



# Benefits of Super Plasticiser

*- An Overview*

**ARMCON**  
CERTAINTY IN CONCRETE

## Benefits of Superplasticiser in the modern precast works

There is a wide range of admixtures available to the precast industry today but their use is often misunderstood or worse still ignored altogether. The use of superplasticiser should be standard in today's precast works.

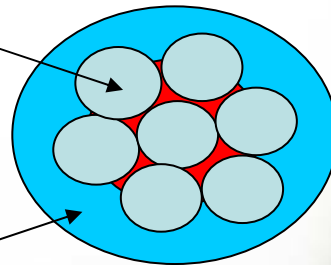
Superplasticiser will improve quality, strength, profitability and consistency. Used in the correct way it will always be cost positive and show a measurable improvement in profitability.

Superplasticiser offers a number of significant benefits to the pre-caster and one of the most important is the ability to reduce cement contents.

More effective use of cement results in increased strength allowing a reduction in cement content. Have a look at the following diagrams which illustrate how superplasticiser achieves this.

## Without superplasticiser

Cement Particles



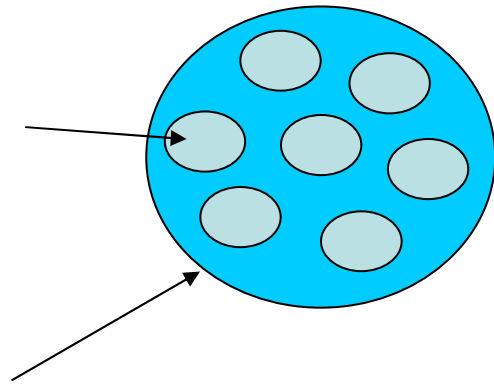
Water

Here we see the cement particles do not disperse and are only partly wetted when they mix with the water. As you can see the red area has no water/cement contact at all and will not fully hydrate the cement.

# With superplasticiser

Cement Particles

Water



With the addition of superplasticiser the cement particles are dispersed allowing the water to coat the whole of each particle ensuring complete hydration resulting in increased concrete strength.

*The economics speak for themselves:*

Say you are using a 300kg/m<sup>3</sup> cement content to achieve a 28 day strength of 35 N/mm<sup>2</sup>.

Cement cost **£24.60** at £82.00/ton

If you used superplasticiser you could expect a 30% increase in strength giving 45.5N/mm<sup>2</sup> or an extra 10N/mm<sup>2</sup> strength.

Typically we need to use 6kgs cement per 1N/mm<sup>2</sup> strength gain so the 10N/mm<sup>2</sup> we have gained is equivalent to 60kgs cement (6kgs x 10). It follows that we could reduce the cement content to say 240kgs/m<sup>3</sup>

Cement cost **£19.68** at £82.00/ton = £4.92 saving in cement.

To do this you would add 0.9 litres per 100kg cement.

The cost of admix is £3.91/m<sup>3</sup> to do this making a saving of £1 per m<sup>3</sup> concrete.

## SUPERPLASTICISER BENEFITS

- 15%-40% water reduction.....*increased strength*
- Low water/cement ratios possible.....*mix compliance*
- Easier mould filling.....*reduced labour costs/increased production*
- Better finish.....*higher product quality/increased sales*
- Reduced blowholes.....*higher quality/no making good/no rejects*
- Reduced vibration.....*faster production/reduced H&S problems*
- Brighter colours.....*reduced pigment cost/more consistent colour*
- High early strength.....*reduced breakages/earlier demould*
- Higher 28 day strength.....*potential cement savings*
- Bleed water reduction.....*higher quality/increased sales*
- Reduce segregation.....*mix consistency*
- Increased density.....*improved strength/less handling damage*
- Improved durability.....*higher quality/longer life*
- Self compacting concrete.....*reduced production costs/less equipment*
- Reduced wear and tear on your mixer.....*reduced maintenance*

**Warning:** Never mix admixtures in the same storage tank, always keep separate until they are added to the mix.



High quality pre-cast gravel board made using superplasticiser

Typical dose rates from 0.35 litres to 2.5 litres per 100kg cement added to mix water.

We hope you have found this information useful and can put it to good use!