



Unibar

Technical Documentation

Unibar. Continuous Cast Iron Bar produced by United Cast Bar Limited

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ADVANTAGES OF UNIBAR

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Many of the advantages of Unibar over other materials can be attributed to the two phases present in the structure: an iron metallic one, similar to steel, and a graphitic phase with graphite in flake or spheroidal form.

Therefore the advantages of Unibar, as compared with other materials, are as follows:

▶ **COMPLETE ABSENCE OF DEFECTS**

This means a reduction in total manufacturing cost, due to the elimination of rejected parts and abortive machining. In addition, the machining tools last longer and there is less machine maintenance required.

▶ **MACHINABILITY**

The machinability of Unibar® is high, fundamentally due to the presence of microscopic particles of graphite in the structure, which act as a lubricant.

In addition to this, the homogeneity of its structure and the absence of the abrasive inclusions of sand which are typical in sand casting, improve machinability and therefore prolong the life of tools, drastically cutting your costs.

▶ **ELIMINATION OF COSTLY PATTERNS**

Resulting in lower overall costs and quicker delivery, when compared with alternative casting processes.

▶ **LESS MACHINING ALLOWANCE**

This is due to the homogeneous fine grain structure of Unibar which allows us to produce sections with dimensions very close to the final measurements of the part. This obviously results in a considerable saving in costs, both in terms of material, and in terms of machining.

▶ **HIGH WEAR RESISTANCE**

Unibar, possesses good wear resistance due to a self-lubricating network of graphite flakes in a matrix of pearlite in the contact surface. This results in a low wear factor, and minimal friction between contact surfaces.

▶ **EXCELLENT THERMAL CONDUCTIVITY**

Generally Unibar is highly recommended for applications in which heat dissipation is the priority, since graphite is an excellent heat conductor.

▶ **HOMOGENEOUS AND CLOSE GRAINED STRUCTURE**

Giving excellent machinability, good wear resistance and ability to withstand hydraulic or pneumatic pressures.

▶ **EXCELLENT DAMPENING CAPACITY**

Unibar has excellent dampening properties, both in its laminar and its spheroidal form since graphite acts as a cushion.

▶ **EXCEPTIONAL DIMENSIONAL STABILITY**

Unibar has high dimensional stability due to the annealing process which relieves the stresses inherent in the process of continuous casting.

▶ **HIGH FATIGUE STRENGTH**

Unibar is an ideal material for those applications in which high fatigue strength is being sought due to the absence of inclusions and blisters, as well as better cohesion of its structure compared with traditional sand casting.

▶ **AVAILABILITY** of a very comprehensive range of bar material stock, thus facilitating improved stock management and control for our customers.

▶ **SUPERB CORROSION RESISTANCE**

Unibar offers high resistance to corrosion, much better than that of steel and, in the case of water and oil, almost as good as that of non-ferrous metals.

▶ Unibar products are suited to **COMPACT STORAGE**, saving valuable space, in comparison to alternative products such as sand castings.

▶ LOW DENSITY

Today, the weight of the machinery and therefore of its components, is a decisive factor, not only due to the energy saving this represents, but due to the reduction in transport and logistic, as well as the in actual cost of the material.

The specific weight of Unibar, which is 10% less than that of steel, satisfies these aspects without risking its physical and mechanical characteristics.

▶ HEAT TREAT RESPONSE

Within its range of products Unibar offers qualities which can undergo heat treatment, thus producing ferritic structures. This results in certain physical properties such as better thermal conductivity or dimensional stability, in addition to better machining.

▶ EXCELLENT SURFACE FINISH

In the case of applications on-view the most suitable Unibar qualities are those with small graphite flakes.

▶ LOW RESIDUAL STRESSES

As the core of Unibar remains liquid, while the periphery is solid at the moment the bar exits the die and cooling system. That means that, the bar undergoes a heat treatment, intrinsic to the process, from the inside to the outside of the bar, which releases most of the stresses in Unibar.

▶ STRENGTH AND DUCTILITY comparable to that of mild and low alloy steels (Unibar Spheroidal).

▶ Excellent bearing properties, SELF-LUBRICATING and OIL RETAINING PROPERTIES.