

Scanning and Measurement of the Polished Samples
Done by Dan Wu with the guidance and supervision under Prof. M. Kostic
(12/01/2003)

Nomenclature

D1 – bigger diameter of the central Hole (mm)

D2 – smaller of the central Hole (mm)

Hs1 – the maximum side height of the sample (mm)

Hs2 – the minimum side height of the sample (mm)

Hc – the central height of the sample (mm)

W – the width of the sample (mm)

e_{Hs1} - the deviation between the measured Hs1 and the desired value $100\% \cdot (10 - Hs1) / 10$

e_{Hs2} - the deviation between the measured Hs2 and the desired value $100\% \cdot (10 - Hs2) / 10$

e_{Hc} - the deviation between the measured Hc and the desired value $100\% \cdot (10 - Hc) / 10$

e_W - the deviation between the measured W and the desired value $100\% \cdot (20 - W) / 20$

e_{D1} - the deviation between the measured D1 and the desired value $100\% \cdot (1 - D1) / 1$

e_{D2} - the deviation between the measured D2 and the desired value $100\% \cdot (1 - D2) / 1$

e_{Dr} - the deviation between the measured D2 and the measured $100\% \cdot (D1 - D2) / D1$

Measured Dimension of the Sample

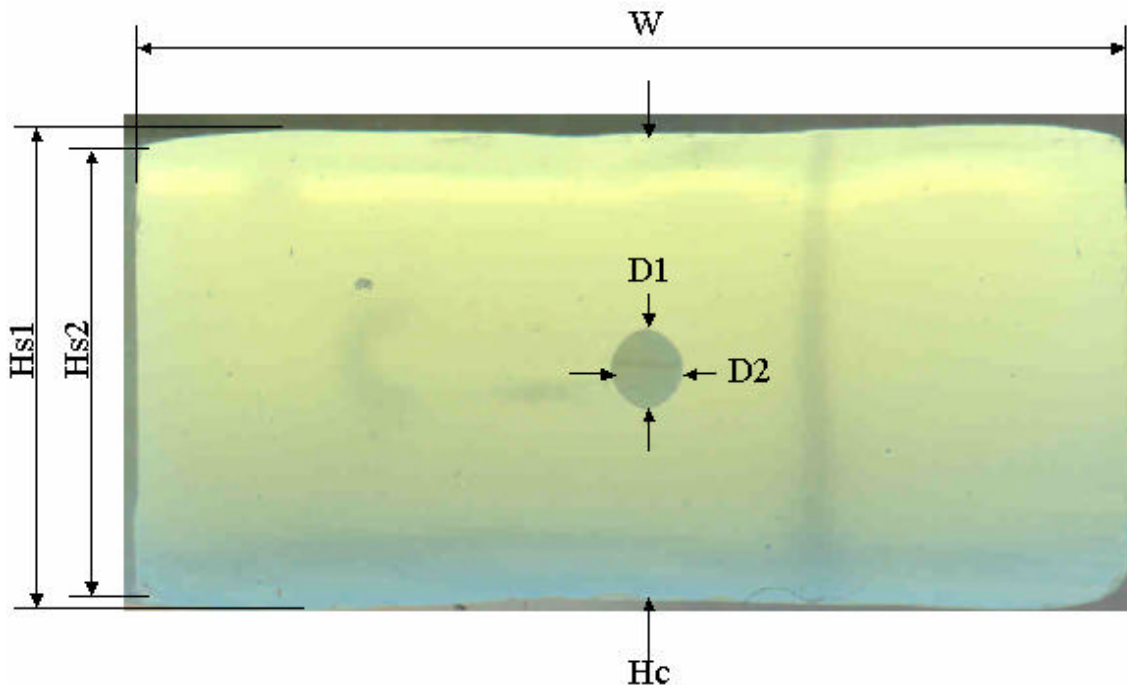


Figure 1: Measured Dimension of the Sample

Summary of the Measurement of the Samples

Sample #	Hs1	Hs2	Hc	W	D1	D2
1	9.71	9.20	9.45	20.08	1.62	1.49
2	9.75	9.16	9.41	20.12	1.66	1.56

Table 1: Summary of the Measurement the two Samples

Sample #	e_{Hs1}	e_{Hs2}	e_{Hc}	e_w	e_{D1}	e_{D2}	e_{Dr}
1	3.0%	8.0%	5.4%	-0.4%	-62.1%	-49.5%	7.8%
2	2.5%	8.4%	5.8%	-0.6%	-66.3%	-55.8%	6.3%

Table 2: Summary of the Deviation of the two Samples

In this table Sample1 is the color sample, and sample2 is the white sample. The following shows the photo of the two samples.

