

# MasterLife® SF100

## Silica fume mineral admixture

### DESCRIPTION

**MasterLife® SF100** is a dry, compacted, silica fume mineral admixture formulated to produce concrete with special performance qualities. It improves the hardened characteristics of concrete in two ways. Firstly, **MasterLife® SF100** is a pozzolan which reacts chemically within the concrete to increase the amount of calcium silicate hydrate gel formed, thus improving the strength and impermeability of the concrete. Secondly, **MasterLife® SF100** is an ultra-fine material that, when added to concrete, physically fills the voids between cement particles resulting in an extremely dense and impermeable concrete. **MasterLife® SF100** meets ASTM C 1240 requirements.

### FIELDS OF APPLICATION

The reduced permeability of concrete produced with **MasterLife® SF100** greatly limits the ingress of water, chlorides, sulphates, and aggressive chemicals known for promoting reinforcing steel corrosion and other distressed in the concrete. This makes **MasterLife® SF100** an ideal product for use in basement structures, parking deck, bridge decks, marine structures, and any construction that requires the protection provided by impermeable concrete. Because of its pozzolanic and void-filling properties, the addition of **MasterLife® SF100** to conventional concrete also provides ultra high compressive strengths. This allows for design flexibility, resulting in reduced member size, increased span lengths, and improves overall structural economics.

As a result of the preceding advantages, **MasterLife® SF100** will improve performance in prestressed, precast, and ready-mixed concrete application. **MasterLife® SF100** can be used with portland cements approved under ASTM AASHTO or CRD specification. When air entrainment is desired, an air-entraining admixture is recommended. Please consult Master Builders Solutions representative. It is also recommended that **MasterLife® SF100** be used in conjunction with high range water-reducing admixture.

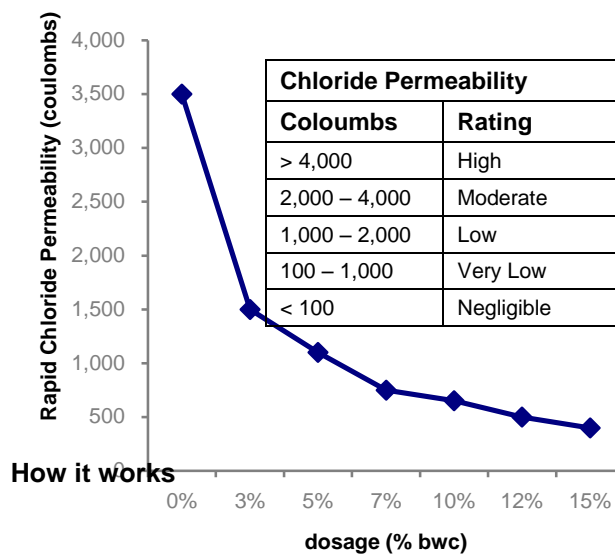
### FEATURES AND BENEFITS

**MasterLife® SF100** aids in the production of concrete with the following special qualities :

- Dramatically improved durability
- Uniformly high compressive strength
- Abrasion and erosion protection
- Better flexural strengths at all ages
- Low permeability
- Excellent freeze/thaw resistance

