

Extend™



Extend™ is a range of low shrinkage concretes designed to reduce joint frequency for both flatwork and structural applications thus offering improved in-service performance and reduced construction costs.

Extend concrete provides specifiers and contractors with a solution for the reduction of shrinkage movement in a range of structural applications from flooring to service reservoirs to tall framed structures to nuclear containment facilities. By using Extend in floors joint spacing can be increased or in some cases eliminated, whilst in service reservoirs, crack control reinforcement can be reduced. These specialised mixes demonstrate reduced shrinkage and curling minimising cracking. Flatwork applications can benefit from the casting of larger panels resulting in construction economies together with a reduction in maintenance costs.

The high strength properties of Extend concretes also offer designers a solution for reduced slab thicknesses and in some cases no need for reinforcement. Lower permeability and higher compressive strengths enable extended life cycles through enhanced resistance to chemical attack and abrasion resistance making it ideally suited to industrial applications. Engineers designing concrete structures in accordance with BS8007 now have the ability to reduce crack control steel whilst maintaining maximum crack width or considering the use of larger panel sizes.

Features and benefits

- Extend is a bespoke concrete solution designed to meet individual project needs assuring fitness for purpose and optimisation of material characteristics
- Designers and contractors can use Extend with confidence knowing that every material combination has been subjected to long term movement testing
- Extend allows the engineer to calculate with confidence, using the declared low shrinkage value for each Extend concrete selected maximising structural performance at optimum cost
- Extended joint spacing for ground supported slabs ensures a reduction in the build programme and material costs whilst extending the in-service performance of the slab
- Extend has been designed to be available from most concrete plants
- Extend formulations can be designed for early strength gain, depending on the formulation chosen higher early age strength gain can allow loading from 7 days
- Where control of crack width is paramount for example in nuclear containment buildings or structures designed to contain or resist water penetration, Extend will allow the designer to calculate with accuracy concrete movement thereby reducing construction cost
- Extend can be formulated to give BS8204 Special class abrasion resistance
- Extended joint spacing allows flexibility in racking design
- Extend concretes can be placed using all standard equipment and techniques and compacted using most forms of equipment including modern floor laying machines. As with any concrete to ensure attainment of the designed properties full compaction is essential.



Applications

Extend is designed to meet the rigours of heavy duty industrial flooring applications where joints within the concrete floor are a known maintenance issue. Reducing the number of joints imparts significant in service benefits, whilst the hard wearing surface removes the need for dry shake toppings:

- Distribution warehouses
- Waste recycling facilities
- Thin toppings/overlays
- High sensitivity manufacturing plants requiring low movement floors
- Water retaining structures
- Nuclear containment buildings
- Hospital radiological suites
- Concrete safety barriers – highways.

The exceptionally low shrinkage and permeability of Extend allow structural designers to consider thinner sections larger panels or joint spacings or alternative reinforcement detailing across a wide range of applications each contributing to lower overall cost solutions.

Manufacturing standard

Extend conforms to the requirements of European standard BS EN 206-1:2001 Concrete Specification, performance, production and conformity together with the requirements of BS8500-1 and BS8500-2 2006.

As with all Aggregate Industries' products, Extend concretes are manufactured to high standards under an independently monitored third party quality assurance scheme in accordance with ISO 9001, and with factory environmental compliance to ISO 14001.

Aggregate Industries was the first concrete business to achieve the "Excellent" rating set by BES 6001 Responsible Sourcing.

Installation standard

The Extend range may be placed by any conventional method. Successful placing has been achieved using pump, conventional skip and direct placement. Achieving the optimum finished surfaces may require discussion with our technical services department before construction begins. When used in floor construction it is critical that Extend concrete is compacted using either laser screed or vibrating beam technologies. Where Extend is used in other structural environments, good site practice should be employed in the placing and compaction of the concrete to ensure a dense, homogenous and void free element.

When placing Extend it is normal to use trained operatives, should you require support with the training Aggregate Industries would be happy to assist.

Curing

Curing must commence as soon as is practical after finishing as any delays may result in damage to the element through plastic cracking. Design codes and good site practise requires the use of a minimum 90% efficient curing membrane applied in accordance with the manufacturer's instructions for all flatwork and for Extend it is considered the minimum level acceptable.



Typical performance and technical data

Characteristic 28 day compressive strength range	C25/30 to C60/75
Consistence S3 or S4	Other consistency targets by agreement with Aggregate Industries
Expected maximum shrinkage value	150 to 250 $\mu\text{m}/\text{m}$ at 90 days (20°C and 65% RH)
Abrasion Class	Special BS8204 2002 by agreement with Aggregate Industries

TR34:2003 analysis is based on the inclusion of the following concrete properties.

Compressive (cube) strength:	fcu	C30 to C75 N/mm ²
Compressive (cylinder) strength:	fck	C25 to C60 N/mm ²



Sustainability and local sourcing

Responsible sourcing: Aggregate Industries is the first company in the world to achieve a BES 6001:2008 Responsible Sourcing Certificate from BRE Global. Products are assessed on:

- quality management
- environmental management
- health and safety management
- greenhouse gas emissions
- minimising raw material usage
- labour practice
- biodiversity
- community engagement.

Energy use: Aggregate Industries is at the forefront of sustainability and has committed to reduce carbon emissions by 20% by 2016 based on a 2012 base line.

Manufacturing Location: produced in the UK, with locally sourced materials under strict environmental and social legislation, for local supply.

Recyclable: the product can be designed for a life in excess of 120 years and is fully recyclable.

Policies

Aggregate Industries' policies on the environment and community, health and safety and sustainable solutions for different product applications can be viewed on our website www.aggregate.com

COSHH data

Full COSHH data on our concrete range of products is available on request.

Technical support

Detailed guidance and assistance with the preparation of specifications and use of our concrete range of products is available through the sales offices.

Call our technical services department at the nearest sales location to your contract.

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www.aggregate.com/strike



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