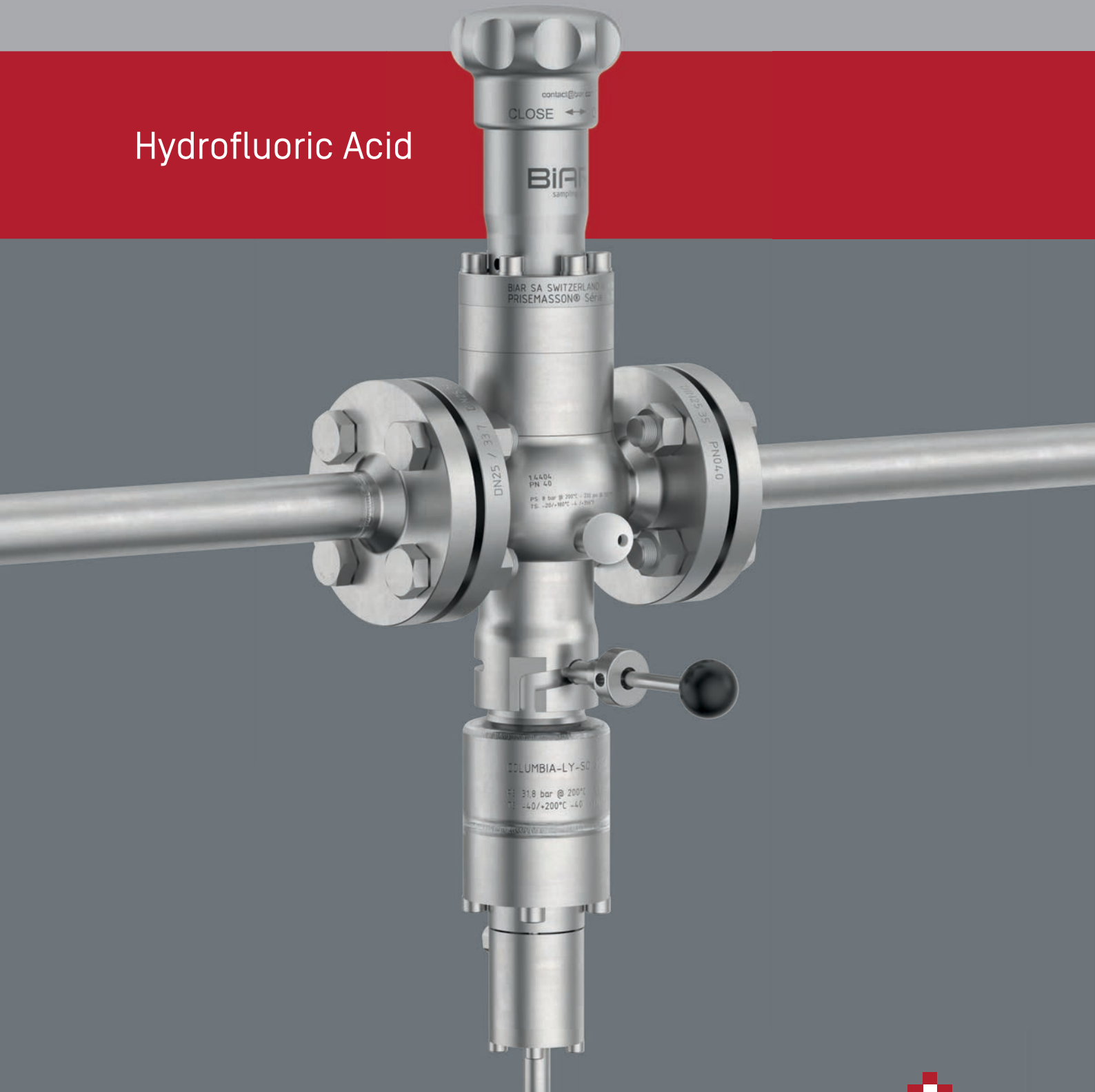


APPLICATION STUDY

Hydrofluoric Acid



EXPERT IN HF SAMPLING

Hydrogen Fluoride (HF) or Hydrofluoric Acid is a clear, colourless substance that transforms into a fuming liquid or gas with a distinct, sharp odour. It is a highly versatile and indispensable chemical used across a wide array of industries due to its unique properties.