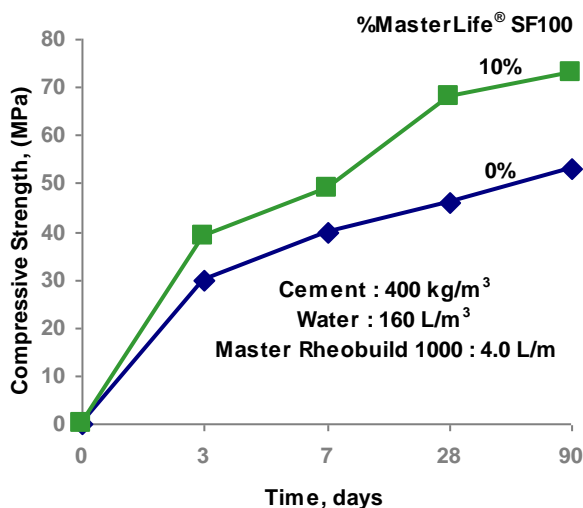
### TYPICAL PERFORMANCE DATA

Example of the influence of **MasterLife® SF100** on rapid chloride permeability



### How it works

#### Compressive Strength (MPa)





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**MasterLife<sup>®</sup> SF100** silica fume is a micro-filling material that physically fills the voids between cement particles. **MasterLife<sup>®</sup> SF100** silica fume dramatically lowers concrete permeability and reduces the size and number of capillaries that allow contaminants to enter concrete.

As a pozzolan, **MasterLife<sup>®</sup> SF100** silica fume reacts chemically within concrete to increase the amount of calcium silicate hydrate (CSH) that is formed. CSH is the bonding agent that holds concrete together.

The additional CSH significantly increases the compressive strength and decreases the permeability of concrete.

## Compatibility

**MasterLife<sup>®</sup> SF100** silica fume can be used with Portland cements approved under ASTM, AASHTO, or CRD specifications. It is compatible with most concrete admixtures, including all BASF Construction Chemicals admixtures.

**MasterLife<sup>®</sup> SF100** silica fume is recommended for use with high-range water-reducing admixture, for maximum workability while maintaining a low water-cementitious materials ratio.

## Rate of hardening

Setting time of concrete is influenced by the chemical and physical composition of the cement and/or cement type used to produce the concrete, temperature of the concrete, weather conditions, and the use of chemical admixtures. Trial mixes should be made with the job materials to determine the setting time of a specific mixture.

**MasterLife<sup>®</sup> SF100** silica fume will not initiate or promote corrosion of reinforcing steel embedded in concrete, prestressed concrete or concrete placed on galvanised steel floor and roof systems. Neither calcium chloride nor any chloride based ingredients are used in the manufacture of **MasterLife<sup>®</sup> SF100** silica fume. **MasterLife<sup>®</sup> SF100** is batched at the ready-mix plant in a manner similar to cement or other cementitious materials such as fly ash and granulated slag. It is recommended that **MasterLife<sup>®</sup> SF100** be used with Master Builders Solutions high-range water reducer in order to provide maximum workability while maintaining the desired low water/cement ratio.

**Note** : For directions on the proper use of **MasterLife<sup>®</sup> SF100** in specific applications, contact your local Master Builders Solutions representative.

## DOSAGE

**MasterLife<sup>®</sup> SF100** is recommended for the use at an addition rate of 5 to 15% by weight of cement, depending on the amount of strength increase or impermeability desired. The exact amount for strength or durability requirements should be determined by trial batches using project materials. For use in Rheosys system, the typical addition rate for **MasterLife<sup>®</sup> SF100** is 3 to 5% by weight of cement.

The above addition rate applies to most concrete mixes using average concrete ingredients. However, variations in the job conditions and concrete materials may make amount outside the recommended range desirable. In such cases, contact your local Master Builders Solutions representative.

## PACKAGING

**MasterLife<sup>®</sup> SF100** is generally supplied in 20 kg bags, bulk bags or bulk delivery.

## SHELF LIFE

**MasterLife<sup>®</sup> SF100** can be kept for more than 12 months time if stored in original packaging, in a cool dry place and protected against physical damage.

## PRECAUTIONS

**Health** : **MasterLife<sup>®</sup> SF100** does not contain any hazardous substances requiring labelling.

It is safe for use with standard precautions followed in the construction industry, such as use of hand gloves, safety goggles, etc.

For detailed Health, Safety and Environmental recommendations, please consult and follow all instructions on the product Material Safety Data Sheet.



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**STATEMENT OF RESPONSIBILITY**

The technical information and application advice given in this BASF publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

**NOTE**

Field service where provided does not constitute supervisory responsibility. Suggestions made by BASF either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not BASF, are responsible for carrying out procedures appropriate to a specific application.

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