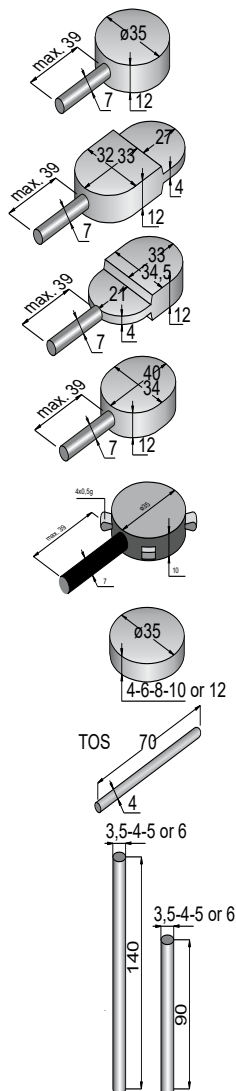


Samp-O-Line®

Representative samples from all stages of the melting process

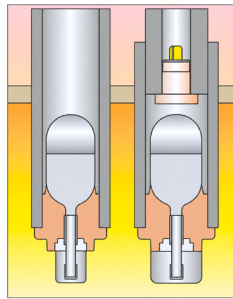
The control of casting melts requires representative samples from all stages of the melting process. Heraeus Electro-Nite samplers are designed to allow safe and easy acquisition as well as accurate and simple evaluation through homogeneous samples. Compared to classical sampling moulds the filling conditions for Electro-Nite samplers are always the same.

Steel sample shapes



Immersion Samplers

Classics



Samp-O-Line® provides both standard and customised immersion samplers suitable for all steel grades where a homogeneous and representative sample of molten steel is required. Non-splash designs are available to enhance operator safety and sampling accuracy.

For optimal sampler performance, a sufficient immersion depth is essential. Capping configurations can be tailored for low-temperature steel conditions. As deoxidant e.g. Al, Zr or Ti are available for unkill steel conditions.

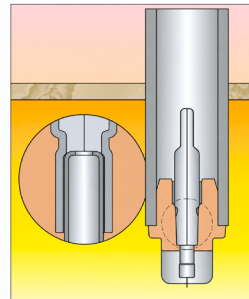
Options

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
 - 32x60x12/4
 - 34x55x4/12

Deoxidant: Al, Zr, 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.

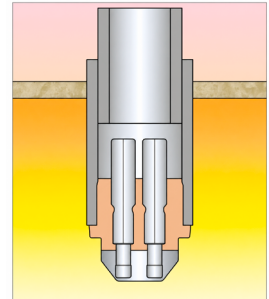
Options

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
 - 32x60x12/4
 - 34x55x4/12

Deoxidant: Al, Zr, 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.

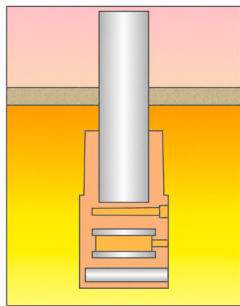
Options

Sample shapes:

- Round 35 Ø x 12
- Oval 34 x 40 x 12
- Dual thickness
 - 32x60x12/4
 - 34x55x4/12

Deoxidant: Al, Zr, 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

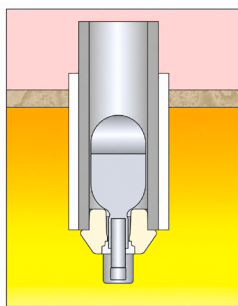
Deoxidant: Al, Zr or Ti

SA-E: Insert only

Tube length: on choice

Cap: mild steel and paper cap

Ultra low carbon



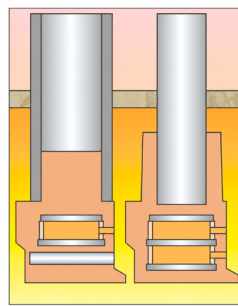
Carbon determination in these steel grades demands the utmost care regarding sample preparation, analysis and sample taking techniques.

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



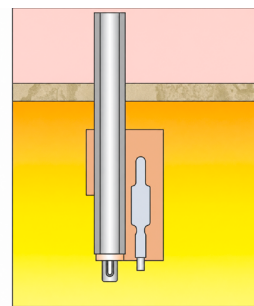
Designed to minimize contamination effects and to withstand high temperatures.