Despite its widespread utility, HF poses significant risks. It is extremely corrosive, toxic and potentially lethal. Therefore, handling HF requires stringent safety protocols to protect both personnel and the environment from its hazardous effects.

Typical physical properties for hydrogen fluoride and hydrofluoric acid solutions

Property	<25%	50% HF	70% HF	100% HF [AHF]
Corrosivity	Moderate	High	High	High
Freezing point	-27.4 [-35°C]	-33°F [-36°C]	-95°F [-71°C]	-118°F [-84°C]
Boiling point	217.4 °F[103 °C]	190°F [88°C]	146°F [63°C]	67.1°F [19.5°C]
Density*	8.4 lbs/gal	9.7 lbs/gal	10.1 lbs/gal	8.3 lbs/gal
pH	< 3.5	< 3.4	< 3.0	< 1.0 [10% solution]

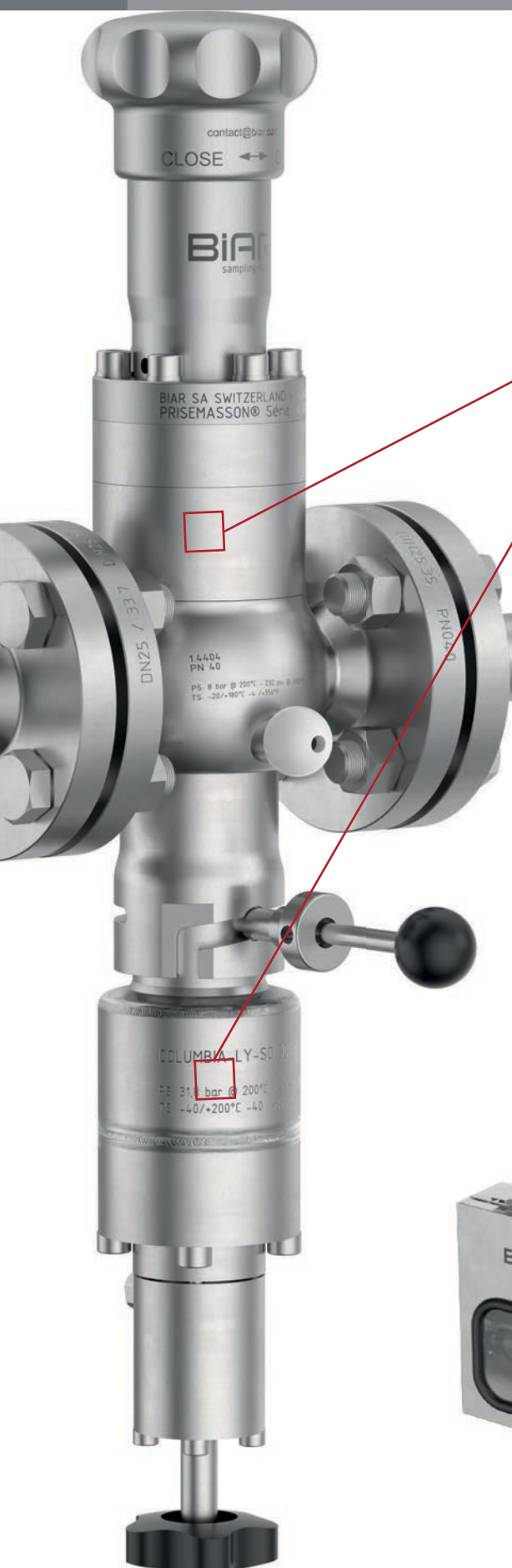
* at [68°F - 20°C] Indicative information sourced from various chemical database as well as guidelines and standards



Sampling HF presents significant challenges. It is a critical and highly sensitive process that requires the strictest safety protocols. Every step, from sampling to analysis, must be meticulously planned and executed to prevent any exposure or accidents.

