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**Historical recipes for preparatory layers for oil paintings in manuals, manuscripts and handbooks in North West Europe, 1550-1900: analysis and reconstructions**

Stols-Witlox, M.J.N.

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*Citation for published version (APA):*

Stols-Witlox, M. J. N. (2014). Historical recipes for preparatory layers for oil paintings in manuals, manuscripts and handbooks in North West Europe, 1550-1900: analysis and reconstructions

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## Appendix 5 Recipes for panel preparation 1550-1900, including South European recipes

### 5a Recipes for panel preparation: aqueous grounds 1550-1900

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
De Mayerne 1620-44: 99	UK				white, honey							
de la Fontaine 1679: 27-8	FR		leather glue		spanish white, glue (x 3, with a brush)	wetted linen, then sanded with horsetail		glue (x 2)				
<i>Valuable secrets</i> 1775: 133	UK		size		whitening, size			boiling oil				
Le Pileur d'Apligny 1779: 72	FR				white, glue							
Fokke Simonsz 1803-4: 84-5	NL				glove clippings, white chalk (x 12, first two coats with more glue)	With soft wet brush dipped in water and water pressed out, brush surface to make it more 'soft'. Alternatively: use wet linen cloth. When dry: smooth with shaved grass or new linen cloth						

<i>source</i>		<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
Bouvier 1827: 577-80 <sup>750</sup>	FR		NOT pumiced			pipe clay, flour or starch, bright yellow ochre, bright orange ochre (x 4 thin layers, with large brush, like a varnish brush)	pumice lightly						
Montabert 1829: 166-169	FR			water, absinth, garlic, salt, vinegar, warm parchment glue, rub while warm and fluid (for adherence)		parchment glue, chalk; or parchment glue, lead white; or parchment glue, pipe clay; or wheat flour, calcined bone powder, pumice powder		decoction of black licquorice sugar					
Fielding 1839: 79-80	UK		well pumiced			calcined bones of sheep's trotters, thin paste (x 3, first coat rubbed in with a pumice stone, next coats applied with a brush)	sandpaper after second coat		coloured ground (artist's colours) 9x 1-2)			raw linseed or poppy oil	
<i>Technische Mitteilungen</i> , nr. 25 (1886): 39	GE			Cologne glue or hareskin glue (x 1)		Cologne glue or hare skin glue, slaked chalk, white bole, China clay (x 3-4, 1st layer with very little chalk, last layer with more	pumice stone, water	shellac or thin oil paint					

<sup>750</sup> This recipe is written primarily for canvas preparation. However in the first line, Bouvier alludes to the fact that it may also employed to prepare panel, board and paper. Bouvier 1827: 577.

source	support repair	smoothing	sizing layer	smoothing	first ground layer	smoothing	isolation layer	second ground layer	smoothing	isolation layer	third ground layer	smoothing
					glue added to smooth it)							
Vibert 1892: 186-8	UK	smoothed with glass paper, then washed with benzine			zinc white, casein paste [made with casein or cheese, water, ammonia, glycerin] (x 3-5, with swallow-tail brush)	do not polish first layer, but polish subsequent layers with glass paper or powdered pumice stone by means of a cork or dry rag. Last layer unpolished			'A good plan to lay on a very light coat of re-touching varnish'			
<i>Technische Mitteilungen</i> , nr. 20 (1895): 1-2	GE				chalk ground				boiled linseed oil			

### 5b Recipes for panel preparation: aqueous layer plus oil-based layer 1550-1900

source	support repair	smoothing	sizing layer	smoothing	first ground layer	smoothing	isolation layer	second ground layer	smoothing	isolation layer	third ground layer	smoothing
Vasari 1550 (1568): 52. translation Brown 1960: 230	IT				gessoed		softest glue (x 4-5, with softest sponge)	nut oil, lead white, lead tin yellow, earth for bells (plastered over the panel and beaten with the hand to unite)				

