



## AN ADMIXTURE FOR SHOTCRETING

**TEST FIRST. COMPLETE TESTING IS REQUIRED BEFORE ACTUAL USE.**

'abilspray<sup>®</sup>' powder is a carefully engineered intimate blend of superfine fly ash with synthetic and naturally occurring amorphous silica available for supply in 10kg net degradable paper sacks.

'abilspray<sup>®</sup>' is designed to impart rheological characteristics that are critical for the application of spray-applied concrete (shotcrete). In particular, the high surface area of 'abilspray' particles per unit weight ensure high wet adhesion to the substrate of an applied shotcrete mix into which 'abilspray' has been incorporated by *thorough* mixing.\*

Until recently, silica fume powder, now referred to as Amorphous Silica, has been the choice of most engineers, concrete

technologists and specifiers for shotcrete mix designs, but due to the apparent anticipated shortage of this product in dependable form from Australian sources, 'abilspray' as a high performance alternative is offered by Ability.

### TESTING RESULTS:

The following results indicate the relative strength gain performances of 'abilspray<sup>®</sup>' verses silica fume in a shotcrete mix design at the same dose rates in a NATA approved concrete testing laboratory evaluation.

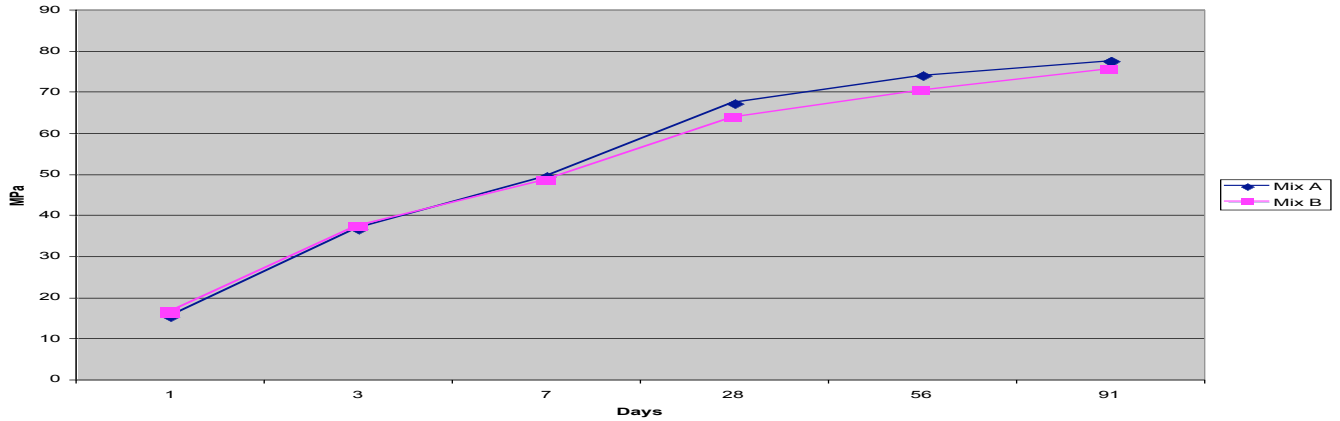
Mix A contains 40 kg of silica fume per cubic metre of shotcrete concrete.

Mix B contains 40 kg of 'abilspray' per cubic metre of shotcrete concrete.

<b>LABORATORY RESULTS</b>		
<b>Compressive Strength (MPa)</b>		
<b>DAYS</b>	<b>MIX A</b>	<b>MIX B</b>
1	15.5	16.5
3	36.5	36.5
3	37.0	38.0
<b>3</b>	<b>36.8</b>	<b>37.3</b>
7	49.5	48.5
28	67.5	62.5
28	67.0	65.0
<b>28</b>	<b>67.3</b>	<b>63.8</b>
56	70.0	71.0
56	74.0	69.5
<b>56</b>	<b>72.0</b>	<b>70.3</b>

\* A mixing time of eight (8) minutes at the ideal barrel *mixing* speed (18 RPM) of premixed concrete supplier's transit trucks is recommended for shotcrete mixes incorporating 'abilspray' admixture.

**2**  
**Compressive Strength**



**OTHER POTENTIAL BENEFITS:**

The incorporation of superfine fly ash into 'abilspray<sup>®</sup>' added into concrete may assist with a reduction of drying shrinkage. It may also reduce the risk of adverse Alkali Aggregate Reactivity in concrete, which can cause major cracking in concrete structures leading to structural damage, lack of watertightness and consequent corrosion of reinforcing steel.

**THROUGH COLOURED SHOTCRETE:**

Colouring oxide pigments may be incorporated into shotcrete mixes with 'abilspray<sup>®</sup>' admixture. Ability's 'abilox<sup>®</sup>' range of 45 UV resistant, colourfast colouring

pigments potentially offers a comprehensive palette of permanent, integral 'through' shotcrete colours which are easily achieved for decorative, functional delineative or environmental colouring use.

**FREE SAMPLES:**

Free-of-charge production size samples for comprehensive laboratory and field evaluation/testing to ensure that the product completely fulfils the functions required by the purchaser/user of 'abilspray<sup>®</sup>' prior to actual use, will be made available by contacting Anna, Dorothy, Bea, Michael or Peter at Ability on PH: (03) 9457 6488.

**PHYSICAL PROPERTIES:**

PROPERTY	RESULT	%	AS3582.1 REQUIREMENT	TEST METHOD
Retained on 45 $\mu$ m Sieve	0.74	%		
Surface Area(approx)	850 m <sup>2</sup> /kg			
Moisture Content	0.2	%	1.0 max	AS 3583.2
Fineness	98	%	75 min	AS 3583.1
Loss on ignition	2.21	%	4.0 max	AS 3585.3
Sulphuric Anhydride	0.3	%	3.0 max	AS 3583.8
Relative Density	2.27			AS 3583.5
Relative Water	97	%		AS 3583.6
Relative Strength	116	%		AS 3583.6
Chloride	<0.001	%		AS 3583.13
Available Alkali as Na <sub>2</sub> O equivalent	0.01	%		AS 3583.12

OXIDES BY XRF:		%		
CaO	1.6	%		*CTLM 3.05
SiO <sub>2</sub>	55.1	%		CTLM 3.05
Al <sub>2</sub> O <sub>3</sub>	28.8	%		CTLM 3.05
Fe <sub>2</sub> O <sub>3</sub>	9.3	%		CTLM 3.05
MgO	1.26	%		CTLM 3.05
SO <sub>3</sub>	0.4	%		CTLM 3.05
Na <sub>2</sub> O	0.2	%		CTLM 3.05
K <sub>2</sub> O	0.2	%		CTLM 3.05
TiO <sub>2</sub>	2	%		CTLM 3.05
P <sub>2</sub> O <sub>6</sub>	0.1	%		CTLM 3.05
Mn <sub>2</sub> O <sub>3</sub>	0.23	%		CTLM 3.05
Total Alkali as Na <sub>2</sub> O equivalent	0.3	%		CTLM 3.05

\* CTLM = Construction Testing Laboratory Method 3.05. 'Cement Australia' in house method based on AS2350.20

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**FURTHER INFORMATION:**

To request further printed information, call Anna, Dorothy or Bea on PH: (03) 9457 6488 or view our website: [www.abilityproducts.com.au](http://www.abilityproducts.com.au).