CUSTOMER REFERENCES

Aditya Birla, Arkema, BASF, Big West Oil, Big West Refinery, Binhua Group, Calumet, Cenex, Cenovus, Cenovus Superior, Chemours, CHS, Chuqian Fugui Material, CITGO, Conoco Phillips, CVR, ESSO, ExxonMobil, GFL, Flint Hills, Formosa Plastics & Formosan Union Chemical, Framatome, HF Sinclair, HollyFrontier, Honeywell, Imperial Oil Refinery, Lanxess, Laxmi Organics, Marathon Refinery, NATREF [The Natref], Navajo Refining, Novelis, OxyChem, OxyVinyls, PBF Energy, Pemex, Phillips 66, Placid, Placid Refining, REPSOL, Sinochem Lantian, Solvay, Sonneborn, Suncor, UOP Honeywell, Valero, Wyoming Refinery...



HF sampling solutions vary significantly, depending primarily on the usages, the acid concentrations along with production and sampling parameters. For demanding applications with stringent regulations such as in refineries BIAR propose a robust and approved complete solution.

Inline sampling valve MLB-S0

Sampling container LY-S0

With the specially designed **carry box**, the container can be safely transported to the laboratory. Additionally, a dedicated **laboratory support** for the LY-S0 ensures safer, easier and more efficient analysis.



SAFE HF SAMPLING

KEY FEATURES

The valve features a conical seat design, ensuring perfect tightness without dead space. The bellows seals in Hastelloy C276 provides superior chemical resistance. The steam gasket and secondary containment made of PTFE, ensure best sealing. A leak detection port enhances the safety. All wetted parts are resistant to hydrofluoric acid (HF). The valve is operated via an automatic closing mechanism, the "Magic Handwheel," ensuring precise and controlled operation.

ADVANTAGES

- Safe system with optimal sealing with leak detection
- Contact-free sampling
- Robust, dead-space-free design
- Direct representative sample :
first time, every time
- Easy to operate, minimum steps required
- Bayonet connection allows accessory changes
without replacing the valve

MODULARITY

Our sampling valves are highly adaptable to specific process requirements and production constraints and available in:



Sizes ranging from
DN15 to DN150 / NPS 1/2" to 6"



Various mounting configurations,
providing flexibility for diverse
installations



Suitable for various
pressure classes

KEY FEATURES

The LY-S0 container with a Hastelloy C276 bellows seal excels in environments demanding rigorous leak management and superior sealing performance. Its robust construction ensures safe and reliable sample collection and analysis. The device is equipped with a leak detection port and a PTFE stuffing box as secondary containment, both enhancing operational safety. All wetted parts are made of Hastelloy C276 and PTFE, providing exceptional corrosion resistance and durability.

ADVANTAGES

- Secure, contact-free sampling
- Optimal sealing and total safety with integrated leak detection
- Robust, dead-space-free design
- Easy to operate and install in both horizontal and vertical configurations
- Dismountable for easy maintenance and cleaning

MODULARITY

The LY-S0 containers are designed for maximum adaptability, meeting specific process requirements and production constraints:



