

**About Lynas Rare
Earths**

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What are Rare Earths?

Rare earths are a group of 15 elements in the periodic table known as the Lanthanide series. Rare earths are categorised into Light Rare Earths (lanthanum to samarium) and Heavy Rare Earths (europium to lutetium).

They are key enablers for technologies looking to lower emissions, reduce energy consumption, as well as improve efficiency, performance, speed, durability, and thermal stability. They are also a key component in technologies that seek to make products lighter and smaller.

Rare earths react with other metallic and non-metallic elements to form compounds each of which has specific chemical behaviours. This makes them indispensable and non-replaceable in many electrical, optical, magnetic, and catalytic applications.

Rare earth elements are relatively plentiful in the earth's crust, however, because of their geochemical properties, rare earth elements are typically dispersed. This means they are not often found in concentration to make them viable to mine. It was the scarcity of these minerals that led to them being called rare earths.

The high grade of Lynas' Mt Weld deposit and very low level of naturally occurring radioactive material (NORM) in the surrounding material sets Mt Weld apart and is a key element of Lynas' success.

Rare Earths are used in the manufacture of many things we use every day – from smart phones to electric windows, power steering and catalytic converters in cars. Rare earths are also used in future facing applications such as robotics, home automation and green technologies such as hybrid and electric vehicles and wind turbines.

How are rare earths used in electric vehicles and wind turbine? How are rare earths different from battery metals?

Rare earths are used in high performance permanent magnet motors. Rare earth magnetic motors convert the electricity that is stored in a battery into motion. This could be the motion to make the four wheels of an electric vehicle turn.

Rare earths are also used to turn motion into electricity, for example, in a wind turbine.

Facts about rare earth elements:

1. A single smartphone contains approx. 8 different rare earth materials.
2. Rare Earth Elements are not rare in the earth's crust – but they're rarely found in commercial concentrations as they are in the Mt Weld deposit.
3. Rare earths make cars greener – Cerium (Ce) is used in catalytic converters to reduce exhaust gas pollution.
4. Neodymium (Nd) is the strongest known magnetic substance.
5. Many MRI machines use Neodymium (Nd) magnets.

Learn more about the rare earths products we produce here: [Our Products](#)