



"FILTER" CLEAN CASTINGS, LOWER TURBULENCE MOULD FILLING

STELEX* ZR

ZIRCONIA BASED FILTERS FOR HIGH TEMPERATURE, HIGH STRENGTH STEEL APPLICATIONS

Cleaner castings

Improved surface appearance

Reduced upgrading





STELEX ZR filters

for the filtration of ferrous alloys

STELEX ZR ceramic foam filters are manufactured from zirconia. They were originally developed for the filtration of molten steel and are suitable for casting temperatures up to 1680°C.

Increasingly, due to their combination of high mechanical strength and superior filtration capacity, STELEX ZR filters are also applied to large ductile and grey iron castings.

The application of STELEX ZR filters in the casting gating system will prevent non-metallic materials reaching the mould cavity. This reduces the need for additional finishing such as the removal and repair of slag inclusions. The total manufacturing time for the casting is reduced.

STELEX ZR filters also minimise molten metal turbulence within the mould cavity, reducing the formation of the reoxidation defects.

Advantages of STELEX ZR foundry filters

- Cleaner casting surfaces
 - reduced grinding
- Less inclusions
 - reduced weld repair
 - no additional heat treatment
- Reduced machining allowance
 - extended machine tool lifetime
- Reduced cleaning time
 - shorter lead times
 - lower costs

Selection of STELEX ZR filters



STELEX ZR filters for investment casting

STELEX ZR filters

ensure clean castings

Calculation of the gating system

In gating systems using STELEX ZR 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 (CA) 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 [cm ²]
22.6	: constant for acceleration
W	: poured weight [kg]
ξ	: friction factor
ρ	: density [g/cm ³]
t	: required pouring time [s]
H	: effective pressure or 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 casting cavity is filled with molten metal before the filter becomes blocked.

Foseco recommends the front face filter area be at least 3.0 times larger than the calculated choke area (CA). It is also important to ensure the exit face of the filter is well supported. A support area of 40% of the front face area should be applied.

Application of STELEX ZR filters

Filtration effectiveness largely depends upon the correct application of STELEX ZR filters. When applying filters we always recommend using STELEX filter prints which have been developed in close co-operation with foundrymen and Foseco experts. Positioned horizontally in the runner system and close to the downsprue, STELEX ZR filters will prime quickly, thereby ensuring a consistent flow through the whole filter area. Typically, these filter prints are placed on the parting line.

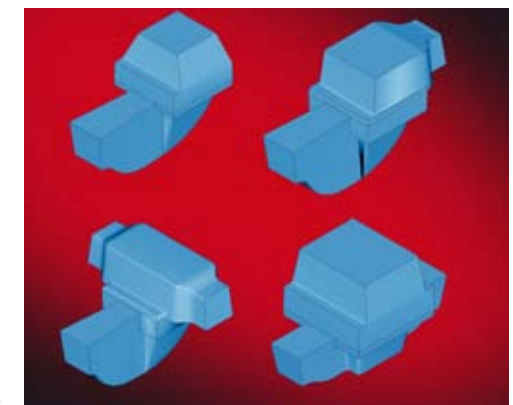
In order to avoid turbulence, abrupt changes in the direction of metal flow behind the filter should be avoided. This is especially important when casting steel alloys, because a turbulent flow will lead to reoxidation and risks the development of new non-metallic inclusions within the casting cavity.



Simulation support



Valve housing



STELEX filter prints

Quality is assured

Higher quality and lower costs

Quality management

The Foseco quality management system is certified against DIN ISO 9001:2008 and ISO 14001:2004. 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



Statistical process control



Visual quality control



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