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
BnF Ms. Fr 640 c. FR 1580-1600: 57 perso 115					chalk tempered in ...[undistinguishable] (x 2-3, dabbed on with a brush)	knife	A layer of glue (x 1)	priming				
De Mayerne 1620-44: 11	UK				glue, chalk	scrape and even with the knife		lead white, umber				
De Mayerne 1620-44: 90v	UK				glue, chalk	scrape and even with the knife		lead white, umber, oil				
Bate 1633 (1654 <sup>751</sup> ): 167	UK				size, whiting	scrape		lead white, oil				
Peacham 1634: 130	UK				size, Spanish white (x 3)	scrape with sharp knife		red lead or some other colour				
Norgate 1640 (Hardie 1919: 91)	UK				size, whiting	scrape		lead white, oil				
Pacheco 1649: 382-3 (transation from Véliz 1986: 66)	SP	hemp over joins			glue, not strong, garlic	unslaked gesso grosso (x 3-4)		tempered gesso sottile (x 5-6)	scraped with knife		lead white, italianpaper umber, linseed oil (x 1, with a large trimmed and soft brush)	
King 1653-57: 52, UK 52v			weak size		Spanish white, well bound (x 2)	scrape with reeds or rushes. Some water plaine it with a wet cloth		primer of lead white, little charcoal black, very little red lead to dry it				
'Art of painting in oyle' 1664: 94-5	UK				strong size, whitening (x 2, applied with a soft brush)	scrape very even with a knife		lead white, thin red lead, linseed oil (x 1, with smooth brush or			lead white, red lead, Spanish brown, umber, (little lamp black)	edge of pigeons feather plucked off the wing

<sup>751</sup> The original text of the 1654 edition was employed and checked against the transcript of the 1633 edition which is provided by Talley 1981: 172

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
								large pencil. More oil than in second ground to prevent sinking in)			(x 1)	
Salmon 1672: 141	UK				size, whiting ground (x 2-3)	scrape smooth		lead white, oil				
Félibien 1676: 407-8	FR		Sized with a brush		white tempered in glue			oil priming				
De la Fontaine 1679: 27-8	FR		leather glue		Spanish white, glue (x 3, applied with a brush)	moistened linen, then sand with horsetail	glue (x 1)	grey in oil				
Beurs 1692: 19-20	NL	Spike oil to keep away woodworm			glue paint, chalk white	scrape		lead white, oil, umber, (x 3-4, applied with a knife)				
Beurs 1692: 19-20	NL	Spike oil to keep away woodworm			glue paint, chalk white	scrape		lead white, oil, black, (x 3-4, applied with a knife)				
Smith 1693: 75	UK				whiting, strong glue (x 6-8)	'Plained with a joiners plane, then water plained with a rag dipped in'		prime				
De la Hire 1730: 708-9	FR		warm leather glue (both sides)	scrape	white chalk, glue (x several layers, with a soft brush)	Smooth layers in between		lead white, little brown red, carbon black, oil (x 1-2, with soft brush)				
Chomel 1743: 948	NL				glue, chalk			oil paint				
Barrow 1754: n.p.	UK				white, size			colours			colours	

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
Pernety 1756: lxxxviii	FR		warm leather glue (both sides)	scrape	white chalk, glue (x 2 or 3, with a soft brush)	scrape size on which you will paint between applications or only after last application		lead white, little brown-red, carbon black (x 1-2, with brush)	scraped with carbon knife blade			
École 1759: 173-5	FR		sized (with brush)		white, glue			lead white, little carbon black				
Hallen 1761: 321-2	GE		warmed glue from glove leather or parchment clippings	planed even	several layers of glue ground chalk (x several, with soft brush)	evened with moist sponge		flake white, oil, brown red and charcoal black	with pumice stone			
Jombert/De Piles 1766: 135-6	FR		warm leather glue, parchment or glove clippings (both sides)	scrape	white chalk, glue (x several, with soft brush)	even between coats		lead white, little brown red, carbon black (x 1-2)				
Griselini and Fassadoni 1772: 269	IT				white, glue	remove all knots with a knife and rub and even with a pumice stone		oil, gesso or white chalk, red ochre, or other chalk				
Nieuwen verlichter 1777: 170	NL		warm glue from leather, parchment or glove cuttings		white chalk and glue (x several times, with soft brush)	scrape between layers		lead white, little brown red, charcoal black (x 1-2)				