Available in various alloys, PFA-coated



Size range from 50 to 1000 ml



Variants available, such as double-chamber, nitrogen-purged versions

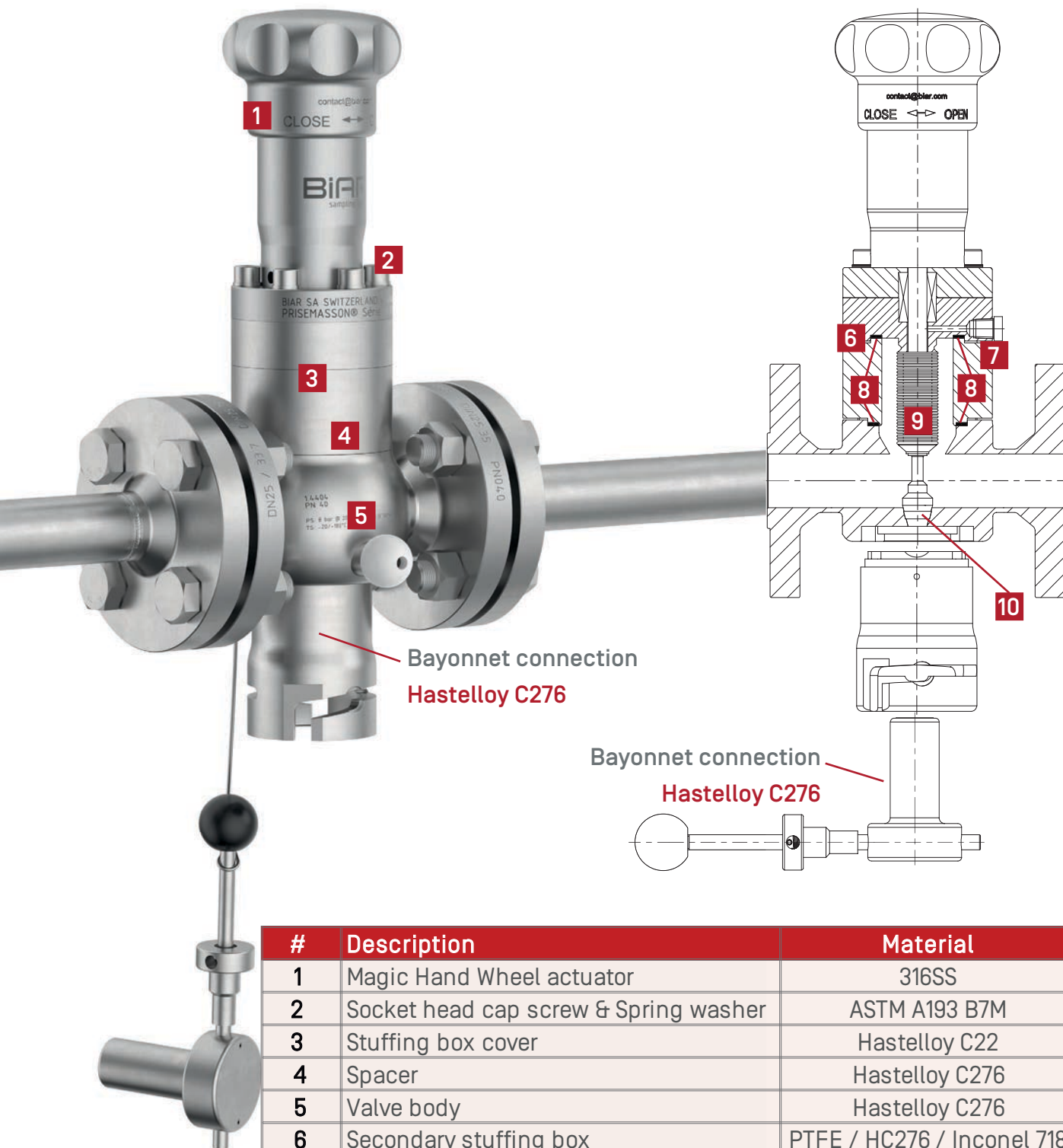


Optional nitrogen rinsing for enhanced sample integrity



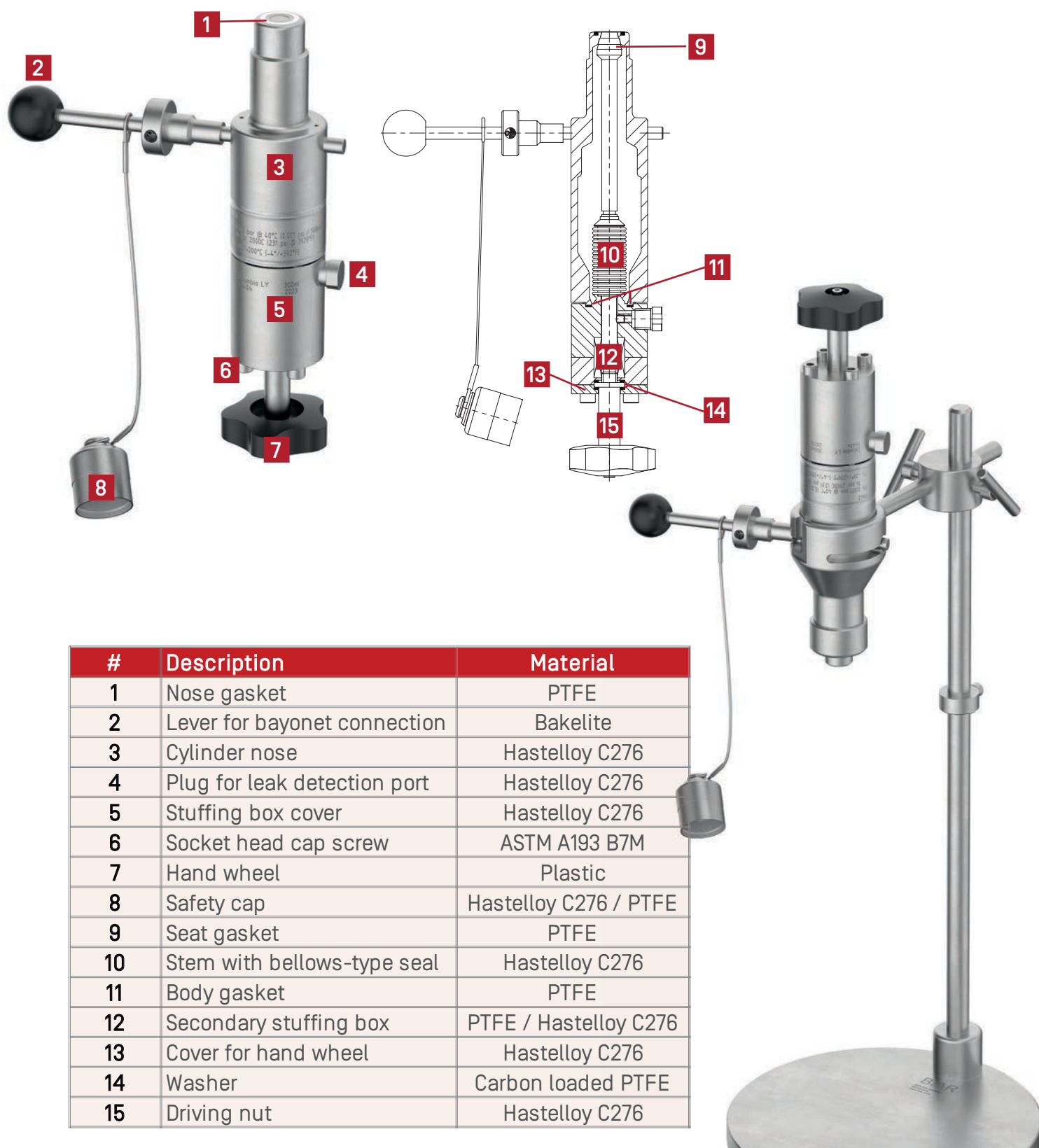
ANATOMY OF THE SOLUTION

The valve and its components are the result of years of development incorporate the most suitable features for sampling HF safely and efficiently.



#	Description	Material
1	Magic Hand Wheel actuator	316SS
2	Socket head cap screw & Spring washer	ASTM A193 B7M
3	Stuffing box cover	Hastelloy C22
4	Spacer	Hastelloy C276
5	Valve body	Hastelloy C276
6	Secondary stuffing box	PTFE / HC276 / Inconel 718
7	Plug for leak detection port	Hastelloy C276
8	Body gaskets	PTFE
9	Stem with bellows-type seal	Hastelloy C276
10	Seat gasket	PTFE

At the laboratory, BIAR's dedicated **laboratory stand** allows for its safe and easy extraction. Its adjustable height enables controlled depressurization of the container while transferring the sample, for example, to a chromatograph or a Karl Fischer titration system.



#	Description	Material
1	Nose gasket	PTFE
2	Lever for bayonet connection	Bakelite
3	Cylinder nose	Hastelloy C276
4	Plug for leak detection port	Hastelloy C276
5	Stuffing box cover	Hastelloy C276
6	Socket head cap screw	ASTM A193 B7M
7	Hand wheel	Plastic
8	Safety cap	Hastelloy C276 / PTFE
9	Seat gasket	PTFE
10	Stem with bellows-type seal	Hastelloy C276
11	Body gasket	PTFE
12	Secondary stuffing box	PTFE / Hastelloy C276
13	Cover for hand wheel	Hastelloy C276
14	Washer	Carbon loaded PTFE
15	Driving nut	Hastelloy C276



BIAR 
sampling systems

BIAR SA

Rte du Grand-St-Bernard 16
CH-1933 Sembrancher
SWITZERLAND

Tél. +41 27 779 11 11
Fax +41 27 779 11 12
contact@biar.com