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

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
 - 32x60x12/4
 - 34x55x4/12

Deoxidant: Al, Zr or Ti
Thermocouple: Type S, R and B

Tube length: on choice

Cap: Different cap configurations are available.

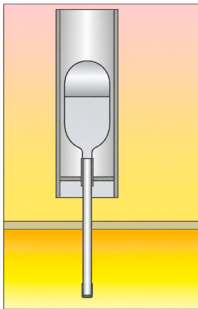
Vacuum Samplers

Vacuum samplers are designed for sampling directly from the mould of the continuous caster, providing clean, reliable samples taken under controlled vacuum conditions.

Stream samplers are designed for sampling from any open stream of liquid metal, ensuring fast and representative sample collection during tapping, casting, or transfer operations. They offer a safe and reliable method for obtaining samples without interrupting the metal flow.

For unkilld steel, suitable deoxidants can be incorporated to ensure proper metallurgical conditions at the moment of sampling. Samples taken with this system provide accurate analytical results that are closely correlated with the characteristics of the final product.

Vacuum / Stream Sampling



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°C to the stream.

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

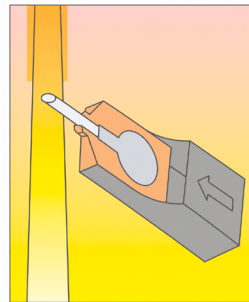
Deoxidant: Al, Zr, Ti

Tube length: 145-430 mm

Cap: On choice

Quartz length: 70, 100 or 150mm

Stream Sampling



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.

Options

Sample shapes:

- Round 32 Ø x 15
- Oval 34 x 40 x 12
- Dual thickness
 - 32 x 60 x 12/4

Quartz:

- straight 60 mm
- 45°C cut, 60 mm

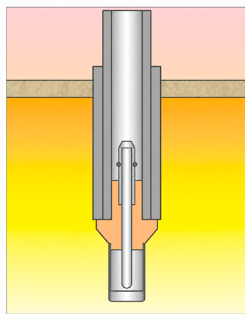
Deoxidant: Al, Zr, Ti

Pin & Clean Argon Samplers

Pin Samplers

A pin sampler has been developed for carbon and sulphur analysis for combustion analysis. The controlled filling ensures a high quality pin. The sampler can be used as sampler only or as a Piggy Back. The pin sampler can cover all applications, as AOD, ladle and tundish. Diameter of the pin is 4 or 6 mm, length minimum 70mm.

Total Oxygen Sampler



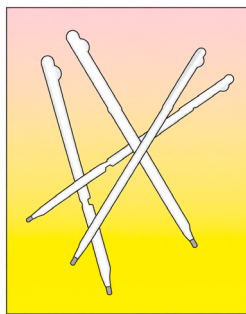
Total Oxygen Sampling offers superb pin sample quality and quick preparation for combustion analysis. TOS is free from contamination, thus being a finger print of the steel cleanliness. Best results are obtained in combination with the special pneumatic lance system in as well RH, ladle, tundish and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

Options

Tube: different lengths with corresponding non-splash lengths are available

Sample pin: 4 mm round sample, 70mm length

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.

Clean Argon Samplers

To meet the high quality requirements of steel, argon samplers have been developed to provide the steel producers a representative steel sample.

The clean steel samplers are flushed with argon during immersion. At a specific immersion depth, the argon is switched off and the sample is filled by using vacuum. The argon samplers must be used with the argon sampling systems that are being provided by Heraeus Electro-Nite, being the IDCAS or Armor system.

Slag Samplers

QUSAS Immersion slag sampler



QUSAS offers a complete range of samplers for collecting slag from the surface of ladles and converters. It provides a slag sample that can be analyzed directly by XRD without any sample preparation.

The slag sample is obtained by immersing the sampler into the slag layer of the ladle or converter.

