

## The Olympic Torch

---

Have you ever seen the Opening Ceremony for an Olympic Games on television? If so, you will probably realise it's one of the most exciting, memorable and entertaining aspects of the Games, with fireworks, laser shows and amazing dances and other whiz-bang performances.

However, it is the traditional rituals associated with each Opening Ceremony that add that special and powerful feeling to the Olympics - the raising of the Olympic flag, the parade of athletes nation by nation and of course, the arrival of the torch and lighting of the Olympic flame in the cauldron.



Opening Ceremony Atlanta Olympics 1996

Allsport

Minerals have played a vital role in the making of the torch for the Olympic Games.

The following will help you find out more.

### Information Sheets

- › The Torch Relay
- › Flame Aims
- › London 2012 Olympic Torch
- › Sydney 2000 Olympic Torch

### Student Activities

- › It's Come A Long Way (Looks at the design of the Olympic torch)
- › A Torch with No Minerals



## Information Sheet - The Torch Relay

The tradition of the Olympic torch goes back to the ancient Games in Olympia, Greece. There, a sacred flame was burnt at the altar of the Greek god Zeus while the competitions were held. It symbolised a striving for perfection and victory. The modern torch relay was introduced in the 1936 Berlin Olympics, where it was a huge success.

During the lead-up to the Olympics Games, women dress up as Grecian priestesses and gather amongst the ruins at the highest point of the ancient Temple of Hera at Olympia. There, they use a curved mirror to reflect and magnify the sun's rays to light a torch. The 'high priestess' passes this torch to the first member of a team of runners (called torchbearers). The torchbearer carries the torch to the site of the ancient Olympic Games to commence and 8 day, 3000km journey around Greece to arrive at the Panathenaic Stadium in Athens (the site of the first Modern Olympics in 1896) for the official handover ceremony to the United Kingdom.



Lighting the Olympic Flame      IOC Museum

The flame will arrive in Cornwall, England in a special purpose gold-liveried aircraft on the 18th of May. David Beckham delivered the torch from Athens to the UK. As the Olympic Flame is classified as a symbolic flame it is permitted to be carried on board an aircraft. It will travel in a ceremonial lantern that is secured in a specially designed cradle which is, in turn, firmly fixed to its seat on the plane using a secure holding device.

The torch relay will commence at Land's End and continue its journey throughout the UK being carried by 8000 torchbearers and travelling 8000 miles (12,875km), spreading the message of peace, unity and friendship. It ends its journey as the last torchbearer lights the cauldron at the Olympic Games Opening Ceremony in the Olympic Stadium, marking the official start of the Games on July 27th.

The flame is extinguished on the final day of the games at the closing ceremony, with an official declaration that it will be re-lit at the next Games which are to be held in Rio de Janeiro, Brazil in 2016.

You can follow the progress of the torch relay, find photographs of the lighting of the flame ceremony and see a map the torch will travel in the UK at: <http://www.london2012.com/torch-relay/>.



Australian Ron Clarke lighting the Cauldron -  
1956 Melbourne Olympics

**Who do you think will light the cauldron at the London Olympic games?  
Why have you chosen this person?**

There have been many ideas by the public about how the Olympic cauldron should be lit. Often it is with the final runner ascending steps leading up to the cauldron and lighting the cauldron with their torch. What would you suggest?



## Student Activity - It's Come a Long Way

### Introduction

If you have read the information in The Torch Relay, you will realise that by the time the Olympic torch reaches the venue of the Opening Ceremony, it will have travelled a long way from Greece. However, it will also have come a long way in its development, from the very first ideas and designs about what it might look like and how it might work, to the impressive finished product.

For each Olympic Games, the host country develops its own torch design - one that looks great and also says something about that country's unique people and places. The designs of the torches certainly have changed over the years!



Torch - 1956 Melbourne Olympic Games Allsport

You can find out more about the history of the Olympic torch at: <http://www.london2012.com/torch-relay/history/>



Torch - 1968 Mexico Olympic Games Allsport



Torch – 2000 Sydney Olympic Games Allsport

### Information Sheet – Flame Aims

QUESTION: What are some of the many other factors to consider when designing an Olympic torch?

When designing a torch for the Olympic Games, it is important to ensure that the torch does (or does not do!) certain things. For example, the designers aim for the torch to:

1. Burn brightly.
2. Be safe for the torchbearers and the on-lookers watching.
3. Stay alight in a variety of weather conditions –including high winds, torrential rain, hail, and temperatures ranging from freezing to very hot.
4. Be environmentally friendly. The torch must use the least amount of fuel, produce the least amount of smoke and other pollutants, and consider recycling in its use.
5. Be light weight and easy to carry.



