

TO DETERMINE MASS SUSCEPTIBILITY OF ORE SAMPLES FROM BLAST FURNACE SITES

<u>Calibration samples</u>	Mass g	Bridge reading	Total susceptibility $k_T \times 10^{-8} \text{ m}^3$	Mass susceptibility $\chi \times 10^{-8} \text{ m}^3 \text{ kg}^{-1}$
Manganese sulphate	50.00	60.9	4.06	81.2
High alumina cement	50.00	543	35.80	716
<u>Bretton ironstone</u>				
BREO-A	17.33	14.0	0.93	54
BREO-B	21.96	124	8.21	374
BREO-C	18.26	17.1	1.14	62
BREO-D	33.55	526	34.68	1034
BREO-E	39.85	20.0	1.33	33
BREO-F	17.48	17.2	1.15	66
BREO-G	15.18	14.8	0.99	65
BREO-H	11.48	12.5	0.83	73
BREO-I	10.97	14.5	0.97	88
BREO-J	11.24	7.0	0.47	42
<u>Bretton roasted ore</u>				
BRER-A	5.06	1500	98.81	19527
BRER-B	4.85	576	37.97	7829
BRER-C	2.39	1350	88.93	37209
BRER-D	3.53	740	48.77	13816
BRER-E	2.70	768	50.61	18746
BRER-F	3.40	1140	75.10	22090
BRER-G	4.12	1250	82.35	19987
BRER-H	4.87	1150	75.76	15557
BRER-I	3.68	1360	89.59	24345
BRER-K	4.98	1880	123.82	24864
<u>Rockley ironstone</u>				
ROCO-A	13.74	10.0	0.67	49
Mean	)			189
Median	) Bretton ironstone			65
Standard Deviation	+/-)			313
Mean	) Bretton ironstone			60
Median	) except			64
Standard Deviation	+/-) BREO-B & BREO-D			17
Mean	)			20397
Median	) Bretton roasted ore			19757
Standard Deviation	+/-)			7813
Mean	) Bretton roasted ore			21793
Median	) except			19987
Standard Deviation	+/-) BRER-B			6836

Chart data

Total sus.	Meter	Total sus.	Meter
0	0		
4.06	60.9	4.06	60.9
		35.80	543

Slope & constant values as calculated by data trendline:

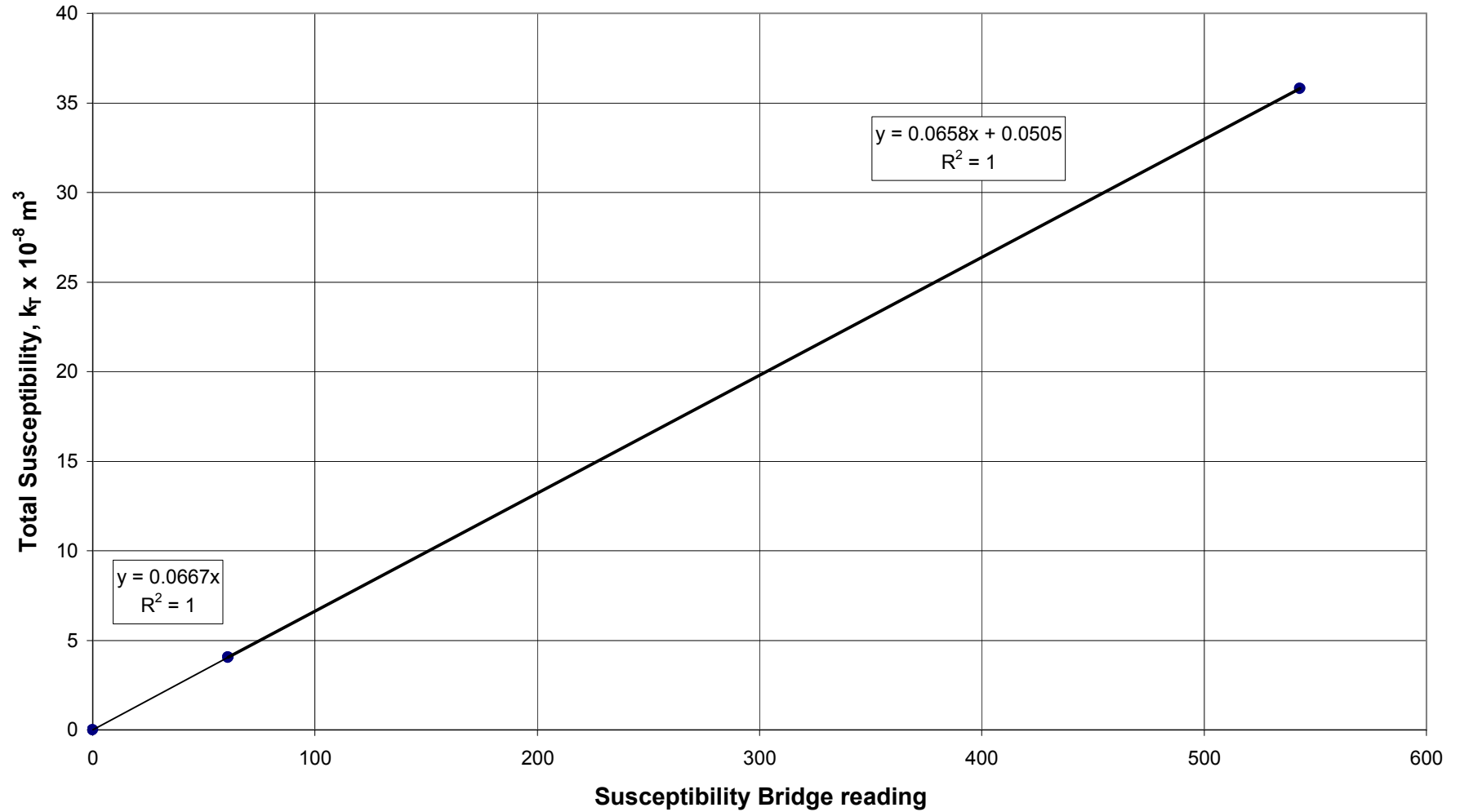
m	c	x	y
0.0667	0	60.9	4.0620
0.0658	0.0505	60.9	4.0577
0.0658	0.0505	543	35.7799

