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# GRAPHITE SOLUTIONS FOR REFRACTORIES

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## **TIMREX®** TIMCAL Graphite

### Natural Flake Graphite in Refractories

For decades now, natural flake graphite has been extensively used in refractories to boost performance and service life. Today, natural graphite is still a vital component of modern refractory products and a prime choice for new developments. Refractories in steel ladles, basic oxygen furnaces (BOF) and electric arc furnaces (EAF) are but a few examples of where IMERYS natural graphite can contribute to smooth, economical and trouble-free operation.

**TIMREX® Graphite powders offer high thermal conductivity and oxidation resistance. They effectively improve corrosion and thermal shock resistance by repelling infiltrations and lowering internal thermal gradients.**

#### **TIMREX® GRAPHITE PROPERTIES AND EFFECTS ON REFRACTORIES**

With its highly crystalline structure, TIMREX® natural flake graphite is a unique material, with unique properties. Additions of TIMREX® graphite to the refractory mix (a few per cent up to 25%) can tremendously improve its service performance.

#### **THERMAL SHOCK RESISTANCE**

TIMREX® Graphite has a high thermal conductivity. When added to refractories, the internal thermal gradient between the hot and the cold face is considerably reduced, thus effectively decreasing internal stresses and improving thermal shock and spalling resistance.

#### **CORROSION RESISTANCE**

TIMREX® Graphite is not wetted by molten slag. When present in the refractory, TIMREX® graphite prevents penetration of slag and molten metal through the crack network inside the refractory. That effectively improves corrosion resistance.

#### **OXIDATION RESISTANCE**

Recent research work indicates that 2 factors directly affect the oxidation resistance: particle size and purity. It has been determined that oxidation takes place only on the edges of the graphite flakes or where impurities or inclusions can be found. Larger and purer flakes are therefore more resistant. With larger flake size, higher thickness and higher purity, TIMREX® Natural Graphite shows excellent resistance to oxidation, and this translates into longer refractory life.

#### **ADDITIONAL PROPERTIES AND ADDED BENEFITS OF TIMREX® GRAPHITE**

- Outstanding resistance to chemical attacks.
- Stability over a wide range of temperature with very low thermal expansion coefficient.
- Reduced tool wear during pressing because of its unique lubricant action.
- Malleable and very easy to model into shape.

# Natural Flake Graphite in Refractories

## TIMREX®

TIMCAL Graphite

### NATURAL FLAKE GRAPHITE IN REFRACTORIES

TIMREX® Natural Flake Graphite is sold in a wide range of products distinguished by particle size distribution, chemistry and carbon content. Imerys Graphite & Carbon mines the graphite from its own source in Lac-des-Îles, Quebec, Canada. This unique “close-to-customer” location guarantees very fast and reliable deliveries. Imerys Graphite & Carbon also offers natural graphite from other world class sources. All TIMREX® “Naturals” are thoroughly controlled in our laboratories to ensure quality, consistency and above all, total customer satisfaction.

### SIZES AND CHARACTERISTICS

Here is an overview of some of the most used products. The selection of the right product depends on many factors.

CLASS	PARTICLE SIZE*	GUARANTEED	TIMREX CARBON CONTENT
Coarse	20 x 50 mesh	80% min + 50 mesh (300 µm)	94% to 97%
Medium	50 x 80 mesh	80% min + 80 mesh (180 µm)	94% to 97%
	50 x 100 mesh	80% min + 100 mesh (150 µm)	94% to 97%
	80 x 150 mesh	80% min + 140 mesh (105 µm)	94% to 97%
Fine	- 100 mesh	80% min - 100 mesh (150 µm)	94% to 97%
	- 150 mesh	80% min - 150 mesh (105 µm)	94% to 97%

Our specialists will be glad to help in the selection of the most suitable product for your application. Depending on customer requirements our products are delivered in bulk bags or paper bags. For details, feel free to contact us via our website at [imerys-graphite-and-carbon.com](http://imerys-graphite-and-carbon.com)

### TIMREX SYNTHETIC GRAPHITE

In its plant of Bodio (Switzerland) Imerys Graphite & Carbon produces very high purity synthetic graphite. Various purity levels, size distribution, particle shapes and physical properties are available. See Imerys Graphite & Carbon’s website for complete product data sheets.

### TIMROC SILICON CARBIDE

As a by-product from synthetic graphite production, silicon carbide is offered in limited supply. It comes in a variety of grades, some suitable for refractories. Contact us for further details.

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