It is difficult to achieve all the necessary requirements! As you will discover, minerals made the job easier by playing an important part in the construction of the torch.

### Information Sheet- The London 2012 Olympic Torch

The London Olympic Torch stands 80cm high. The Torch is made up of an inner and an outer aluminium alloy skin. It is perforated by 8,000 small cut-out circles, representing the 8,000 torch bearers who will carry it on its 8000 mile (12,875km) journey around the UK. The circles also help to ensure heat quickly escapes without being conducted down the handle, helps to keep the torch light and provide extra grip.

The torch is a beautiful gold colour reflecting the brightness and warmth of the flame it carries.

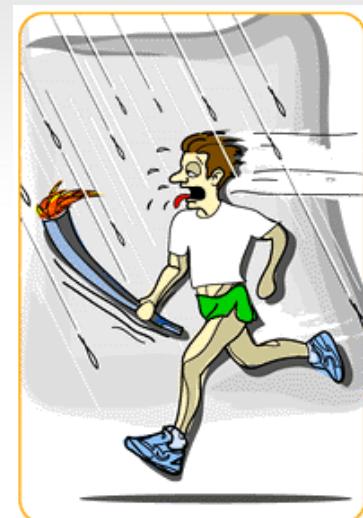
The torch is a triangular shape. The designers chose a 3 sided shape to represent the three Olympic values of respect, excellence and friendship; the three words that make the Olympic motto – faster, higher, stronger; and the fact that the UK has hosted the Olympic Games three times - in 1908, 1948 and 2012.

The flame is kept alive by a gas burner system held in the centre of the torch, dispensing a gas mix that optimises flame height, colour and luminosity. There is enough fuel available to keep the flame burning for at least ten minutes

**Question:** More than half the Olympic torchbearers are expected to be young people some as young as 12! Why did the designers of the torch choose aluminium rather than making the torch from steel?



The London 2012 Olympic Torch courtesy of LOGOC2012



## Information Sheet - Sydney 2000 Olympic Torch

Sydney was host to the Olympic Games in 2000. The information below tells you about the design of the Sydney Olympic Torch.

### Design Features

- ➊ Shape inspired by the Sydney Opera House sails.
- ➋ The three layers represent fire, water and Earth.
- ➌ The subtle curve of a boomerang.
- ➍ Weighs just over one kilogram (about the same as a litre of milk).
- ➎ Is 72 centimetres long, making it easy to carry.

Inner shell (silver) – stainless steel

Middle shell (blue) - aluminium

Outer shell (white) - aluminium

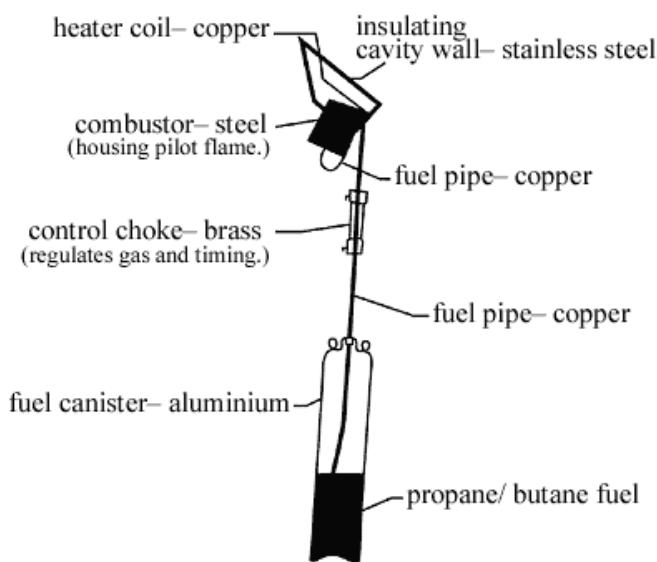
Torch shell designed by Blue Sky Design Sydney.



The engineering of its 'combustion system' (that is, deciding what fuel to use and how to keep the flame alight) was designed by the company Fuel Combustion Technology Pty Ltd, working with the University of Adelaide. Using their tests and results, the engineers and manufacturers from the company G A & L Harrington then came up with the final product.

Sydney 2000 Olympic Games Torch Allsport

### Inside the Sydney 2000 Olympic Games Torch



\* butane- used in cigarette lighters, propane or 'LPG' - used in gas-fired barbecues



## Student Activity - It's Come a Long Way

Using the information sheets **Flame Aims** and **Sydney 2000 Olympic Torch**, correctly match the five flame aims with the various design features listed below. Some features could match with more than one Flame Aim.

