
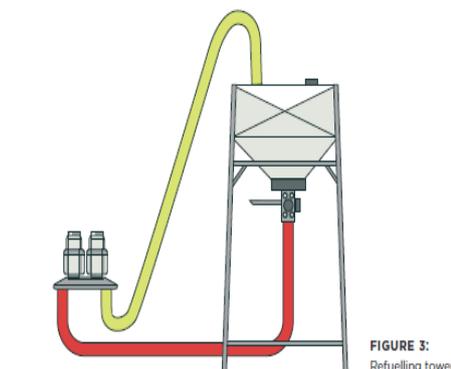
All refuelling equipment such as refuelling rigs, hoses and couplings shall be earthed at all times and meet MotorSport NZ or FIA standards.

## Vents

A “Siamese” filler vent (Figure 4) will be connected to a vent hose linked to the tower. The vent moves all displaced fuel from the vehicle’s tank to the ullage space in the reservoir of the tower.

The vent hose will:

- be made of rubber or a fuel resistant plastic
- be connected to the emergency cut off valve
- be at least 2.5 metres long
- be maximum of 50 mm (2 inches) in diameter
- remain open at all times during refuelling.



## Churns

Decanting should only be done in the dedicated refuelling zone or in the pitlane garage.

## Be prepared for an emergency

Even if you are safety conscious, you still need to be prepared for an emergency involving fuel. Officials, marshals, competitors, service crews and emergency response workers need to know who is responsible for what is an emergency.

The layout of your event must, so far as is reasonably practicable, allow people to enter, exit and move about safely without risks to their health and safety - under normal conditions and in an emergency. Where practical involve other event personnel to share their ideas and experiences or concerns about how avenue is set up.

### Emergency Planning

Good planning and organisation is important for the safety and enjoyment of everyone involved in the event.

One of the good steps is to have an effective emergency plan.

The emergency plan contains information on how to respond to accidents, how to notify emergency services and what help you will need from emergency services if a major incident occurs.

If you have large amounts of fuel stored on site, you must include this in your emergency plan. It must cover off all the likely emergencies involving fuel and identify who is responsible in each emergency.

This plan needs to be tested at least once per year.

Use Hazardous Substances Calculator <https://hazardoussubstances.govt.nz/calculator> to work out if you need an Emergency Response Plan.

The <https://hazardoussubstances.govt.nz/> website has a lot of useful information when preparing the plan.

If fuel spills or leaks, the prime concern is the safety of the nearby people. If anyone is injured, make sure they receive first aid and medical treatment.

### Safety Data Sheet (SDS)

Safety Data Sheets for fuel products used in motorsport in New Zealand are available at <https://www.motorsport.org.nz/technical/fuel/>

### Fire

If you are not the venue owner, check what fire safety arrangements are in place and what you need to do if fire breaks out.

# Fire extinguishers

Fire extinguishers put out fires before it reaches fuel and becomes dangerous.

- All competitors must keep at least one 60B rated 4.5 kg dry powder fire extinguisher in their pit area. Note the definition of Pit Area under Section 1 of this document . If more than one vehicle is sharing a pit garage or similar one 4.5 kg extinguisher is required for each vehicle. The fire extinguisher fitted to the motorsport vehicle is not included in this requirement. The fire extinguisher must be clearly visible and accessible in an emergency.
- Organisers must ensure that at least one 80B rated 9 kg fire extinguisher is situated in the pitlane/activity area at all times whenever vehicles are practicing or competing. This extinguisher must be clearly visible and readily accessible in an emergency.
- Pitlane fire marshals should be provided with the required PPE.
- In Endurance Racing, each competing team will have a minimum of two 80B rated 9kg fire extinguishers in the refuelling area. One with the team's fire marshal and the other one located in a clear space near the fuel container. The Team Manager shall brief the team on using the extinguishers before the event

If there is a fire, raise the alarm - phone 111

- Make sure people are in a safe area
- Don't put yourself or others at risk

# Spills and leaks

You need to be prepared to deal with a fuel leak or spill. You need to take extra care with fuel spills to make sure people on site do not do anything to ignite the vapours. For example, cell phones should not be used near a spill as they can be an ignition source.

Remember to tell your local council about any fuel spills at your venue if it endangers a waterway. Most councils have an emergency pollution hotline you can call. This number should be recorded in your emergency response plan.

## Minor spills

You should follow these steps to clean up a minor fuel spill.

- keep anyone not involved with the clean-up of a minor spill away
- wear the correct PPE
- check there are no ignition sources near the spill
- stop the spill or leak at the source if it is safe to do so
- stop the spill from spreading by using absorbent material such as sand, soil or spill containment socks
- clean the spill up using your spill kit
- dispose of all product and contaminated materials according to the Safety Data Sheet (SDS)
- clean your PPE after use.

Think about how the spill happened, was it avoidable? Do your safety procedures need updating to minimise the risk of another spill?

## Spill Kits

These are available from safety outlets and should generally contain:

- PPE like overalls, gumboots gloves, goggles and face masks
- Spill handling equipment like plastic shovels. Metal shovels can cause a spark.
- Spill containment equipment like drain guards or barriers and absorbent material.
- Leak proof disposable container to put contaminated material in for disposal.

## What to do if there is a fuel spill

If it is safe, stop the spill at the source. Then:

- stop the fuel escaping to drains and waterways
- clean up the spill but only if it's safe to do so
- contact your local fuel supplier or council about getting rid of the contaminated material

Everyone is responsible for health and safety.

If you see an issue, rectify it if able or report the issue to an Event Official.