

RUGBY® HIGH STRENGTH

PORTLAND-LIMESTONE CEMENT
BS EN 197-1 CEM II/A-L 52,5 N



Rugby High Strength is a factory produced cement ideal for use in multiple applications particularly where higher strength at early and/or later stages is a necessity.

Incorporating finely ground limestone Rugby High Strength contains lower levels of Portland cement clinker than CEM I alternatives meaning a lower level of carbon intensity but with equivalent levels of technical performance. A small quantity of gypsum is introduced during grinding to control the setting characteristics of the cement. Rugby High Strength is suitable as an alternative to CEM I Portland cement in most types of concrete except where environmental exposure conditions demand the use of sulfate resisting cements when Rugby Sulfate should be specified.



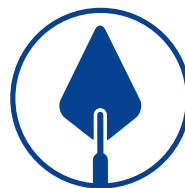
Ideal for



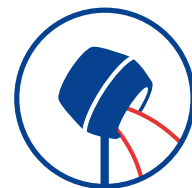
Precast and thin
concrete sections



Renders and
screeds



Mortar



Concrete

Rugby®

CEMEX

Applications

Rugby High Strength can be used in all applications where sulfate resistance is not a requirement and as such is ideal for use in general purpose concrete, mortar, render, screeds and civil engineering applications.

The faster strength gain of Rugby High Strength liberates more heat over a shorter period of time and as such makes this product ideal to counteract the effect of colder weather, although its use in extreme cold conditions should be avoided.

The fine limestone content improves cohesion when mixed and makes Rugby High Strength ideal for use where segregation might otherwise be an issue for example in self-compacting concrete, flowing screeds and grouts.

Most admixtures are compatible with this product. Admixtures and technical advice is available from Cemex Admixtures.

Product specification

Typical Properties		High Strength	Rugby Premium	Rugby Sulfate
EN196-1 Strength	2-day	33.0	20.0	24.5
	7-day	45.5	31.5	32.5
	28-day	59.0	41.0	49.0
Water for Standard Consistence/%H ₂ O		29.0	24.5	30.0
Initial Setting Time/Minutes		120-140	115-140	120-140
Fineness m ² /kg		440-460	390-410	430-450
+SR		No	No	Yes
Colour / CIELab	L*	61.0	63.0	59.5
	a*	-1.2	-1.2	-1.1
	b*	5.9	5.8	7.0

Usage guidance and concrete properties

Concrete

To produce durable concrete using Rugby High Strength the mix proportions must be respected. BS8500; Concrete, Complementary British Standard to BS EN 206-1 gives guidance for using Rugby High Strength in concrete in various environmental exposure conditions.

There are some environmental exposure conditions in which Rugby High Strength is not suitable such as where a Design Chemical Class 3 (DC-3) or above is necessary and in some marine environments.

If in doubt please consult a technical consultant or contact Cemex Technical Support.

When site mixing, ensure the minimum amount of water is used whilst ensuring the mix is workable enough to be placed and compacted fully.

Water reducing admixtures can be used to reduce the amount of water for a given workability to assist. Excess mixing water reduces strength and durability considerably. In all cases trial mixes of proposed mix designs are recommended.

Once placed and fully compacted concrete requires moisture to develop its full strength and durability and premature drying out should be avoided. In normal conditions, avoiding direct sunlight and excessive wind and in temperatures in excess of 10°C concrete should be cured under damp conditions (covered with a suitable curing membrane or other protection) for 1 to 3 days; below 10°C the curing time should be doubled.

Protection of freshly placed concrete against freezing is essential and placement at temperatures below 5°C on a falling thermometer should be avoided.

The following tables give nominal mix proportions by volume for common applications:

General purpose site mix

(For most uses except foundation work and outdoor paving).