### Flame Aim

### Design Features

Constant, bright, easy-to-light flame

- ➊ The fuel canister is removable so can be re-filled.
- ➋ There is an in-built system that extinguishes the torch after 10 secs if it is left lying on the ground or is held upside-down.
- ➌ The materials used to make the torch are lightweight.

Safety

- ➊ The soot is burned away completely so that no smoke can come off the flame.
- ➋ A wind and rain shield provides weather protection.
- ➌ Each canister holds enough fuel to burn for 20 minutes

Weather resistance

- ➊ The fuel can be stored as a liquid, taking up minimal room, therefore the torch can be small.
- ➋ One end of a heater coil is immersed in the flame. Its other end heats the fuel so that it more easily and continuously turns into a gas which can be easily ignited

Environmentally friendly

- ➊ The small pilot flame inside the torch stops the much larger outside flame from going out.
- ➋ The torch has a cavity wall (double wall with a layer of air between). As air doesn't transfer heat very well, this cavity insulates the outside of the torch from the hot flame.

Easy to carry

- ➊ A wind and rain shield serves to spread the flame and make it more visible (without it, the flame would go straight up).
- ➋ Butane and propane are easy to ignite (highly flammable) as gases.



Torch - Sydney 2000 Olympic Games, Allsport



## Student Activity - A Torch with No Minerals

Working on your own, in pairs or small groups, design the torch for the 2016 Olympic Games to be held in Rio de Janeiro, Brazil.

The catch is, imagine we couldn't mine for minerals – so your torch will have to be made from other materials!

Present your idea on a poster and use it to help you explain your torch design to the rest of the class.

"The Olympic Games are about being part of something bigger than yourself, sharing the history, spirit, ceremony and tradition of the most enduring and admirable human event of all time and the Torch Relay literally and figuratively embodies this sense of sharing - from the simple connection of two individuals as the torch is passed from one to the next to the sharing of the spirit of the Torch Relay with all Australians and the entire world." This was the Official Statement - Olympic Torch Relay for the Sydney 2000 Olympics.

Write your own statement for your torch design for the Olympic Games – try to reflect on what you think the values of the Olympic Games should be.



Opening Ceremony 1980 Moscow Olympic Games. Allsport



## REFERENCES

Olympic Minerals 2000 – Minerals Council of Australia

London 2012 Olympic Games website [www.london2012.com](http://www.london2012.com)

Images for 2012 courtesy of London Olympic Games Organising Committee

\*\*Original References

## REFERENCES

Bruce, Linda, Olympics – The Greatest Games, Reader's Digest, 1996.

Gordon, Harry, Running Light, The Australian, 25 January, 2000.

Kelso, Nathan & Lanspeary, The Technology within the Olympic Torch, SASTA Journal, vol. 2, 1999.

Sydney 2000 Olympic Torch Relay InfoSheet, SOCOG, April, 1999.

[www.minerals.org.au/downunder/index.asp](http://www.minerals.org.au/downunder/index.asp)

[www.agso.gov.au/education/factsheet/](http://www.agso.gov.au/education/factsheet/)

[www.engaustr.com.au/other/CEA0399-1](http://www.engaustr.com.au/other/CEA0399-1)

[www.minerals.org.au/pages/page3\\_15.asp](http://www.minerals.org.au/pages/page3_15.asp)

[www.minerals.org.au/pages/page3\\_15.asp](http://www.minerals.org.au/pages/page3_15.asp)

[www.mineralswa.asn.au/cme/frameset/cgi/5/1](http://www.mineralswa.asn.au/cme/frameset/cgi/5/1)

[www.olympics.com/eng/about/torch/route/index](http://www.olympics.com/eng/about/torch/route/index)

[www.olympics.com/eng/about/torch\\_design/about.html](http://www.olympics.com/eng/about/torch_design/about.html)

[www.olympics.com/eng/news](http://www.olympics.com/eng/news)

[www.olympics.org/eng/history/ceremonies/home](http://www.olympics.org/eng/history/ceremonies/home)

[www.sydney2000online.com/relay/index](http://www.sydney2000online.com/relay/index) (gives exact locations of relay throughout Australia).

[www.mineralswa.asn.au/cme/frameset/cgi/5/1](http://www.mineralswa.asn.au/cme/frameset/cgi/5/1)

## ACKNOWLEDGEMENTS

We gratefully acknowledge the assistance and support provided by:

- ➊ Sydney Organising Committee for the Olympic Games (SOCOG)
- ➋ Sydney Paralympic Organising Committee Limited
- ➌ G A & L Harrington Pty Ltd

