ACCOMPANYING MATERIAL 1 CLEANING TREATMENTS USED IN LITHIC RESIDUE ANALYSIS

Cleaning Treatment	Tool Type	Further Description	Analysis Type	Source
No preparation	6 experimental tools: hornfels, quartzite, chert, mudstone		FTIR microscope attached to a 70v spectrometer, spots of 100 um, recording time range between 500 and 1000 scans, spectral resolution 4 cm^{-1}, in situ analysis	Prinsloo et al. 2014
Unwashed	86 experimental tools: flint and obsidian tools		FTIR microscope, frequency range 4000-600 cm^{-1}, resolution of 2 cm^{-1} or better, at least 200 scans. Spots of 100 x 100 µm normally selected	Cesaro and Lemorini, 2012, 300
Unwashed	70 archaeological stone tools		in situ viewing with incident light microscopy, selected removal of residues using double sided tape for SEM, Au coated	Hardy and Svoboda 2009, 164
Unwashed	53 archaeological tools: hornfels, dolerite, quartz	controlled curation	in situ viewing with stereo binocular metallographic microscope used with analysing and polarising filters	Lombard 2007, 408; Lombard 2008, 29
Unwashed, minimally handled	50 archaeological stone tools		in situ viewing with VLM 100x to 500x	Hardy et al. 2001, 10973
Unwashed, no handling prior to residue analysis	20 ethnographically produced scrapers, 18 archaeological tools of modern date: chalcedony, chert, quartz		stereo petrographic microscope with analysing and polarising filters, 50x to 500x for residue analysis	Rots and Williamson 2004, 1288
Most specimens unwashed, some rinsed	50 archaeological points and point fragments (? hornfels, dolerite, quartz)		in situ viewing, use and residue traces documented with low-power stereo microscope up to 40x, reflected VLM with polarising filters, 50x to 500x	Lombard 2005a, 283

Wash with water	46 archaeological artefacts: bone, antler, teeth, ivory	no alcohol, acetone or chemicals used	Stereo microscope, reflected VLM	van Gijn 2005, 50
Jet bath		jet bath with deionised water to remove loose sediment, JB sediment analysed	residue extraction, transmitted light microscopy	Mercader 2009, supporting material
Wash with tap water, jet bath	11 archaeological tools: basalt, chert, chalcedony	jet bath with deionised water to remove sediment and contaminants, jet bath solution analysed	residue extraction, transmitted light microscopy	Croft 2012, 97
Wash with water and detergent	2 experimental tools: flint		SEM with energy dispersion analysis system (EDAX), elemental composition of spots on stone surface	van Gijn 1990, 5
Wash with water, soak in H_2O_2	6 experimental flakes: chert	flakes fractured after use, soaked in 35% H_2O_2 for 24 h	Au coating for SEM and C coating for EDX, IDIS-microscope (stage 2) at 10 kV, in situ analysis	Jahren et al. 1997, 246-247
Wash with water, soaking in bleach solution	28 experimental flakes: hornfels, dolerite, chert and chalcedony	1:10 bleach solution for 48 hours to remove bacteria. Flakes rinsed again with water, sun dried in synthetic clean container	stereo binocular metallographic microscope with analysing and polarising filters, 50x to 800x, sketches to record positions of residues on flakes	Wadley et al. 2004, 1492-1493
Wash with tap water, soaking in 5% ammonium hydroxide (NH_4OH)	2 grounding stones	tool surfaces soaked for 30 minutes in 5% NH_4OH	residue extraction, transmitted light microscopy	Zarrillo and Kooyman 2006, 484, 498
Ultrasonic bath, tools in nylon weigh boats half filled in distilled water	recommended protocol	boats with artefacts float in bath for about 30 sec	extractions, transmitted light microscopy	Fullagar 2006, 210
Ultrasonic bath about 10-20 sec, tool	recommended protocol		in situ viewing with reflected brightfield illumination, darkfield	Torrence 2006, 195

