



TOTAL REFLECTION X-RAY FLUORESCENCE TXRF Accessories

Total reflection X-ray fluorescence (TXRF) spectroscopy is a well-established method for trace element analysis of a variety of samples offering detection limits in the ppb range. TXRF expands the application segment for XRF to ultra trace element analysis in liquid samples, suspensions, particles, and thin films on different carriers.

TXRF is therefore an excellent alternative technique to atomic absorption spectroscopy (AAS) and inductively coupled plasma optical emission spectroscopy (ICP-OES) or mass spectroscopy (ICP-MS), respectively. The S2 PICOFOX and the S4 T-STAR® TXRF spectrometers set new standards in performance, automation and quality of benchtop TXRF spectrometry.

Due to the outstanding mass sensitivity of TXRF in the picogram range samples must be carefully prepared. Since contamination prevention is of highest priority, Bruker supports your daily work with a wide range of tailor-made accessories for TXRF analysis.

The TXRF Workflow

Careful sample preparation and sensitive TXRF measurements require a variety of tools and sample preparation equipment. Bruker's range of accessories guarantees a quick and safe workflow for sample preparation and accurate measurements.

1. Sample Pipetting

Depending on the analytical requirements, there is a range of sample discs of different materials with a diameter of 30 mm available. After preparing the sample as liquid or slurry, it has to be carefully pipetted onto a sample disc.

When using transparent discs, a center mark at the bottom of the T-BOX helps to pipette the sample directly in the center of a disc.

2. Sample Drying

The samples need to be thoroughly dried by heat or vacuum. The new vacuum desiccator T-DRY comes with a chemical resistant vacuum pump and holds up to six sample trays loaded with sample discs.

3. Loading and Measurement

Without touching a disc, the sample trays can be easily loaded into the S4 T-STAR[®] spectrometer. The tray type is automatically detected and the assigned measurement job can be started immediately. In the S2 PICOFOX, the discs are loaded in a sample cassette, resulting in a very compact spectrometer design.

4. Cleaning and Storage

After measurement, the quartz and sapphire discs can be efficiently cleaned by using the chemical resistant washing cassette, which fits in a 1 liter beaker. The cleaned discs can be stored with the sample trays in the stackable T-BOX or individual sample containers.



TXRF Accessories

Part	Description	Quantity	Order No.	
Sample carriers				
- Quartz discs	For lowest detection limits, reusable after cleaning	Set of 25	B-A20V09	
- Sapphire discs	For low Si amounts, reusable after cleaning	Set of 25	B-A20V21	
- Acrylic discs	For screening purposes or routine work, disposable	Set of 100	B-A20V11	
- Borosilicate discs	For lowest detection limits of heavy metals, contains natural impurities, disposable	Set of 70	B-A20V13	
Sample trays (S4 T-STAR®)				
- Sample tray D	For up to nine discs of Ø 30 mm	Set of 5	B-A30V20	
- Sample tray M	For up to three microscopy slides	Set of 2	B-A30V21	
- Sample tray W	For up to five 2" round wafers	Set of 2	B-A30V22	
- Sample tray R	For up to five 2" square wafers	Set of 2	B-A30V23	
Sample cassette (S2 PICOFOX)	Capacity of 25 discs	1	B-A20V17	
Sample centering tool	Sample centering tool	1	B-A20V15	
T-DRY	Vacuum desiccator for sample drying with two drawers for sample drying, for up to six sample trays Dimensions (without connections and pressure gauge): 400 mm x 300 mm x 294 mm, incl. chemical resistant vacuum pump (100 V - 240 V, 50/60 Hz)	1	B-A30V31	
Washing cassette	Tool for disc cleaning, chemical resistant (Teflon), capacity of 25 discs	1	B-A20V10	
Sample container	Storage of single discs	Set of 25	B-A20V19	
T-BOX	Storage box for sample discs and S4 T-STAR® trays	Set of 10	B-A30V30	
Transport case (S2 PICOFOX)	Pelicans® (ATA certified): rugged case with wheels and handles for easy transport and on-site screening	1	B-A20V50	
Starter kit	Contains pipettes, tips, racks, tubes, mortar, shaker, etc.	1	B-A20D20	see front & next page
QC standard disc set				see next page
- for S4 T-STAR®	Multi-element standards on quartz discs, packed in individual sample containers	Set of 6	B-4210-5600-000	
- for S2 PICOFOX		Set of 6	B-4200-000010-000	

All accessories can be ordered via your local Bruker Service.

Sample Preparation

The accurate preparation of samples is a prerequisite for reliable measurement results. Bruker offers a starter kit with all parts required for TXRF sample preparation.

TXRF Sample Preparation Starter Kit*

Part	Size	Quantity	Part	Size	Quantity
Microliter pipette	0.5 - 10 µl	1	Microreaction tube	1.5 ml	1.000
Microliter pipette	25 - 250 µl	1	Cryo tube	4 ml	100
Microliter pipette	500 - 5000 µl	1	Rack for reaction containers		2
Pipette tip, PP**, unsterile	0.5 - 10 µl	960	Rack for Cryo tubes		2
Pipette tip, PP**, unsterile	100 - 1000 µl	1.000	Lint-free tissue	213 mm x 114 mm	1.400
Pipette tip, PP**, unsterile	15 ml	75	Washing bottle "Acetone"	500 ml	1
Measuring flask	10 ml	2	Washing bottle "Distilled water"	500 ml	1
Measuring flask	100 ml	2	Agate mortar	40 ml	1
PTFE-cup	100ml	3	Sample shaker Velp ZX4 (100-240V/50/60 Hz)		1
Griffin cup	1000 ml	3	Spatula assortment		Set of 6
Weighing paper, Machery-Nagel		100	Tweezers		1

* Bruker Nano GmbH reserves the right to change the contents of the starter kit without notice.

**polypropylene

Quality Control

Quality control samples are required for a frequent control of the instrument performance. For both, the S2 PICOFOX and the S4 T-STAR® TXRF spectrometer, there is a set of six multi-element standards discs available, packed in single sample containers.

QC Standard Disc Set

Parameter	S4 T-STAR®		S2 PICOFOX	
	Quantity	Standard	Quantity	Standard
Detector resolution, FWHM	1	1 µg Mn	1	1 µg Mn
Gain correction	1	1 µg As + 1 µg Sc + 1 µg Pd	1	1 µg As
Sensitivity	1	1 ng Ni + 2 ng Cr + 3 ng Cd	1	1 ng Ni
Reproducibility	3	10 µl Kraft XII (12 elements)	3	10 µl Kraft XII (12 elements)

Bruker AXS
info.baxs@bruker.com

bruker.com/s2-picofox

bruker.com/s4-tstar



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