

# TYTRO<sup>®</sup> WR 157

High-range water-reducing admixture for shotcrete

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## Product Description

TYTRO<sup>®</sup>WR 157 is a polycarboxylate-based high-range water-reducing admixture specifically formulated to provide prolonged workability, excellent plasticity, and extended slump life in underground shotcrete applications. Featuring the latest in the polycarboxylate technology, TYTRO<sup>®</sup>WR 157 provides superior water reducing performance to shotcrete. Manufactured under closely controlled conditions to provide uniform, predictable performance, GCP Applied Technologies' TYTRO<sup>®</sup>WR 157 contains no added chlorides and is formulated to comply with specifications for Chemical Admixtures for Concrete, ASTM Designation C494 as a Type A and F admixture.

## Product Advantages

- Efficient dosage rate – Produces high slump shotcrete at very low dosages
- Operational flexibility – Prolonged workability
- Improved pumpability – Improved consistency
- Lower water-to-cementitious materials ratio – Enables designing shotcrete mix with higher strength and durability
- Neutral impact on set time and air content
- Consistent performance across cement chemistries

## Uses

TYTRO<sup>®</sup>WR 157 is used in all shotcrete applications where it is desired to minimize the water-to-cementitious materials ratio yet maintaining workability, and especially in the following applications:

- Temporary and permanent rock support in tunnels
- Underground rock support in mining
- Slope stabilization

## Addition Rates

The dosage of TYTRO<sup>®</sup>WR 157 can vary based on the mix design, cementitious content, water-to-cementitious materials ratio, aggregate gradations and slump required. The dosage of TYTRO<sup>®</sup>WR 157 normally ranges between 0.8% and 1.5% by the total weight of cementitious materials. At a given water-to-cementitious materials ratio, the slump required for placement can be controlled by varying the addition rate. Should conditions require using more than the recommended addition rates, please consult your GCP Applied Technologies representative. GCP Applied Technologies recommends that trials be performed with cement and aggregates under local conditions before use to assess and optimize dosage rates and performance.

## Mixing & Dispensing

In general, it is recommended that TYTRO®WR 157 be added to the mix near the end of the batch sequence for optimum performance. It is recommended that TYTRO®WR 157 be introduced into the mixer by means of automatic dispensing equipment. A range of equipment is available, and advice on supply and fitting is available from GCP Applied Technologies on request.

## Packaging

TYTRO®WR 157 is available in bulk, delivered by metered tank trucks, 1,250 litre totes, and 210 litre drums.

## Storage

### Temperature

TYTRO®WR 157 should be stored at a temperature range of 2 °C to 35 °C. If TYTRO®WR 157 freezes, it will return to full effectiveness after thawing and thorough mechanical agitation. It is recommended that your local sales representative be consulted prior to the use of any products that may have been frozen. Performance tests should always be carried out prior to use.

### Conditions

TYTRO®WR 157 must be kept in closed plastic containers or closed tanks.

## Shelf Life

If stored in tightly closed original containers and under the above mentioned conditions, TYTRO®WR 157 has a shelf life of at least 12 months. Please contact your local GCP Applied Technologies sales representative regarding the suitability for use if the shelf life of TYTRO®WR 157 has been exceeded.

## Health and Safety

Avoid eye and skin contact and wear rubber gloves and safety glasses when handling this product. If contact occurs, rinse with plenty of water and seek medical advice.

For further information, refer to the Material Safety Data Sheet or contact your local GCP Applied Technologies representative.

## Compatibility

TYTRO®WR 157 is compatible with all TYTRO®shotcrete admixtures.

GCP Applied Technologies recommends that a suitable alkali-free set accelerator and a hydration control admixture be incorporated into the shotcrete mix to achieve the required strength performance and setting characteristics. TYTRO® SA series of high performance set accelerator along with TYTRO®HC series of hydration stabilizing admixtures are recommended for this purpose. For shotcrete requiring air entrainment, the use of TYTRO®AE series is recommended to provide desired air content and air-void system for resistance against freezing and thawing cycles.

Pretesting of the shotcrete mix should be performed before use and as conditions and materials change in order to ensure compatibility with other admixtures.

For use with other shotcrete admixtures systems, we recommend you to contact GCP Applied Technologies for further advice.

## Properties

Form	Liquid
Density (g/cm <sup>3</sup> )	1.06-1.10
pH (25 °C / 77 °F)	4.2-6.0
Chloride Content	≤500 ppm

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