Fudan Block’s Test Results

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Thanks to Mason for diligently testing these blocks

Blocks from Fudan

- Fudan shipped 2 excellently packed blocks to UIUC
- These blocks are a BL21 and BL23 with Fudan DBN Numbers of S11 and S13
  - Renamed to F11 and F13 in the UIUC database to avoid confusion between s and 5 being written on a block.
- These blocks were labeled and entered in the database and subjected to the full UIUC testing process

Block Dimensionality and Density

- We observe noticeable deviations between Fudan dimension measurements and UIUC measurements.
- On average (accounting for sign changes) the dimensions deviate by 0.002” however we see individual measurements with deviations on the order of 0.02”

Fudan Measurements (inches)

	ΔL	ΔST	ΔSB	ΔSH	ΔBT	ΔBB	ΔBH
F11	-0.007	-0.010	0.008	0.000	-0.007	0.008	0.003
F13	-0.006	-0.023	-0.003	0.006	-0.019	0.014	0.002

UIUC Measurements (inches)

	ΔL	ΔST	ΔSB	ΔSH	ΔBT	ΔBB	ΔBH
F11	-0.01	-0.003	0.002	-0.001	-0.004	0.002	0.006
F13	0.003	-0.01	0.003	0.009	-0.011	0.002	0.008

- Comparing block mass measurements we observe very good agreement to within 1 gram

UIUC Measurement

	Mass (g)	Density (g/cm^3)
F11	3494	9.63
F13	3574	9.54

Fudan Measurement

	Mass (g)	Density (g/cm^3)
F11	3495	9.6
F13	3575	9.61

- Overall there are variations in the dimensional measurement from Fudan and UIUC likely due to using calipers rather than the wedges.

Fiber Counts

- According to the presentation from Fudan: both blocks F11 and F13 measured 2668 fibers present at Fudan
- With our photos and counting software we have counted 2658 and 2653 respectively.
- Difference of 0.37% and 0.56% respectively

	F11	F13
Fudan	100%	100%
UIUC	99.63%	99.44%

- We observe small variations in the fiber counting, however these are not large compared to the 0.5% uncertainty we have assigned to our measurement and the 98% threshold.

Scintillation Test Results:

- Have no comparison points for Fudan at this time:
- We measure good scintillation for both blocks: F11 had a ratio to calibration block of 1.319 and F12 had a ratio of 1.529
- This compares to the average of our currently testing blocks of 1.2, with a very wide range from ~0.7 to > 2

Summary:

- We are very excited to have blocks from Fudan!

- Density Measurement: Observe reasonable agreement, with the disagreement arising from dimensional differences
- Dimensionality: Observe acceptable agreement, level of disagreement likely due to wedges versus caliper based measurements
- Fiber Counts: Observe good agreement to within the uncertainty on our fiber counting measurement
- Scintillation test: have no scintillation results from Fudan, but these blocks pass our scintillation requirements.