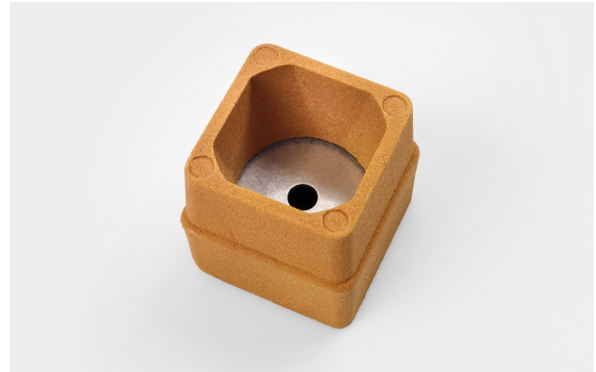
Options

Slag sample shapes:

- Round 38 Ø x 10
- Oval 38 x 24

Tube lengths: on choice

QUSAS Blast Furnace Slag Sampler



The Blast Furnace Slag Cup Sampler offers a cost-effective method for collecting slag samples. It provides a slag sample that can be analyzed immediately in the laboratory, eliminating costly sample preparation and reducing analysis time.

Slag is collected with a specially designed spoon, which allows iron droplets to settle at the bottom. The slag is then poured into the sampling cup. After cooling, the cup is broken and the slag sample is easily recovered for analysis.

Slag Sample shape: 38mm Ø, 10 mm thick

QUSAS Slag Cup Sampler

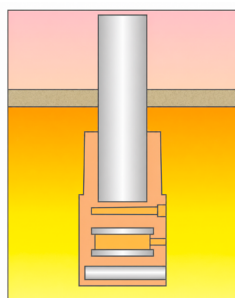
An alternative to the slag immersion sampler, the Slag Cup Sampler is designed for use during EAF and AOD de-slagging operations. The sampler is placed in a holder and positioned in the slag stream to collect a representative sample for analysis.

Sample shape:

- Round 38 Ø x 10

Hot Metal Samplers

SA-E



Low cost hot metal sampler for spectrographic analysis.

Suitable for use in runners, torpedoes, and hot metal transfer ladles. Designed with thick chill plates for "white" solidification, ensuring reliable analysis with optical emission spectrometers.

Options

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

SA-E: Insert only

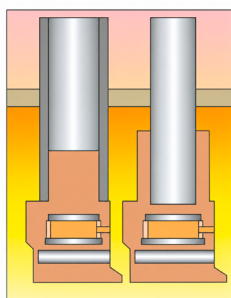
SA-E on tube: 300, 600, 900 and 1200 mm

Cap: Mid steel and paper cap

Sampling procedure

A reusable cardboard tube from a used thermocouple can be fitted to the insert. Complete units pre-mounted on cardboard tubes are also available.

SQUAF



One side hot metal sampler for spectrographic and x-ray analysis

This sampler provides a hot metal sample with a clean, sand-free and clearly marked analysis surface, allowing the laboratory to select the best side for improved analytical accuracy.

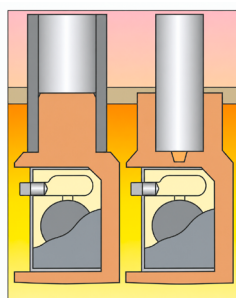
The horizontal sample chamber forces gas bubbles and inclusions to rise to the top of the sample. The bottom side is then used for analysis, ensuring a high-quality sample. The design also enables easy sample removal.

Options

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

Tube length: Available on thermocouple tubes and sampling tubes.

SAH



Dual side hot metal sampler for spectrographic and x-ray analysis

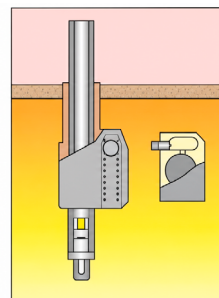
Some laboratories prefer a hot metal sample that is free of sand and suitable for analysis on either side. The SAH sampler provides a clean, sand-free sample for reliable analysis on both surfaces.

After immersion, the hot metal enters a pre-chamber before filling a vertical sample chamber. Thick metal chill plates ensure rapid cooling and an excellent white structure. During solidification, gas bubbles and inclusions are trapped in the pre-chamber, which is easily removed during sample extraction. The design also allows for easy stripping of the sample.

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

This combined sampler provides both a temperature reading and a dual-sided hot metal sample in a single immersion. Its filling characteristics are identical to those of the dual-sided sampler.

The Piggy Back sampler is compatible with existing lance hardware and can be used with 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

Heraeus Electro-Nite
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