

Heraeus

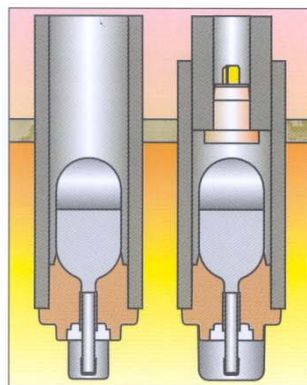
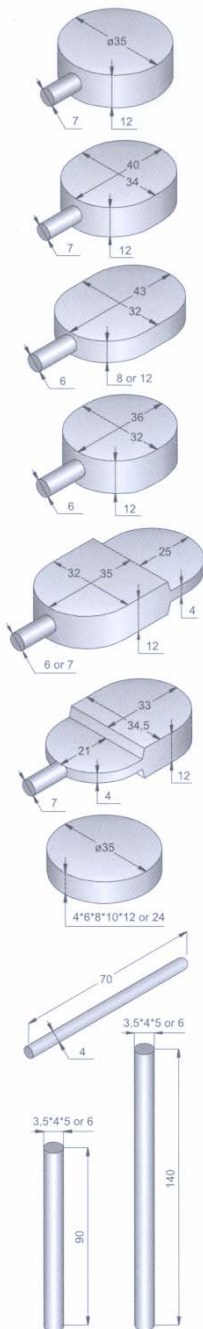
Samp-O-Line®

The masters when it comes
to control techniques



Electro-Nite

Classics



Samp-O-Line® offers standard and customised samplers for all types of steel whenever a homogeneous and representative sample from molten steel is needed. Non-splash samplers are available for improved safety and accuracy. Sufficient immersion depth is required for proper functioning. Capping configuration can be adapted to suit low steel temperatures. As deoxidant e.g. Al, Zr or Ti are available for unskilled steel conditions.

OPTIONS

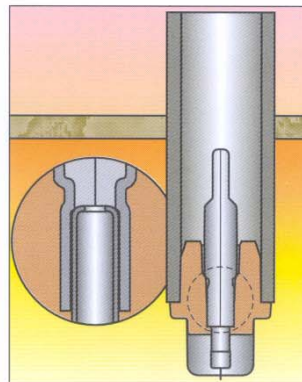
Sample shapes:

- Round 35 Ø x 12
- Oval 34 x 40 x 12
- Oval 32 x 36 x 12
- Oval 32 x 43 x 8
- Oval 32 x 43 x 12
- Dual thickness:
 - 32 x 60 x 12/4
 - 34 x 55 x 4/12

Deoxidant: Al, Zr or Ti

Tube length: on choice

Pin Break Off Sampler



The removal of a sampler pin can in certain circumstances be problematic. The Pin Break Off sampler offers the customer a sample that allows an easy removal of the pin: at high carbon grades, the pin drops off automatically, for low carbon grades, the pin drops off easily by a small hit on the pin.

This characteristic is specially useful for steel plants with a steel product mix covering as well low carbon grades as high carbon grades. The use of the pin break off characteristic also improves in certain circumstances the quality of the sample.

OPTIONS

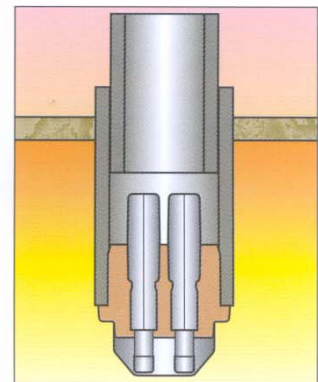
Sample shapes:

- Round 35 Ø x 12
- Oval 34 x 40 x 12
- Oval 32 x 36 x 12
- Oval 32 x 43 x 8
- Oval 32 x 43 x 12
- Dual thickness:
 - 32 x 60 x 12/4
 - 34 x 55 x 4/12

Deoxidant: Al, Zr or Ti

Tube length: on choice

Double Sampler



The Double Sampler offers the steel plants the possibility to speed up time for analysis. Two samples are yet immediately available and can be used for different purposes. The design of the sampler allows the customer to choose all possible mould shapes that are available in the classic Samp-O-Line® product range.

