



IMERYS

1. Project:

Aqaba New seaport - Phase II expansion (Apron) (September 2018)

2. Location:

Aqaba - South Jordan.

3. Client(s):

Aqaba Development Corporation (ADC).
Represented by:

Dar s.a.l - ARCADI - Dar (Jordan) JV.

ADC had awarded the consultancy

services to the joint venture of Moffatt & Nichol and Mostaqbal Engineering and Environmental Consultants. The contract under awarding to the preferred bidder the joint venture of impresa di costruzioni Ing. E Mantovani Spa with Abu Shreikh Contracting Co.(ASRC)



4. Concrete supplier:

Manaseer Ready Mix Concrete



Kingdom Ready Mic Concrete



5. Tasks:

The tasks of the above two ready mix concrete companies is to supply a high quality concrete including pozzolan to satisfy the high specifications requirements set by the project and to fulfil both mechanical and durability requirements with total quantity of 15,000 cu.m concrete. According to the approved Mix design for this project the estimated quantity of **Micrasil®** to be supplied is 600 MT since it is the only pozzolan material approved for this section of the project and mix design stated 40 kg/cu.m.

The project requirements for the both compression strength and durability (represented as RCPT test according to ASTM C 1202) is 32 MPa designed strength and 2,000 coulombs respectively.



The following mix design shows the components designed to fulfill the above requirements.

Components	Quantity	Sources
Cement (CEMII/A-P(42.5 N))	385 Kg.	Portland Pozzolan Cement from Al Qatraneh Cement Co.
Micrasil 10%	40 Kg.	Imerys Minerals Arabia LLC
Water (Free) (W/C = 0.4)	170 Lt.	Main water supply - Aqaba.
20 mm Aggregate	1834 kg in total	Tarawneh Quarry located in wadi Al Tetin - Aqaba
14 mm Aggregate		Tarawneh Quarry located in wadi Al Tetin - Aqaba
Fine Sand (Aqaba Sand)		Tarawneh Quarry located in wadi Al Tetin - Aqaba
Fine Sand (Naqab Sand)		Al Habahbeh Quarry located in Ras Al Nagab.
Steel Fiber		Supplied by Bekart
Super Plasticizer (G)	7.50 Lt.	CTC - Amman Jordan.

6. Test results:

The following table summarizes the test results obtained from large scale test conducted in the presence of all concerned bodies; i.e. RMC, lab, Consultant and Contractor.

Slump test results	Slump (mm)	Temperature (C)
Initial	220	27
After 60 minutes	220	27.2
After 90 minutes	220	27.5

Compressive strength (MPa)	
7 days	50.0
28 days	57.8

Initial surface absorption	
@ 10 min	0.14
@ 30 min	0.09
@ 60 min	0.03
Water penetration (cm)	0.6
Chloride Content (%) by weight of cement	0.08
Sulfate content (%) by weight of cement	2.9
RCP (Coulombs)	311

7. Value of Micrasil to End user, client and owners of the project:

As with other SCMs when added to concrete the expected improvement of properties can be shortlisted with the following:



- Improved strength and other mechanical properties.
- Reduced permeability hence, increased durability of concrete.
- Reduced segregation and bleeding.

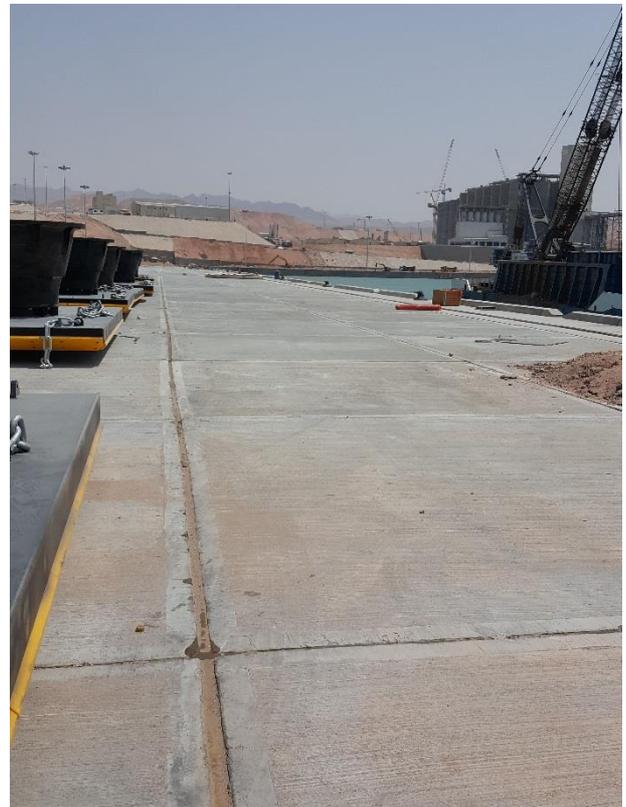
In addition to the above, **Micrasil®** has been capable of providing concrete producers with the following additional properties:

- Better workability.
- Better workability retention and travelling time.
- Slight reduction in admixture level.
- Better placeability of concrete and finishing.

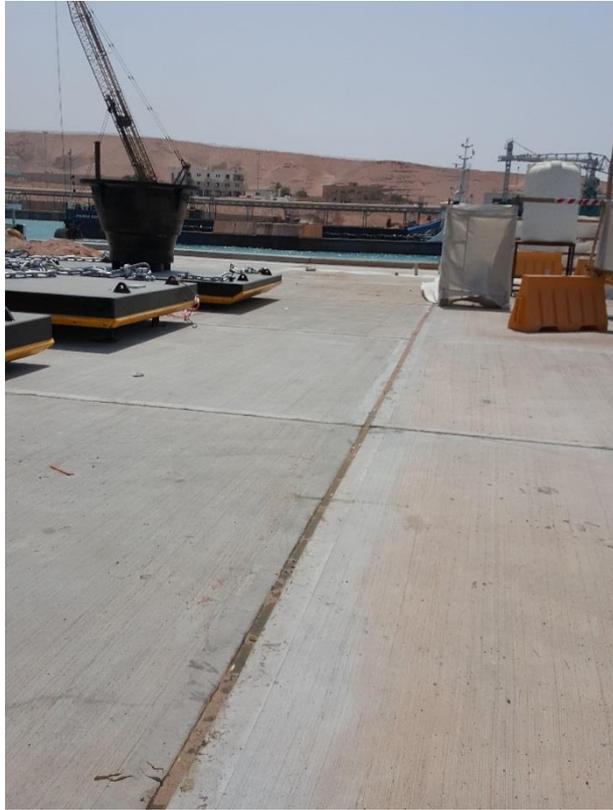
8. Conclusion:

Micrasil® has performed well in this project and all the parameters required for successful concreting job was achieved successfully using **Micrasil®**.

9. Photos taken from the project and showing the respective work achieved with concrete including Micrasil®



Concrete slabs made with concrete supplied by both RMCs including Micrasil



Concrete slabs made with concrete supplied by both RMCs including Micrasil