



Moderate Sulfate Resistant Portland Cement (Type II A)

Technical Data Sheet

SECTION 1 – PRODUCT IDENTIFICATION

Product Name: Moderate Sulfate Resistant Portland Cement (Type II A)

Product Type: Portland Cement – ASTM C150 Type II (Type II A)

Manufacturer: Gulf Cement Company P.S.C

Manufacturing Location: Ras Al Khaimah, United Arab Emirates

Product Description:

Type II Portland Cement is a Moderate Sulfate Resistant Cement often specified for use when sulfates are present especially in some natural soils. This product is designated as Type II A and will meet the requirements for Type I Portland cement also.

SECTION 2 – INTENDED USES

MSRC (Moderate Sulphate Resisting Cement) is designed for use in concrete structures that come into contact with soil or water containing moderate sulphate content.

MSRC is recommended for projects where concrete will be exposed to soil or groundwater with moderate sulphate levels, making it ideal for foundations, piling works, and underground structures.

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Revision Date:
01/12/2025



SECTION 3 – PRODUCT COMPOSITION (GENERAL)

GCC manufactures Ordinary Portland Cement, Moderate Sulfate Resisting Cement and Sulfate Resisting Portland Cements as per international standards of ASTM and BS EN with stringent quality controls.

The product is made with high quality raw materials and state-of-the-art cement manufacturing technology equipped with modern equipment.

SECTION 4 – PRODUCT CHARACTERISTICS & PERFORMANCE

GCC produces Type II cement at its plant in Ras Al Khaimah with lower heat of hydration and moderate sulphate resisting properties with Tricalcium Aluminate (C3A) ideally at 4.0–6.0%.

This cement comes with engineered particle distribution that provides good workability, strength and durability, making it a perfect choice for construction.



SECTION 5 – APPLICATIONS

Best use for construction in sulphate-rich environments:

- Recommended for foundations, piling works, and underground structures exposed to moderate sulphate levels.

For use in marine environments:

- Increasing the durability of concrete in marine environments, reducing the risk of sulphate attack and alkali-silica reaction.

Recommended for structures requiring low heat of hydration:

- Reducing the heat evolution of concrete, minimizing the risk of shrinkage cracks and making it suitable for large concrete structures.

Suitable for projects exposed to tidal zones:

- Provides excellent protection against sulphate attack, reducing the risk of damage to concrete structures.

Higher increased workability and pumpability:

- Improves the workability and pumpability of concrete, making it easier to handle and place.

SECTION 6 – QUALITY MANAGEMENT & ASSURANCE

GCC is certified to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 for Quality, Safety Health and Environment Management systems, and API Spec Q1 10th Edition for Class G Cement.

Equipped with a modern test laboratory, GCC ensures that the product is always manufactured with a greater degree of consistency and provides the best products to customers.



SECTION 7 – TESTING & LABORATORY FACILITIES

GCC test facilities include online X-ray analyzers and physical testing laboratories to certify products against ASTM and BS EN standards.

Test facilities include:

- Blaine specific surface area
- Laser particle size analysis
- Flow tests
- Setting time tests
- Jolting machines
- Compressive strength testing
- Heat of hydration tests
- Soundness tests (Le Chatelier and Autoclave)

SECTION 8 – PACKAGING & SUPPLY

The product is available in bulk only.

Upon request it can also be packed in convenient 1.5/1.0 Ton jumbo bags.



SECTION 9 – PROJECT REFERENCES

GCC is proud to be associated in major iconic projects like Burj Khalifa, Dubai Metro, and Dubai Airport Terminal 3 in UAE and abroad.

Customized Type II cement to suit both OPC and MSRC properties was supplied in huge quantities for T3 Terminal Dubai Airport Project (2004–2006).

**TEST CERTIFICATE****ASTM C150 – TYPE II CEMENT****CHEMICAL COMPOSITION**

Parameter	Unit	Requirements	Typical Results
Loss on Ignition	%	Max. 3.0	1.39
Insoluble Residue	%	Max. 1.5	0.24
Silicon Dioxide (SiO ₂)	%	—	20.81
Aluminium Oxide (Al ₂ O ₃)	%	—	4.54
Ferric Oxide (Fe ₂ O ₃)	%	Max. 6.0	4.40
Calcium Oxide (CaO)	%	—	63.98
Magnesium Oxide (MgO)	%	Max. 6.0	1.52
Sulphur Trioxide (SO ₃)	%	Max. 3.0	2.20
Tricalcium Silicate (C ₃ S)	%	—	59.2
Dicalcium Silicate (C ₂ S)	%	—	15.0
Tricalcium Aluminate (C ₃ A)	%	Max. 8.0	4.6
Alkalies (Na ₂ O + 0.658K ₂ O)	%	—	0.565
Chlorides	%	—	0.012
Heat Index (C ₃ S + 4.75C ₃ A)	—	≤ 100	81.1



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PHYSICAL PROPERTIES

Parameter	Unit	Requirements	Typical Results
Specific Surface (Air Permeability)	m ² /kg	Min. 260	326
Autoclave Expansion	%	Max. 0.80	0.044
Time of Setting: Vicat test – Initial	Minutes	Min. 45	185
Time of Setting: Vicat test – Final	Minutes	Max. 375	230
Air Content of Mortar	Vol(%)	Max. 12	6.7
Compressive Strength – 3 Days	psi	Min. 1450	3180
Compressive Strength – 7 Days	psi	Min. 2470	3743
Compressive Strength – 28 Days	psi	—	5313
Heat of Hydration at 7 Days	kJ/kg	—	262



LASER PARTICLE SIZE ANALYSIS