Slope & constant values as calculated from raw data:

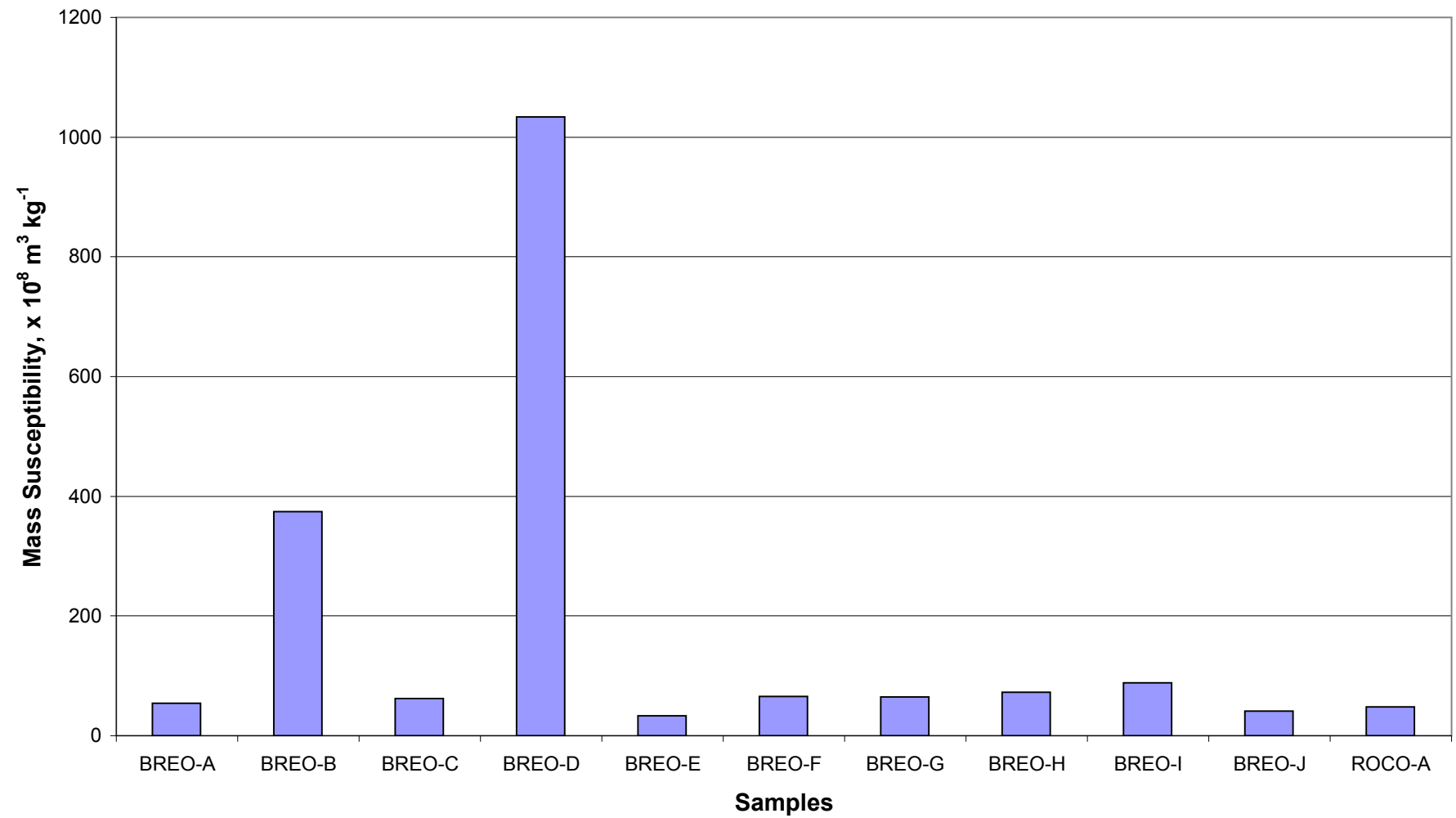
m	c	x	y
0.06667	0	60.9	4.06
0.06584	0.050529	60.9	4.06
0.06584	0.0505289	543	35.80

