

STELEX* PrO

For high integrity heavy iron and steel castings

VESUVIUS





STELEX PrO - carbon bonded filters

for cleaner castings and minimised turbulence

STELEX PrO (priming optimisation) filters are a new generation of ceramic foam filter developed for application with carbon and low alloy steels.

The filters are carbon based and therefore have a very low weight and thermal mass. The low weight offers major benefits when the filters are used with alloys which are viscous and poured close to their liquidus / solidus transition (typically carbon and low alloy steels). The filters prime immediately and metal flow rates and capacity are high. The filters facilitate turbulence reduction on mould filling and inclusion and slag removal.

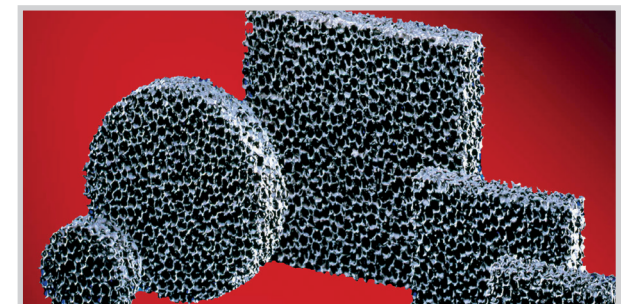
The attributes of STELEX PrO filters make them ideal for application to large iron castings.

STELEX PrO foundry filters have the following features:

- + Low weight
- + Low heat capacity
- + Slag resistance Thermal shock resistance
- + Low levels of internal stress
- + Exceptionally high creep resistance
- + High levels of hot strength

The particular benefits of STELEX PrO foundry filters are:

- + Consistent priming means that pouring temperatures for conventional gating systems are achievable
- + Reduction of temperature related defects
- + High filtration capacity including high flow rates
- + Flexible filter positioning - the filter can be placed horizontally and vertically and is ideally placed at the ingate
- + When used in the KALPUR* direct pour system the filter will float to the feeder surface after pouring, reducing the risk of secondary shrinkage and maximising feeding efficiency
- + No negative influences when remelting returns containing filter material
- + Lower costs for energy
- + Lower costs for refractory materials



Range of STELEX PrO filters

STELEX PrO - advanced foundry filters

for high-integrity heavy iron and steel castings

Calculation of the gating system

In gating systems using STELEX PrO foundry filters, the cross-section of the downsprue should be the smallest or controlling section of the running system. The calculation of this choke area (C_A) is based on the "general ingate formula".

$$C_A = \frac{22.6 \times W}{\xi \times \rho \times t \times \sqrt{H}}$$

C_A : downsprue area [cm²]

22.6 : constant

W : poured weight [kg]

ξ : friction factor

ρ : density [g/cm³]

t : required pouring time [s]

H : effective pouring height [cm]

Based on an extensive range of applications and experience, Foseco recommends the following gating ratio.

downsprue	1.0
ratio of runner	1.1
ratio of ingates	1.2

The front face filter area must be large enough to ensure that the casting cavity is filled with molten metal before the filter becomes blocked.

Foseco recommends the front face filter area to be at least 3.0 times larger than the calculated choke area (C_A). It is also important to ensure the exit face of the filter is well supported. A support area of 30% of the front face area should be applied.

Application of STELEX PrO filters

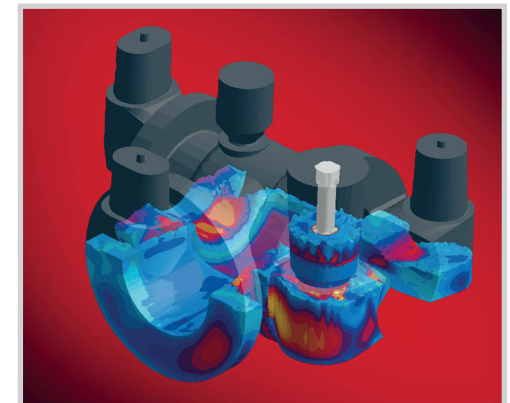
Filtration effectiveness largely depends upon the correct application of STELEX PrO filters. When applying filters we always recommend using STELEX filter prints which have been developed in close co-operation with foundrymen and Foseco experts. The superior priming properties of STELEX PrO filters mean that the filter can be placed at the ingate rather than at the base of the downsprue. This position ensures filtration of any inclusions generated in the running system and optimal turbulence control before the metal enters the mould cavity.

In order to avoid turbulence, abrupt changes in the direction of metal flow after the filter should be avoided. This is especially important when casting steel alloys, because a turbulent flow will lead to reoxidation and the development of new non-metallic inclusions within the metal stream.

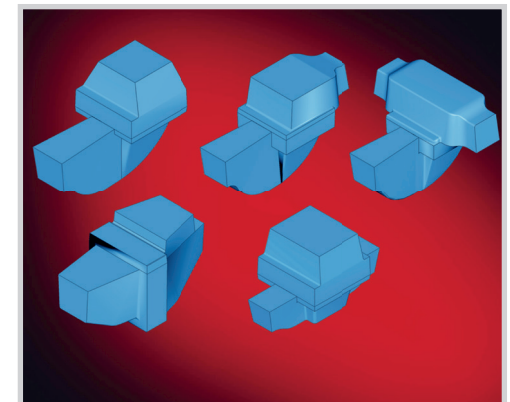
Simulation support



KALPUR ST
direct pour unit,
side feeder



STELEX filter prints



Quality is assured

Higher quality and lower costs

Quality management

The Foseco quality management system is certified against DIN ISO 9001, VDA 6.1 and ISO 14001. All relevant product quality features of STELEX filters are controlled and recorded according to these quality standards.

Further information regarding filter sizes, flow rates and filter capacities can be obtained from your local Foseco team.

Service

Our engineers and product managers work in partnership with our customers to help them improve productivity, process control, casting quality and the working environment.



Impingement testing unit



Visual quality control



Statistical process control



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Foseco International Limited
Drayton Manor Business Park,
Tamworth, Staffordshire,
England B78 3TL
Phone: +44 (0)1827 262021
Fax: +44 (0)1827 283725
www.foseco.com
Please contact your local Foseco team