OPTIONS

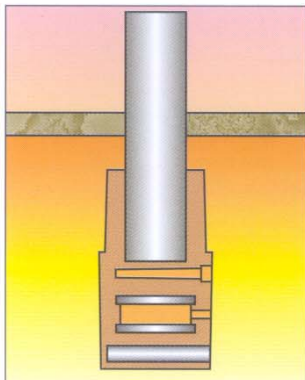
Sample shapes:

- Round 35 Ø x 12
- Oval 34 x 40 x 12
- Dual thickness:
 - 32 x 60 x 12/4
 - 34 x 55 x 4/12

Deoxidant: Al, Zr or Ti

Tube length: on choice

SA-E



This steel sampler is available in a re-usable tube configuration. The re-usable cardboard tube from a previous temperature measurement can be fixed to the insert.

The SA-E sampler is an economic solution for all carbon grades with carbon values of 0.05 % minimum.

OPTIONS

Sample shapes:

- Round 35 Ø x 12
- Round 35 Ø x 10
- Round 35 Ø x 8

Possibility of an additional pin

Deoxidant:

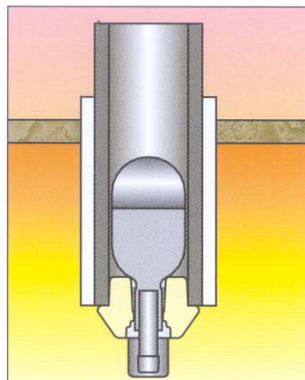
Al, Zr or Ti

SA-E: Insert only

Tube length: on choice

Cap: mild steel and paper cap

Ultra Low Carbon

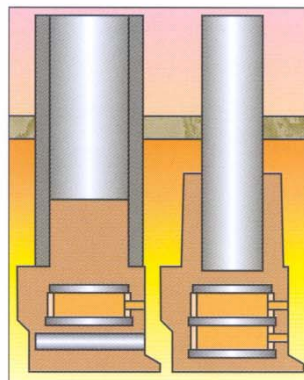


Carbon determination in these steel grades demands the utmost care regarding sample preparation, analysis and sample taking techniques. Heraeus Electro-Nite can offer a wide variety of sampling systems with controlled low carbon components in order to meet specific requirements.

OPTIONS

Available as well for immersion samplers and vacuum samplers.

Stainless Steel



Designed to minimize contamination effects and to withstand high temperatures.

The Squaf-design offers the customer the possibility of a single sample, sample with pin or even a double sample. The Squaf can be assembled on thermocouple tube and sampling tube.

OPTIONS

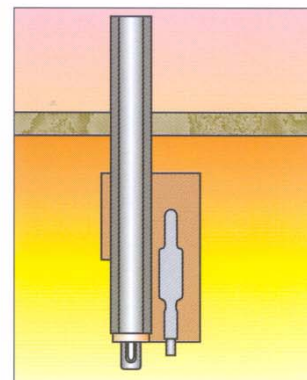
- Round 35 Ø x 12
- Round 35 Ø x 12, with separate pin
- 2 samples, round 35 Ø x 12
- Round 35 Ø x 24

Deoxidant: Al, Zr or Ti

Capping: on choice

Tube length: on choice, as well TC or Sampler tube

Piggy Back Steel



A single immersion with the Piggy Back Steel gives both temperature and sample saving time and handling. The Piggy Back Steel is compatible with our standard hardware. Automatic immersion systems take full profit from this combination. As with traditional sampling a wide choice of sample shapes, deoxidant types and tube configurations are available.

