

## ***How does Repel Work?***

In 1937 Goodyear patented the style of product which was to become the standard mould release for rest of the 20<sup>th</sup> century. This was a mixture of oleic acid in light mineral oil such as heating oil, distillate (diesel) or turpentine. Oleic acid is a thick oily liquid obtained when olive oil, canola and other oils are boiled with caustic soda, then neutralized. Other natural acids have been widely used for mould release, especially gum rosin, the sticky stuff left after oil from pine trees is distilled to dryness.

The conventional wisdom preached by generations of marketing people is that oleic acid in a film of mould release agent combines with lime in wet cement to form an insoluble soap, looking a bit like porridge. This layer is held against the mould by the weight of concrete, and stops the concrete wetting the mould. This is critical because wet cement against just about any other material will bond strongly to that material as the mixture dries. Without adequate release agent, that bond can be so strong that breaking the mould away from the dried concrete will fracture the concrete rather than separate at the mould surface – go to [Quality Needs for Concrete Mould Release](#) and download [Making Big Pipes](#).

Acids mixed with light oils have failed too often, so many concrete casters have used rough and ready alternatives particularly sump oil, especially when far from the curious eyes of health and safety personnel – go to [Quality Needs for Concrete Mould Release](#). The theory of that is to plaster the mould with a heavy water-repellent layer which will keep the concrete water away from the mould.

***Oils work, but they leave residues and play havoc with colours because of adsorption by the concrete. Even the acid-in-oil approach tends to work poorly when the acid proportion is less than about 30%.***

In order to design Repel from first principles, I spent dozens of hours in university libraries reading the history of mould release going back to 1905. Criteria for a new style of mould release grew out of that research –

- ***cost effective***
- ***low impacts on health, safety and the environment***
- ***minimum reliance on non-renewable resources***
- ***easy application***
- ***reliable release***

The first and last criteria were always the most important. Otherwise, we had gained too little.

Essentially Repel works the same way as any other mould release – putting a waterproof film against the mould so that setting concrete cannot stick to it.

- When a Repel film is left to dry it forms a waxy membrane which remains effective far longer than oil-based release agents – download [Building Big Tanks and Bridges](#).
- Repel also works while wet, immediately after application – download [Moulding Concrete Roof Tiles](#). But Repel itself is water-based, so how can it work while wet? Repel's active components are stabilized and supported in the product by a chemical matrix which is triggered to unravel the instant it contacts cement water. The waterproofing agents are released and immediately pressed against the mould, while the water disperses into the cement. This leaves only a very thin film, nearly all natural products, which remains on the concrete as it sets.

***Repel adapts proven natural acid release technology out of an oil solution into a water emulsion.***

***Repel supports its active ingredients by a much more sophisticated system which greatly increases the efficiency of delivery to the mould-concrete interface.***