COLOR INDEX NAME/NUMBER

Pigment Blue 29
77067

LIGHTFASTNESS

ASTM D4302 1

CHEMICAL TYPE/CLASS

Inorganic synthetic

Sulfate

CHEMICAL FORMULA/DESCRIPTION

Na₈Al₆Si₄O₁₆·8H₂O

Sodium silicate prepared from lapis lazuli ore or synthetically by calcining white clay, soda ash, and other appropriate materials

SOLID BULK DENSITY

19.1-20.0 lb/US gal

OIL ABSORPTION

28-31 ml/100g

OIL FILM CHARACTERISTICS

Average to slow drying

Fairly hard, somewhat brittle

VEHICLE COMPATIBILITY

Lined oil, alkyd, acrylic, watercolor, gouache, tempera, casein, encaustic, pastel

TOXICITY

Not considered toxic; do not breathe dust

COMMON NAMES

Ultramarine blue, French ultramarine

Ultramarine blue. Since 1828, the ultramarine of commerce has been an artificial product made by heating clay, soda, sulfur, and coal in furnaces; the color of the resulting compound is attributed to colloidal sulfur. Commercial American ultramarines are produced in a wide variety of shades, from that of the true ultramarine blue to inimitable cobalt and turquoise shades which are comparatively greenish. The pigment called green ultramarine is a rather dull color with properties similar to those of ultramarine blue; it is produced during the manufacture of the blue, and may be considered an unrefined ultramarine blue; it is not widely used. All pure ultramarine pigments and variations are equally permanent, but many inferior and reduced grades are made for industrial use. Ultramarine is semitransparent; it works poorly in oil, where it tends to yield stringy instead of buttery pastes. It is entirely permanent for most uses, including high-temperature applications, but is easily affected and bleached by very weak acids and acid vapors; the same is true of the native lapis. Hence it has never been used in the fresco palette. After several independent discoveries concerning the nature of the product and the method of its manufacture, it was first produced commercially in France by Guimet in 1828, and the pigment was used by artists in Paris. In the same year the process was published by Gmelin in Germany. Ultramarine is the standard blue color in artistic use. The best quality ultramarines as made since 1828 are identical with the native lapis lazuli for all practical purposes. They have the same chemical reactions and are distinguishable from it only upon microscopic examination, when the difference in crystalline structure is immediately apparent. Like most other high-temperature furnace products, it is otherwise of great permanence. When ground in oil, ultramarine normally has one of the worst painting consistencies of any of the pigments and tends to make paints of eratic and usually stringy nature; it is therefore much diluted with waxes and other stabilizers by the makers of colors who require all their paints to have the same buttery plasticity. Artists who grind their own oil colors, however, find that they are able to paint the colors which are not quite as uniform in consistency. Furthermore, ultramarine in oil is often used as a tinting color in admixture with whites, yellows, etc., which tend to impart a normal consistency to the mixtures.

Although aurine, blue verditer, and the other unsatisfactory blues were augmented by small in the seventeenth century and Prussian blue in the eighteenth, the invention of artificial ultramarine was one of the major events in the history of artists' materials. Its invention was the result of intense chemical research following the accidental observation of a mysterious blue color entrapped as an impurity in the furnaces where soda ash was made; since then it has become a moderately priced article of large-scale use. Ultramarine blue is sometimes used as a substitute pigment for cobalt blue in cheaper grades of paint.