OPTIONS

Sample shapes:

- Round 35 Ø x 12
- Oval 34 x 40 x 12
- Oval 32 x 36 x 12
- Dual thickness:
 - 32 x 60 x 12/4
 - 34 x 55 x 4/12

Deoxidant: Al, Zr or Ti

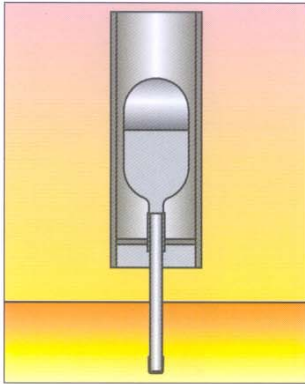
Thermocouple: Type S, R and B

Tube length: on choice

Cap: Different cap configurations are available.

Vacuum Samplers

Vacuum/Stream Sampling



Vacuum samplers are used for sampling from the mould of the continuous caster. Stream samplers are used for sampling from any open stream of liquid metal.

OPTIONS

Sample shapes:

- Round 35 Ø x 12
- Oval 34 x 40 x 12
- Oval 32 x 36 x 12
- Oval 32 x 43 x 8
- Oval 32 x 43 x 12
- Dual thickness:
 - 32 x 60 x 12/4
 - 34 x 55 x 4/12

Deoxidant: Al, Zr or Ti

Tube length: 145 - 430 mm

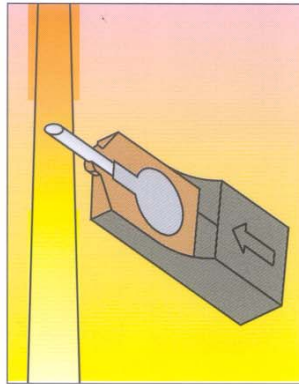
Cap: On choice

Quartz length: 70, 100 or 150 mm

SAMPLING PROCEDURE

The sampler is tightly fixed to a conical probe holder. With vacuum sampling the quartz tube is dipped into the liquid metal, while with stream sampling the quartz tube is kept at an angle of 45° to the stream.

Stream Sampling



Stream sampling is a safe way to take samples from any open stream of liquid metal. Deoxidants are available for use in unkilld steel. Samples taken by means of this system will give accurate analytical results in close relation with the end product.

OPTIONS

Sample shapes:

- Round 32 Ø x 15
- Oval 32 x 40 x 12
- Dual thickness:
 - 32 x 60 x 12/4

Quartz:

- straight 60 mm
- 45° cut, 60 mm

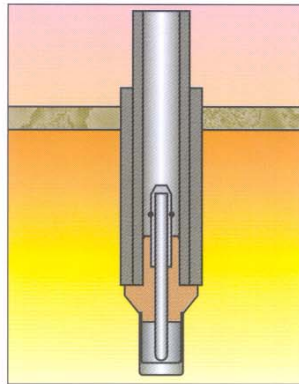
Deoxidant: Al, Zr or Ti

SAMPLING PROCEDURE

The sampler has to be held versus the stream in a specific way to obtain a good quality sample. The best surface for analysis is marked allowing less sample preparation cost and faster, more accurate analysis.

Clean Steel Samplers

Total Oxygen Sampler

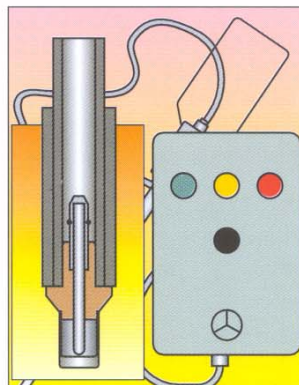


Total Oxygen Sampling offers superb pin sample quality and quick preparation for combustion analysis. TOS is free from contamination, thus being a finger print of the steel cleanliness. Best results are obtained in combination with the special pneumatic lance system in as well RH, ladle, tundish and moulds.

