Description
Sigma 190 is an economical mid range water reducer based upon modified lignosulphonate, it is designed to improve the workability of the concrete with minimal effects on other properties. Sigma 190 if used correctly can achieve water reductions of up to 18%.

Applications
Sigma 190 can be used to reduce the water content in dry/semi-dry mixes which in turn will increase the density of the finished product leading to higher strengths.

Benefits in Concrete
- Increased early and final strength
- Reduced shrinkage
- Reduced permeability
- Increased density
- Reduced segregation and bleeding

Properties
<table>
<thead>
<tr>
<th>Nature</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>Dark Brown</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.10 g/cm³</td>
</tr>
<tr>
<td>pH</td>
<td>6.50</td>
</tr>
<tr>
<td>Chloride Content</td>
<td>&lt;0.10%</td>
</tr>
<tr>
<td>Na₂O equivalent</td>
<td>&lt;1.00%</td>
</tr>
</tbody>
</table>

Addition Rates
Dosage rates vary dependant on mix design, process, aggregate type and the desired effect but typically:

200mls - 600mls per 100 kg cement
(0.20% - 0.60% by weight of cement)

Standards
Sigma 190 complies with the requirements of BS EN 934-2 and is produced in accordance with the ISO 9001 Quality Management Standard and the ISO 14001 Environmental Management Standard.
**Compatibility**

**Sigma 190** is compatible with all Portland cement systems, including GGBS, Pfa and limestone blends.

**Sigma 190** is compatible with all Oscrete admixtures, but should be added to the mix separately.

**Storage**

**Sigma 190** should be protected from extreme temperatures and if stored unopened within the range 5°C - 30°C will have a minimum shelf life of 12 months.

**Handling**

**Sigma 190** is a non hazardous product but in line with normal handling procedures, personal protective equipment should be worn.

Refer to the Material Safety Data Sheet for full details.

**Packaging**

200 litre drums, 1000 litre IBCs and bulk deliveries.

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**Notes**

**Sigma 190** should be added with the water or at the end of the mixing process and not directly onto the cement. A mixing time of at least 30 seconds is recommended after the addition of the admixture.

If frozen **Sigma 190** may be used after thawing slowly at room temperature followed by intensive remixing.

Please consult the OSCRETE Technical Department for advice on admixture selection.