Material	Proportions by Volume	Amount per M ³ (approx)
Rugby High Strength	1	310kg
Sharp Sand	2	655kg
4/20 Aggregate	3	1130kg
(All-in/Ballast)	(4)	(1785kg)

Foundation site mix

(For footings, foundations and bases for precast paving)

Material	Proportions by Volume	Amount per M ³ (approx)
Rugby High Strength	1	265kg
Sharp Sand	2.5	690kg
4/20 Aggregate	3.5	1110kg

Paving site mix

(For all exposed in-situ paving e.g. pool surrounds and driveways. Use of an air entraining admixture is recommended in this application).

Material	Proportions by Volume	Amount per M ³ (approx)
Rugby High Strength	1	385kg
Sharp Sand	1.5	575kg
4/20 Aggregate	2.5	1150kg
(All-in/Ballast)	(3.5)	(1725kg)

Once in place, concrete requires moisture to develop its full strength and premature drying out must be avoided. In normal conditions and at temperatures in excess of 10°C, concrete should be cured under damp conditions for 1 to 3 days (cover with curing membrane, plastic sheeting or wet hessian); at temperatures below 10°C, this curing time should be doubled.

Curing is particularly important with CEM II cements as early strengths may be slightly lower than for CEM I products. Protection of fresh concrete against freezing is essential and placement under such conditions should be avoided if possible.

Masonry mortar

Rugby High Strength may be used in the proportions below to produce satisfactory cement/sand mortars with clean, well graded sands (see BS EN 998-1 Table NA1). The addition of a mortar plasticiser and/or the inclusion of Rugby Hydrated Lime may be desirable.

Lifts should be covered to allow for good curing after construction.

Application	Assumed BS EN 998-2 Mortar Class	Rugby High Strength: Sand (with Plasticiser)	Rugby High Strength: Rugby Hydrated Lime: Sand
General Use (Low rise/moderate exposure)	M4	1:5 to 6	1:1:5 to 6
Strong (Free-standing/severe exposure)	M6	1:3 or 4	1:1.5:4 to 4.5

Render

Rugby High Strength may be used in the proportions below for general rendering applications. It is important when applying two-coat renders (normal practice) that the second coat is either thinner or weaker than the scratch coat to avoid shrinkage and/or delamination.

A suitable sand graded specifically for rendering should be used. Attention to a good curing regime is important to ensure the cement has time to fully hydrate.

Application	Rugby High Strength: Sand (with Plasticiser)	Rugby High Strength: Rugby Hydrated Lime: Sand
First Coat (Strong substrate)	1:3 or 4	1:0.5:4 to 4.5
First Coat (Moderate substrate) OR Second Coat (Moderate or strong background)	1:5 to 6	1:1:5 to 6

Availability, delivery and storage

Cemex bagged cements are available across the UK. Delivered by road in a curtain-sided vehicle, the standard load size is 28 tonnes. All Cemex drivers are fully trained and experienced in the safe delivery and unloading of our vehicles. Please ensure the site is accessible with no obstructions. A pre-delivery inspection can be arranged to assess the site for suitability, just ask.

Rugby High Strength is available in 25kg weatherproof bags or paper sacks delivered as shrink-hooded, 1.4 tonne modules on non-chargeable pallets. To avoid premature deterioration of the reducing agent incorporated in the cement for control of soluble chromium (VI), storage should be in accordance with our recommendations given on bags and despatch documents.

Declared performance and UKCA marking

Cemex UK bagged cements conform to the relevant requirements of UK Designated Standard BS EN 197-1 or BS EN 197-5 and are subject to third party accreditation by a UK Approved Body in accordance with the most rigorous level of 'assessment and verification of constancy of performance' (AVCP 1+) specified in the UK Construction Products Regulation.

This provides:

- Independent confirmation that products conform fully to the relevant technical specification
- Regular independent auditing of products by UKAS accredited laboratories
- Regular independent evaluation of test data and appraisal of our Factory Production Control
- Traceability of cement deliveries to their source of manufacture

Declarations of performance in respect of the essential characteristics of our products are available from our website at cemex.co.uk/ukcamarks

UK CA Bagged Cement UKCA mark information can also be found on our despatch documentation as required by the UK Construction Products Regulation.