OPTIONS

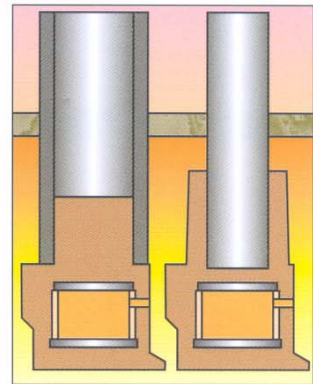
Tube: Different lengths with corresponding non-splash lengths are available
Sample pin: 4 mm round sample, 70 mm length

T.O.S. Pneumatic Unit



TOS system uses argon flushing before sampling. When using the special pneumatic switch box, the sampling procedure is completely automated.

SQUAF 24 mm



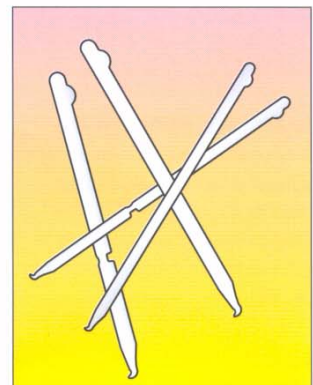
The Squaf technology has been modified to produce a 24 mm thick sample. For specific applications, it is useful to have a thicker sample available.

OPTIONS

Sample shapes:
Round 35 Ø x 24

Tube length: on choice

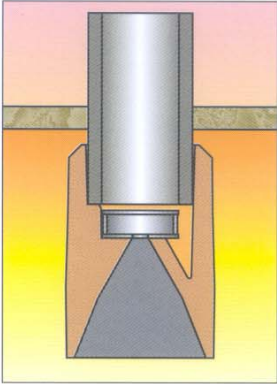
Evacuated Pin Tubes



Evacuated Pin Tubes are used for sampling from spoon in ferrous and non-ferrous melts. They feature a thin wall bulb section which melts in contact with molten metal. The molten metal is sucked into the tube to form a solid slag free pin.

Slag Samplers

Qusas Immersion Slag Sampler



A completely new product line is yet available to sample the slag on top of the ladle or converter surface. It provides a slag sample that can immediately be analysed by the XRF without any preparation. The slag sample is obtained after immersion of the slag sampler in the ladle or converter.

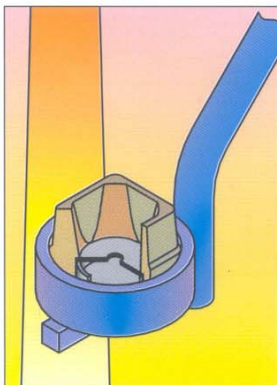
OPTIONS

Slag Sample shapes:

- Round 38 Ø x 10
- Round 38 Ø x 24

Tube lengths: on choice

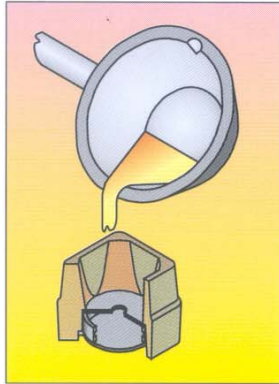
Qusas Slag Cup Sampler



An alternative for the slag immersion sampler is the use of the slag cup sampler, that can be placed in a holder and held in the slag stream when de-slugging the EAF and the AOD.

Sample shape:
Round 38 Ø x 10

Qusas Blast Furnace Slag Sampler



Cost of blast furnace slag sampling can be reduced considerably by using the blast furnace slag cup sampler. The blast furnace slag cup sampler provides a slag sample that can immediately be analysed in the lab. It avoids expensive slag sample preparation and saves a lot of time. The slag is collected by means of a special spoon. This spoon ensures that iron droplets sink to the bottom. The slag is cast into the cup. After a few minutes, the slag cup is crushed and the slag sample can be collected.

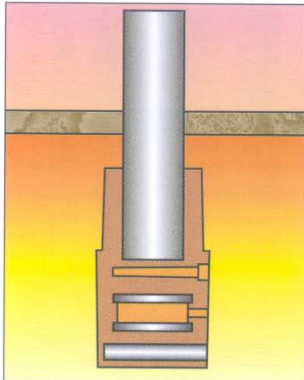
DESCRIPTION

Slag Sample shape:
38 mm Ø, 10 mm thick



Hot Metal Samplers

SA-E



LOW COST HOT METAL SAMPLER FOR SPECTROGRAPHIC ANALYSIS

Can be used in runners, torpedo and hot metal transfer ladle. They are designed with thick chill plates for 'white' solidification to meet all requirements for a reliable analysis with optical emission spectrometers.