immersed in pure water in plastic floating container			and cross polarising filters. Remove subsample for TLM	
Wash with water, ultrasonic bath with deionised water	92 archaeological tools: flint and obsidian	washed with water to remove soil deposits, ultrasonic bath in deionised water for 5-10 min	FTIR microscope, frequency range 4000-600 cm^{-1}, resolution of 2 cm^{-1} or better, at least 200 scans. Spots of 100 x 100 µm normally selected	Nunziante Cesaro and Lemorini, 2012, 300
Wash with tap water and bare hands, ultrasonic bath in NH_3, tools in lidded plastic containers	106 archaeological tools: basalt, chert, chalcedony	after water wash, tools air dried on paper-towel, sonication with ammonia for 30 min	extractions, transmitted light microscopy	Croft 2012, 237
Ultrasonic bath in H_2O_2 , ultrasonic bath in detergent, ultrasonic bath in acetone		H_2O_2 ultrasonic bath for 10 min, neutral phosphate-free detergent (Derquim® LM 02) for 10 min, ultrasonic bath in acetone for 2 min	SEM-EDX	Ollé and Vergès 2008, 40
Ultrasonic bath with detergent, ultrasonic bath in acetone	104 archaeological tools	neutral phosphate-free detergent (Derquim® LM 02) for 10 min, ultrasonic bath in acetone for 2 min	Reflected VLM, SEM	Borel et al., 2014, 47
Wash with tap water and blowing with compressed air	2 archaeological tools	blown gently with compressed air to remove surface contaminants	Leica MZ16A stereoscope, mapping, SEM-EDX, vibrational spectroscopy, FTIR microscopy, confocal Raman microscopy	Monnier et al. 2013, 3724
Unwashed, compressed air	1 archaeological tool	blown gently with compressed air to remove surface contaminants	Leica MZ16A stereoscope, mapping, SEM-EDX, vibrational spectroscopy, FTIR microscopy, confocal Raman microscopy	Monnier et al. 2013, 3724
Compressed air	recommended protocol	no brushing or scrubbing, causes abrasion	SEM-EDX	Jahren 1997, 250
Dry brush	160 experimental flakes: hornfels,		in situ viewing with indirect or reflected light	Langejans 2011, 986

	chert, quartzite		microscope, mapping, contextual approach	
Brush	recommended protocol		extractions, transmitted light microscopy	Fullagar 2006, 210
Nylon brush	recommended protocol		in situ viewing with reflected brightfield illumination, darkfield and cross polarising filters. Remove subsample for TLM	Torrence 2006, 195
Solutions of NaOH and HCl	experimental and archaeological tools	identical cleaning process on experimental and archaeological specimens	main focus microwear, but ochre residues observed as well	Keeley 1980
Chemical clean with 10% HCl solution, rinse with KOH	2 experimental tools: flint		SEM-EDX, elemental composition of spots on stone surface	van Gijn 1990, 5
Soak in detergent water, periodic wipe with alcohol or acetone, soak in 10% HCl solution	25 experimental tools: flint		in situ viewing, SEM-EDX	van Gijn 1984, 13
'mild' and 'harsh' cleaning treatments	15 experimental flakes: flint	flakes used on fresh hay, soaked post-velvet antler, unused control	mild cleaning: soak in water, brushing in soapy water, acetone rinse. harsh cleaning: same as above but with additional step of 10 min ultrasonic bath in 5% ammonium hydroxide (NH_4OH) prior to acetone rinse.	Evans and Donahue 2005, 1735
Uncontrolled curation	14 archaeological tools: hornfels, dolerite, quartz	wash with water, marked, handled, sketched	in situ viewing with stereo binocular metallographic microscope used with analysing and polarising filters	Lombard 2007, 408
Uncontrolled curation	11 ethnographic implements: wooden bowls, cooking drum, knife, stirrer, spoon, and stone	museum curated, some uncleaned	residue extraction, transmitted light microscopy	Barton 2007

	pounders			
Uncontrolled curation	3 archaeological burins	museum curated, labelled with ink	in situ viewing, residues and microwear, stereo microscope, reflected-light microscope with DIC, SEM, EDX	Dennis et al. 2009, 1924