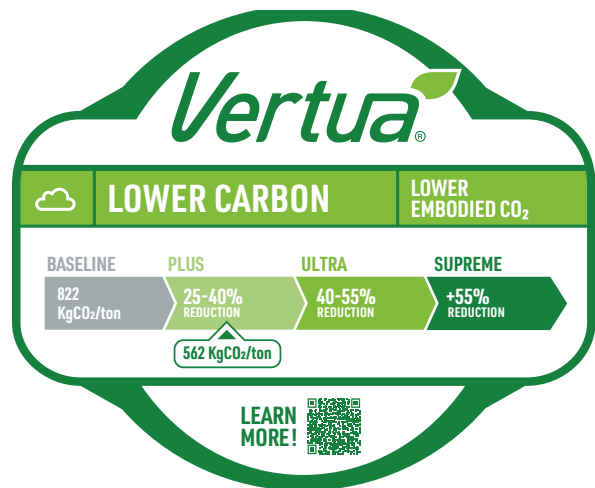
Sustainability

Sustainability at Cemex is embedded in our business strategy and in our day-to-day operations. Cemex aims to lead in sustainable construction by developing building products and solutions that have significant positive sustainability attributes and contribute to the transformation of the construction sector. Cemex manufacturing sites operate environmental management systems based on the principles of ISO 14001:2015. All of our operations are accredited to BES 6001 Responsible Sourcing and our cement operations are leading the way in carbon footprint production by using decarbonised raw materials, alternative sources of fuel and energy and developing a portfolio of cements containing lower clinker levels all contributing to a lower carbon intensity of our operations.

Our vision, through our Future In Action programme and our involvement in the United Nations' 'Race to Zero' campaign, is to lower our carbon intensity in our cementitious materials by 40% (against our baseline) by 2030 and by 2050 ensure we deliver net zero CO₂ company. These targets are in alignment with the Well Below 1.5°C Scenario defined by the Science Based Targets initiative.

Vertua – more sustainable by design

The Vertua 'lower carbon' logo and label is shown on selected cement products characterised by their unique composition. These cements contain the highest quality ingredients to reduce the carbon footprint of the finished product. Cements bearing this sign are guaranteed to reduce CO₂ emissions in the process of their manufacture by over 25%, than conventional Portland cement CEM I*. Our cements labelled as Vertua Ultra have over 40% lower CO₂ emissions with comparable performance.



*Basis of calculation: GCCA standard value for cement clinker emissions (global weighted average of direct Net emissions of cement clinker) from Getting the Number Right (GNR) in 2000: 862 kg CO₂/t cement clinker. Reference value Cement (CEM I with 95% cement clinker content): 822 kg CO₂/t cement. (GWP figures calculated to recognised standards are available on request)

Vertua is a Cemex Group trademark that highlights specific characteristics of Cemex Group products regarding environmental impact as described in the corresponding Fact Label. The Vertua label is not intended as a certification. Cemex defines all labels on industry standards, the data in this label is based on operational performance and cement emissions taken from actual figures. This is subject to change and will be reviewed and updated annually.

Technical Services and Product Support Helpline:

Cemex UK provides support for our products through the dedicated support channels listed here.

Routine test data in the form of Weekly Cement Test Reports, Product Conformity Certificates etc are available through our online portal, please contact us for further details and registration.

Product Support

 **0800 667 827**

 **gb-enquiries@cemex.com**

Bagged Cement Customer Services

 **0808 145 1900**

 **customerservices@cemex.co.uk**

 **cemex.co.uk/bagged-cement-products**

Cemex is a global leader in the building materials industry providing high-quality, innovative products and exceptional service to both customers and the community in the most sustainable and efficient way possible.

Cemex UK Operations Ltd, Cemex House,
Binley Business Park, Harry Weston Road,
Coventry, CV3 2TY

© 2023 Cemex Innovation Holding Ltd., Switzerland,
All Rights Reserved

