

# MIRA<sup>®</sup> 35

Mid-range water-reducing admixture ASTM C494 Type A

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## Product Description

MIRA<sup>®</sup>35 is a mid-range water reducer specifically formulated to produce concrete with enhanced finishing characteristics and near-neutral set times.

MIRA<sup>®</sup>35 is an aqueous solution of complex organic compounds, each of which contributes uniquely to the concrete's final properties. It is manufactured under rigid control, which provide uniform predictable performance. MIRA<sup>®</sup>35 does not contain calcium chloride as a functional ingredient. It is supplied as a brown colored, low viscosity liquid. One gallon weighs 10.5 lbs (one liter weighs approximately 1.26 kg).

## Uses

MIRA<sup>®</sup>35 is recommended for residential and commercial flatwork and formed concrete surfaces including ready-mix, job site, precast and concrete paving plants for normal and lightweight concrete. MIRA<sup>®</sup>35 imparts a "slickness" to the surface of the concrete, which is highly desirable for slip formed placement.

MIRA<sup>®</sup>35 is also highly effective to improve paste quality in lean, harsh mixes and concrete containing fly ash and GGBF slag. MIRA<sup>®</sup>35 produces concrete with improved placement properties including improved pumpability. It yields a less permeable concrete that is more resistant to damage from freeze-thaw exposure.

## Product Advantages

MIRA<sup>®</sup>35 offers significant advantages over conventional water reducers. Laboratory and field work has consistently demonstrated:

- Superior workability and finishability. The exceptional water-reducing capabilities allow for production of high quality, workable concrete with better water retention, internal cohesiveness and placement properties.
- MIRA<sup>®</sup> 35 is formulated with proven finishing enhancing components for flatwork. It controls bleeding and is recommended for lean harsh concrete mixes to improve paste quality pumpability and finishability. Floating and troweling, by machine or by hand, easily imparts a smooth, close tolerance surface with less machine time and labor
- Near-neutral setting times. MIRA<sup>®</sup> 35 provides near-neutral setting times throughout its recommended dosage range. Therefore concrete can be produced with excellent workability [125 to 200 mm (5 to 8 in.) slumps] without extended set times. MIRA<sup>®</sup> 35 does not contain added chloride
- Superior strength performance. Concrete manufactured with MIRA<sup>®</sup> 35 shows superior compressive and flexural strength development at all stages.

## Addition Rates

The typical addition rate range of MIRA<sup>®</sup>35 is 3 to 12 fl oz/100 lbs (195 to 780 mL/100 kg) of cementitious material. Addition rates may vary depending on materials, job conditions and desired performance characteristics. Please consult your GCP Applied Technologies representative for information and assistance.

## Compatibility with Other Admixtures and Batch Sequencing

MIRA<sup>®</sup>35 is compatible with most GCP admixtures as long as they are added separately to the concrete mix, usually through the water holding tank discharge line. In general, it is recommended that MIRA<sup>®</sup>35 be added to the concrete mix near the end of the batch sequence for optimum performance. Different sequencing may be used if local testing shows better performance. Please see GCP Technical Bulletin TB-0110, *Admixture Dispenser Discharge Line Location and Sequencing for Concrete Batching Operations* for further recommendations. MIRA<sup>®</sup>35 should not come in contact with any other admixture before or during the batching process, even if diluted in mix water.

Pretesting of the concrete mix should be performed before use, as conditions and materials change in order to assure compatibility, and to optimize dosage rates, addition times in the batch sequencing and concrete performance. For concrete that requires air entrainment, the use of an ASTM C260 air-entraining agent (such as DARAVAIR<sup>®</sup> or DAREX<sup>®</sup> product lines) is recommended to provide suitable air void parameters for freeze-thaw resistance. Due to a synergistic effect between MIRA<sup>®</sup>35 and air-entraining agents, the amount of air-entraining agent may be reduced by 10% to 50% when added to concrete that contains MIRA<sup>®</sup>35. Please consult your GCP Applied Technologies representative for guidance.

## Packaging & Handling

MIRA<sup>®</sup>35 is available in bulk, delivered in metered tank trucks, or in totes and drums.

MIRA<sup>®</sup>35 will freeze at approximately 25°F (-5°C), but will return to full strength after thawing and thorough mechanical agitation.

## Dispensing Equipment

A complete line of accurate, automatic dispensing equipment is available. MIRA<sup>®</sup>35 may be added to the concrete mix on the sand or in the batch water.

## Specifications

Concrete shall be designed in accordance with *Standard Recommended Practice for Selecting Proportions for Concrete*, ACI 211.

This water-reducing admixture shall be a mid-range water reducing admixture such as MIRA<sup>®</sup>35 as manufactured by GCP Applied Technologies. The admixtures shall not contain calcium chloride. It shall meet the requirements of Specification for Chemical Admixtures for Concrete, ASTM C494 as a Type A admixture. Certification of compliance shall be made available upon request. The admixture shall be delivered as a ready to use liquid product and shall not require mixing at the batching plant or at the job site.

## ASTM C494 Type A Water Reducer Test Data

	U.S. UNITS		METRIC	
	Control	MIRA® 35	Control	MIRA® 35
Cement (pcy) (kg/m <sup>3</sup> )	517	517	307	307
Coarse aggregate (pcy) (kg/m <sup>3</sup> )	1878	1840	1114	1092
Fine aggregate (pcy) (kg/m <sup>3</sup> )	1415	1278	840	758
Water (pcy) (kg/m <sup>3</sup> )	252	239	425	403
w/cm	0.487	0.462	0.455	0.462
Slump (inches) (mm)	3.5	3.5	89	89
Plastic air (%)	5.8	5.6	5.8	5.6
<b>Compressive strength</b>				
1 day (psi) (MPa)	2860	3180	19.7	21.9
7 day (psi) (MPa)	4280	4840	29.5	33.4
28 day (psi) (MPa)	5300	5860	36.5	40.4
Initial set time (hr:min)	4:39	4:58	4:39	4:58
Length change 28 day (%)	-0.037	-0.038	-0.037	-0.038
Freeze-thaw resistance (RDME %)	93	89	93	89

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Last Updated: 2022-05-06

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