Above slope & constant values used in formula to calculate total susceptibility from the corresponding meter reading.

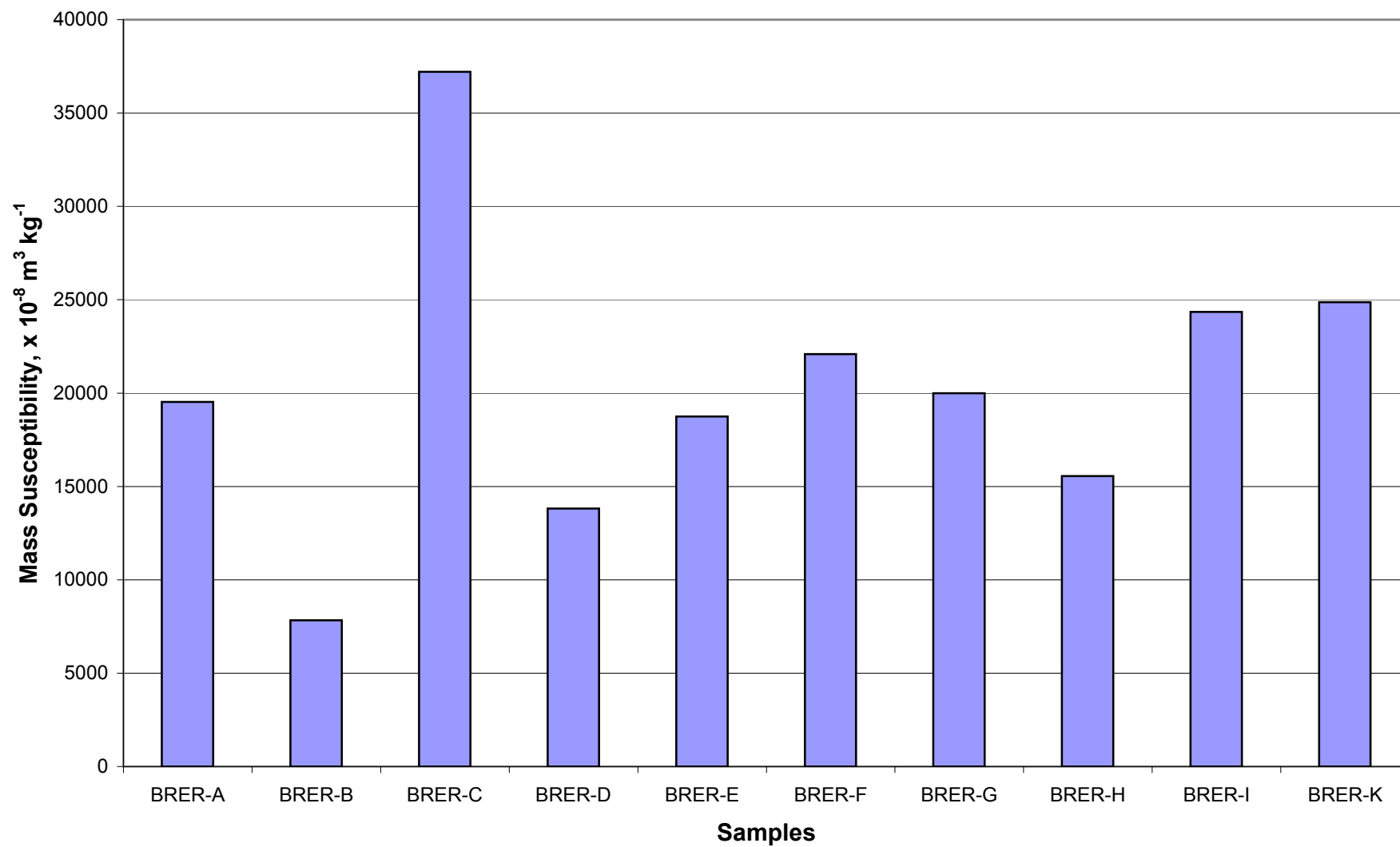
BLAST FURNACE ORE SAMPLES SUSCEPTIBILITY CALIBRATION CURVE



BLAST FURNACE ORE SAMPLES MASS SUSCEPTIBILITY



BLAST FURNACE ROASTED ORE MASS SUSCEPTIBILITY



**TO DETERMINE MASS QUADRATURE SUSCEPTIBILITY AND MAGNETIC VISCOSITY
OF ORE SAMPLES FROM BLAST FURNACE SITES**

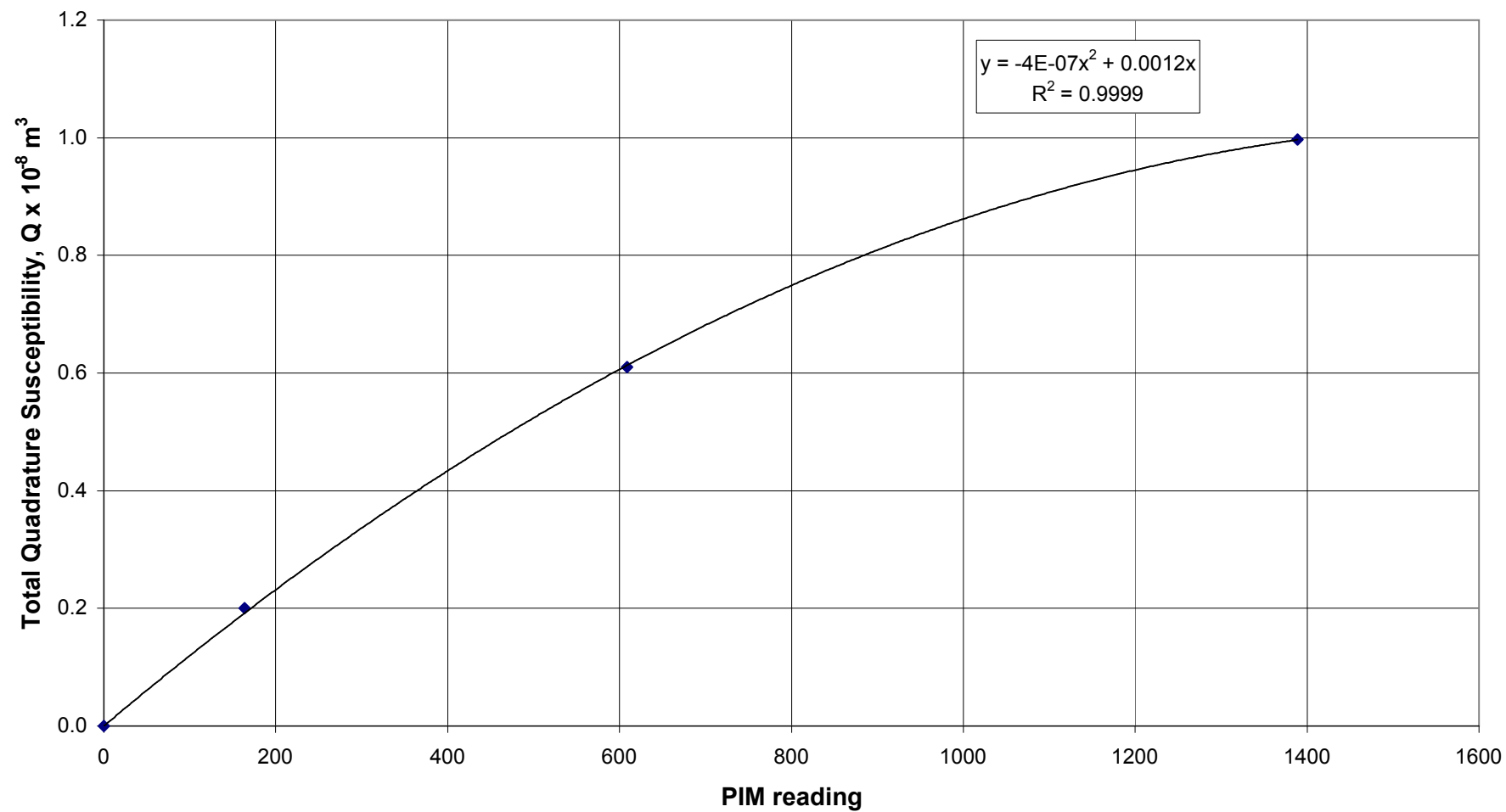
<u>Calibration samples</u>	Mass g	PIM reading	Total quad. sus. $Q \times 10^{-8} \text{ m}^3$	Mass quad. sus. $q \times 10^{-8} \text{ m}^3 \text{ kg}^{-1}$	Magnetic viscosity %
High alumina cement	50.00	164	0.20	4.0	
BS87	50.00	609	0.61	12.2	