OPTIONS

Sample shapes:
Round 35 Ø x 12, 10, 8, 6 and 4

SA-E: Insert only

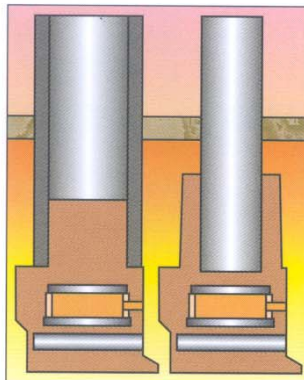
SA-E on tube: 300, 600, 900 and 1200 mm

Cap: Mild steel and paper cap

SAMPLING PROCEDURE

A re-usable cardboard tube from a used thermocouple can be fixed to the insert. Complete units already fixed to the cardboard tube are available as well.

SQUAF



ONE SIDE HOT METAL SAMPLER FOR SPECTROGRAPHIC AND X-RAY ANALYSIS

This sampler provides the lab a hot metal sample, free of sand and a marked surface, that allows to select the best side of the sample and to improve analysis. The horizontal sample chamber forces the gas bubbles and inclusions to rise to the top of the sample.

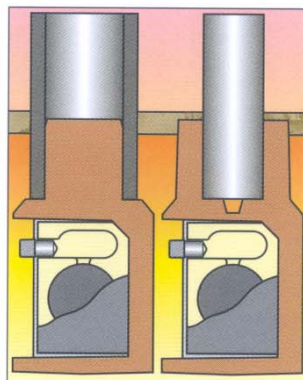
The bottom side of the sample will be used for analysis. This technique ensures that a good quality sample is obtained. The design also allows a very easy stripping technique.

OPTIONS

Sample shapes:
Round 35 Ø x 10
Possibility of a separate pin (4 or 6 mm) for combustion analysis

Tube length: Available as well on thermocouple as on sampling tube

SAH



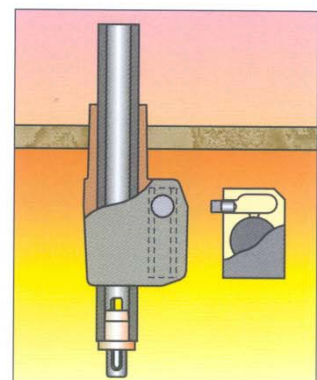
DUAL SIDE HOT METAL SAMPLER FOR SPECTROGRAPHIC AND X-RAY ANALYSIS

Some labs prefer to analyse a hot metal sample, free of sand and independent of the side of the sample. The SAH sampler provides a sample, free of sand for analysis on its both sides. After immersion hot metal will enter a pre-chamber and then fill a vertical sample chamber. Thick metal plates will ensure a good cooling resulting in an excellent white structure. During solidification, the gas bubbles and inclusions will be trapped in the pre-chamber. This pre-chamber is easily removed when stripping the sample. The design also allows a very easy stripping technique.

OPTIONS

Round 35 x 10, additional pin or lugs on request
Round 35 x 8 with lugs

Piggy Back Hot Metal



COMBINED SENSOR FOR TEMPERATURE AND THE DUAL SIDE HOT METAL SAMPLER

The immersion of this combined sampler provides as well a temperature reading as a dual side hot metal sampler. The filling properties are identical to the dual side sampler. The Piggy Back is compatible with existing lance hardware and allows the use of existing automatic immersion systems.

OPTIONS

Sample shape:
Round 35 x 10, additional pin or lugs on request
Round 35 x 8 with lugs

Thermocouple: Type S, R and B

Tube length: on choice

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