Scanning photos of the two samples

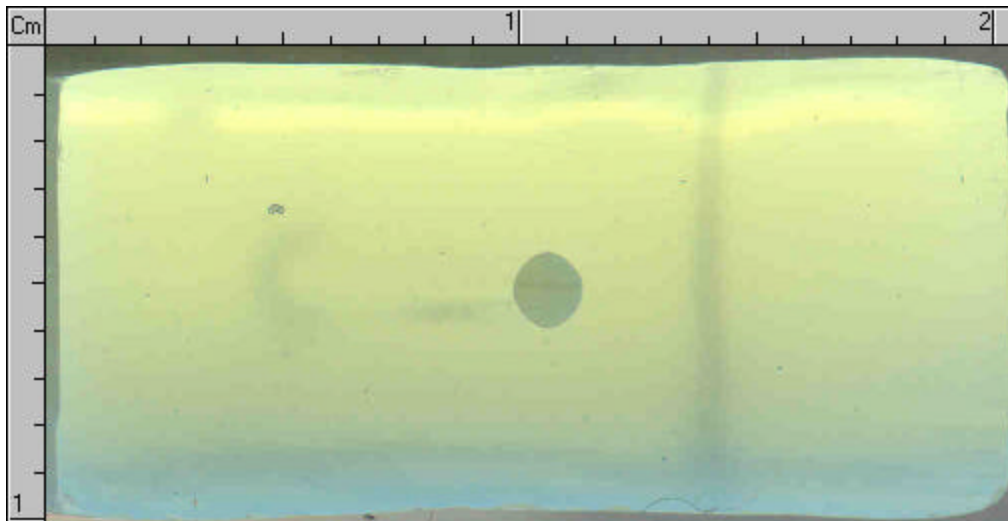


Figure 2: Scanning Photo of the Color Sample

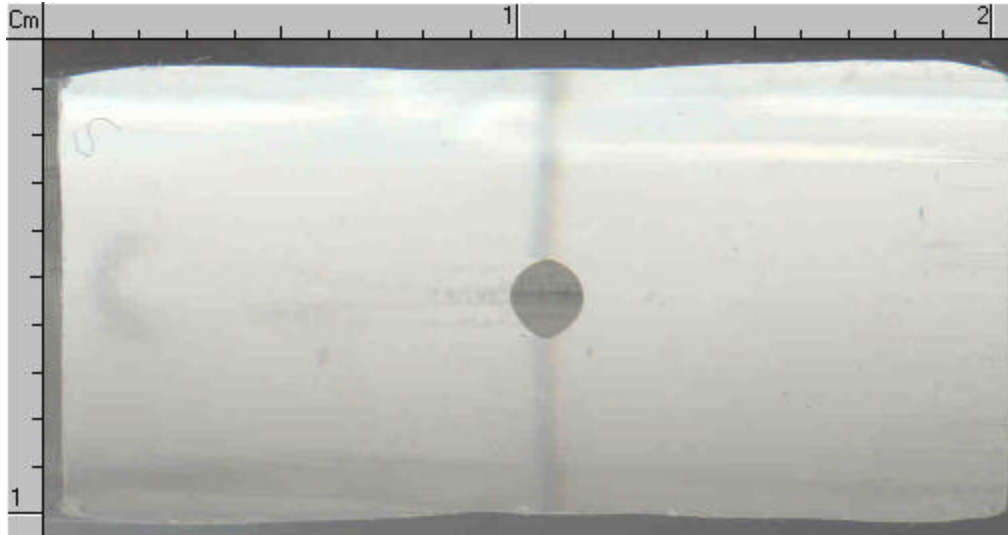


Figure 3: Scanning Photo of the White Sample

Conclusion

The measured dimensions of these two samples are closer to the desired dimensions than those of our samples. Qualitatively, the rectangular contour and the circular hole shaped in these two samples. Quantitatively, the height and width of the sample are very close to 10mm (less than 8.4%) and 20mm (about -0.6%), respectively. But the diameter of the central hole is much bigger (about 50%) than 1mm.