BS62	38.20	1389	1.00	26.1	
<u>Bretton ironstone</u>					
BREO-A	17.33	2	0.00	0	0.3
BREO-B	21.96	249	0.27	12	3.3
BREO-C	18.26	2	0.00	0	0.2
BREO-D	33.55	1612	0.89	27	2.6
BREO-E	39.85	2	0.00	0	0.2
BREO-F	17.48	2	0.00	0	0.2
BREO-G	15.18	2	0.00	0	0.2
BREO-H	11.48	1	0.00	0	0.1
BREO-I	10.97	2	0.00	0	0.2
BREO-J	11.24	2	0.00	0	0.5
<u>Bretton roasted ore</u>					
BRER-A	5.06	1480	0.90	178	0.9
BRER-B	4.85	430	0.44	91	1.2
BRER-C	2.39	830	0.72	301	0.8
BRER-D	3.53	270	0.29	84	0.6
BRER-E	2.70	682	0.63	234	1.2
BRER-F	3.40	1190	0.86	253	1.1
BRER-G	4.12	984	0.79	193	1.0
BRER-H	4.87	90	0.10	22	0.1
BRER-I	3.68	76	0.09	24	0.1
BRER-K	4.98	204	0.23	46	0.2
<u>Rockley ironstone</u>					
ROCO-A	13.74	2	0.00	0	0.4

Mean	)	4	0.8
Median	) Bretton ironstone	0	0.2
Standard Deviation	+/-)	9	1.2
Mean	) Bretton ironstone	0	0.3
Median	) except	0	0.2
Standard Deviation	+/-) BREO-B & BREO-D	0	0.1
Mean	)	143	0.7
Median	) Bretton roasted ore	134	0.9
Standard Deviation	+/-)	102	0.4
Mean	) Bretton roasted ore	148	0.7
Median	) excl.	178	0.8
Standard Deviation	+/-) BRER-B	107	0.4
Mean	)	4	0.8
Median	) All ironstone	0	0.2
Standard Deviation	+/-)	8	1.1
Mean	) All ironstone	0	0
Median	) except	0	0
Standard Deviation	+/-) BREO-B & BREO-D	0	0

Chart data

Total quad.	PIM
0	0
0.20	164
0.61	609
1.00	1389

BLAST FURNACE ORE SAMPLES QUADRATURE SUSCEPTIBILITY CALIBRATION CURVE



BLAST FURNACE ORE SAMPLES MASS QUADRATURE SUSCEPTIBILITY & MAGNETIC VISCOSITY

