

# QUALITY ASSURANCE STATEMENT

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FOR  
**'abilox<sup>®</sup>'**  
SUPERLATIVE QUALITY  
COLOURING  
OXIDE PIGMENTS  
(DRY POWDER COLOURANTS)

## STATEMENT OF QUALITY ASSURANCE & PERMANENCY FOR 'abilox<sup>®</sup>' SYNTHETIC MINERAL OXIDE PIGMENTS USED TO COLOUR PRODUCTS OF INDUSTRY

### CONFORMANCE TO GLOBAL STANDARD SPECIFICATIONS

'abilox<sup>®</sup>' man-made synthetic mineral metal oxide powder pigments are ultra-fine solid non-dissolving coloured particles. They are used as colouring additives and with adequate mixing, to integrally and permanently colour composite materials such as concrete and mortar.

'abilox<sup>®</sup>' oxides are manufactured to exceed and surpass industry accepted standards of quality. Conformance to national Standard Specifications include Australian Standard K54-35 'COLOUR PIGMENTS FOR USE WITH PORTLAND CEMENT, British/European Standard BS EN 12878/1999 'COLOURS FOR CONCRETE AND MORTARS' and the American ASTM Standard C979-1999 'COLOUR PIGMENTS FOR INTEGRAL COLOURATION OF CONCRETE AND MORTARS.'

Although brighter, stronger in colouring strength and more uniform in properties from batch to batch, 'abilox<sup>®</sup>' fine, particulate oxides used as dry colouring pigment admixtures are essentially the same as natural metal ores and ochres used by humankind for eons of time as permanent colouration - particularly for prehistoric cave art. Many ancient cave paintings by Australian Koori and other peoples throughout our global earth incorporating these naturally occurring colouring materials are reputed by archaeologists to have lasted for more than 100,000 years.

Mineral oxide pigments have the same chemical makeup as naturally occurring ochres and metal ores (earth colours), which for example when present in clay, cause a baked clay brick to be red, cream, brown etc - permanently. They are also the same mineral compounds which permanently colour rocks, pebbles, sand, crushed aggregates and other natural stone materials such as granite, basalt and marble - often used for monumental and building purposes.

**'abilox®' COLOURS ARE FADE-PROOF**

Ultra-fine solid grains of 'abilox®' mineral (metal) oxide pigments are resistant to solar rays such as UV from sunlight and photo degradation. They are chemically inert and non-reactive as well as being insoluble and, in themselves, fade-proof. In the world of various types of colouring pigments they are called 'fast' colours.

**'abilox®' COLOURANTS IN CONCRETE, MORTAR, ASPHALT, PAINT, PLASTICS, RUBBERS AND OTHER COMPOSITE MATERIALS**

Provided that there are no surface flaws, faults, growths, encrustation, signs of erosive or abrasive wear on building and other man-made composite building materials which integrally incorporate well mixed 'abilox®' fine colouring pigments and that these composite materials are of industry acceptable standards of ultimate mechanical strengths, soundness and quality, they will remain without change and not fade.

Therefore 'abilox®' colours potentially provide excellent long-term permanent colouration for these and similar materials.

Most types of composite materials can be permanently coloured. That is to say, the binding vehicles, media or 'glue' components of composite building and other materials may be easily coloured. These include ideally hardened (hydrated) Portland cement in concrete, hydrated lime-silica in sand lime mortars, hydrated Gypsum plaster in applied plaster finishes, resins and polymers in paints, adhesives, plastics and rubber. This colouration is permanent provided that these binders effectively bind and strongly hold properly mixed and dispersed fine 'abilox®' particulate pigments in correctly formulated coloured systems to adequately encapsulate them and 'lock' them in firmly, on a long-term basis. The total composite material will then maintain the pigmented/coloured effect over a very, very long time.

Due to their UV absorption and dissipation characteristics, micro-fineness and high surface area (the average particle size being approximately 0.3 microns - about 500 times finer than typical Portland cement particles), 'abilox®' pigments also protect the binder or 'glue' in composites from degradation by UV rays.

**NO DELETERIOUS EFFECTS ON THE MECHANICAL STRENGTHS OF CONCRETE, MORTAR ETC**

Being insoluble and chemically non-reactive, 'abilox®' and other brands of powder oxide pigments conforming to the aforementioned Standards should not result in any deleterious effects when adequately mixed into properly formulated concrete, mortar of a given total mix design - including the (ideally low) water content, ie 'abilox®' does *not* reduce the mechanical strength properties of these materials at the same water to cementitious material ratio (W/C ratio).

However, it is strongly recommended that for the best performance, concrete, mortar, etc - either pigmented (coloured) or plain (unpigmented) should be made and placed with the lowest practical water/cement ratio, be properly and fully compacted by means of poker vibrators, other proper and effective vibration processes immediately after placement to remove all air voids which reduce strength and are counter-productive and, after the finishing process and setting, be continuously cured (a procedure adopted for the prevention of the evaporation of the mix water), according to Australian Standard AS3600-2000 'Concrete Structures'.

It is also strongly advised, that for concrete jobs requiring more than one load of pre-mixed concrete, all raw materials and every step of the concrete's manufacture including the 10 minute mixing time at the fastest concrete transit mixer barrel speed, whilst the vehicle is stationary be uniform and consistent. This desirable uniformity aspect also applies to all of the subsequent concrete site processing and finishing steps.

**FURTHER INFORMATION**

For your benefit and further guidance please request and carefully read Ability's printed articles entitled 'Colouring Pigments For Concrete: Their Possibilities For Enhancing, Architecture, Landscape Architecture And Civil Engineering' 'Colour Pigments For Permanently Colouring Concrete Mortar And Concrete Products,' 'Colourful Concrete And Mortars' 'Obtaining Colour Uniformity With Through-Coloured Concrete Using Mineral Oxide Colouring Pigments' And 'Concrete What Is It?' These guides are available free of charge upon request.