

Measurements of INT Primary mirror reflectivity with CT7 on 2021 October 26th before and after water washing

Values are percentage reflectivity (or equivalent absorptivity for Dust). Each column represents a waveband.

The reflectometer readings on the reference surface have not changed significantly since the problem discovered in March

We conclude that some 6% reflectivity was gained by washing and is about 4% better than in August

Compared with fresh aluminium, the values in 2 blue bands are 4% lower than in red bands, typical of an ageing Aluminium surface.

				%R per waveband (nm)							Dust Index						
				365	404	464	522	624	760	970	365	404	464	522	624	760	970
Calibration on reference surface																	
52	22/10/2021 14:44	20 Gauge	19	84.3	83.4	88.2	90.2	89.1	82.8	85.9	2.6	3	2.5	1.6	1.3	1	1.2
	04/03/2020 12:07	Gauge	24	84.3	83.6	88.4	90.6	89.4	82.9	86.1	2.7	3.2	2.7	1.7	1.2	1	1.2
Change in reference since March				0	0.2	0.2	0.4	0.3	0.1	0.2	0.1	0.2	0.2	0.1	-0.1	0	0
Measurements on INT primary mirror																	
44	21/10/2021 09:59	19 INT before	20	83.6	82.5	82.6	82.9	82.8	79.8	85.2	16.3	15.8	16.9	13.5	14.8	13.8	14.3
45	21/10/2021 10:00	19 INT before	20	79.9	79.1	79.5	80.1	79.7	77.3	83	20.2	20.1	21.4	17.2	19.6	17.8	17.4
46	21/10/2021 10:01	19 INT before	20	79.8	79.4	80.2	80.5	80.1	78.2	83	21.1	20	20.8	16.6	19.2	16.4	17.7
47	21/10/2021 11:48	19 invlaid	18	0	0	0	0	0	0	0	0	3.7	5.6	6.7	12.6	7.9	0.5
48	21/10/2021 11:49	19 INT after	18	84.2	84.1	85.5	86.1	86	84	90.1	16.2	13.9	12.3	8.3	8.4	5.5	4.8
49	21/10/2021 11:50	19 INT after	18	86.4	85.3	86	86.4	87	84.2	90.8	11.8	11.8	10.5	7.1	6.2	4.9	3.7
50	21/10/2021 11:52	19 INT after	19	87.3	86.8	87.4	88	87.8	85.3	91.4	9.6	8.3	7.2	4.5	4.2	2.6	2.2
51	21/10/2021 11:53	19 INT after	19	84.2	84.2	84.8	85.8	85.5	83.6	89.6	16.5	14.2	13.5	9.9	9.5	6.9	6.4
Change since CO2 cleaning in August				81.1	80.3	80.8	81.2	80.9	78.4	83.7	19.2	18.6	19.7	15.8	17.9	16.0	16.5
Improvement from washing				4.4	4.8	5.2	5.4	5.7	5.8	6.7	-5.7	-6.6	-8.8	-8.3	-10.8	-11.0	-12.2
Average Result				85.5	85.1	85.9	86.6	86.6	84.3	90.5	13.5	12.1	10.9	7.5	7.1	5.0	4.3
Difference from Fresh Aluminium				-7.3	-6.2	-4.9	-4.3	-3.3	-2.6	-2.1	11.0	9.8	8.7	5.9	5.5	3.8	3.1
				365	404	464	522	624	760	970	365	404	464	522	624	760	970
				%R per waveband (nm)							% Dust Index						

Improvement is greater in scattering than in reflectivity which is unusual. The difference from fresh aluminium is quite small in the red bands, but much larger in the blue bands, particularly in scattering. This is even more accentuated than the usual tendency of old surfaces (M1 aluminised 9 years ago).

This comparison not affected by the calibration memory problem (affects 970 band mainly) and is probably unrecoverable by further washing or CO2 cleaning.