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
Dutens 1779: 62	FR		Glove glue (both sides)	scrape	white, glue (x1-2, with brush)			oil, lead white, brown red (x1)				
Pernety 1781: 8	FR		size		white in glue			oil priming				
Monton 1792: 42SP			glue		white, glove clippings glue	scrape smooth		oil, ochre				
<i>Golden cabinet</i> 1793: 113	US A				white, size			white chalk, red ochre, or other chalks beaten pretty stiff				
<i>Transactions</i> 1806: 85-9	UK	pumiced			calcined and crushed bones of sheep's trotters, wheaten flour, (x 2, first layer rubbed on with pumice stone, subsequent layers applied with a brush)	sandpaper		'coats of the colour' [probably the mixture used as a first ground, with the addition of pigments/oil paint] (x 1-2, with a brush)		raw linseed or poppy oil before painting		
Cawse 1822: 9-11	UK				calcined ground sheep's trotters, wheat flour (x 2)			calcined ground sheep's trotters, wheat flour, colour (x 1)				
Smith 1825: 357-8	FR	pumice stone			calcined bones from sheep's feet, wheat flour (x3, first coat spread with pumice stone, second with brush)	softened with sandpaper after second coat		colour (1-2)		layer of raw linseed or poppy oil		



<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
Fernbach 1834: 5-6	GE		glue water (x 2, dabbed on with stiff brush)		chalk ('Mannheimer Kreide'), glue (x 6-7, dabbed on with stiff brush)	pumice stone and water, pumiced twice	hot glue water	lead white, chalk ('Mannheimer Kreide'), amber varnish (x 3-4, with brush)	also in between coats, with pumice stone and turpentine, carefully when just dry, then smoothed very fine again			
Cawse 1840: 20-1; 26	UK				parchment clippings size, whitening, (tint) (x 2 with trowel or large palette knife) Plaster of Paris may be added	1st coat: well-surfaced pumice-stone, 2nd coat: hand, dipped in water		'Should it be desirable to remove the absorbance': coat of light coloured drying oil				
Hundertpfund 1847: 125-7	GE				flour, pipe clay <sup>752</sup> ('Haugerde'), water (until no more pores are visible)			oil paint, lead white, some turpentine oil (x 2)	pumice stone (after first application)		flour (sifted over and superfluous flour beaten off) (applied while former layer is wet)	
Hundertpfund 1849: 105-9	UK				flour, cold water, pipeclay (x 3-4)			oil colour of lead white and oil of turpentine (x 2, second without turpentine)	pumice-stone (after first application)		flour sifted over and superfluous dusted off (straight after application of leadwhite paint)	
<i>Technische Mitteilungen</i> , nr. 25 (1886): 39	GE		Cologne glue or hare skin glue (x 1)		Cologne glue or hare skin glue, slaked chalk, white bole, China clay (x 3-4, 1st layer with very	pumice stone, water	shellac or thin oil paint					

<sup>752</sup> The English 1849 translation of Hundertpfund 1847 translates 'Haugerde' as 'pipe clay'. Hundertpfund 1849: 150

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>third ground layer</i>	<i>smoothing</i>
					little chalk, last layer with more glue added to smooth it)							
Vibert 1892: 184 UK		sandpaper, for the last rubbing soaked in petroleum. Then panel must be seasoned.			lead white, painting varnish with a little siccativ (x several layers)		glass paper between each layer					

### 5c Recipes for panel preparation: oil-based grounds 1550-1900

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>
BnF Ms. Fr 640 c. 1580-1600: 48 perso 114					'Scudegrun' and lead white, oil	even with a feather, or scrape dry ground strongly with a knife				
De Mayerne 1620-44: 99			sized		oil priming applied with a knife or a bone spatula					
Eikelenberg 1679-1704: 403			glue		potters earth, linseed oil	rainwater, rubbed in with the palm of the hand while wet				
Palomino 1715, 1724, vol. 2: 33 (translation Véliz 1986: 151)		panel scraped and smoothed			oil priming (x 1-2, applied with a brush, blended with a soft brush)	scraped with a knife in between applications				
Cröker 1729: 78			glue	horsetail (before last glue layer)	oil ground					

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>
Mss.Hist.Helv.XVII. SUI 234 1750-1800: 85-6 (transcribed in Stettler 1987)			glue water (x 3)		brown red (x 1)			charcoal black, lead white, raw linseed oil (x 1)		
Mss.Hist.Helv.XVII. SUI 234 1750-1800: 85-6 (transcribed in Stettler 1987)			oil		brown red (x 1)			charcoal black, lead white, raw linseed oil (x 1)		
Dossie 1758: 203-4 UK			hot drying oil (as long as will soak in)		lead white, of flake, colour					
Dossie 1758: vii- viii, 204, 205	UK		hot drying oil		flake white, fat oil, colour					
Chomel 1767: 869	FR		glove glue (x 2)		oil priming					
Van Leen c. 1800: 18	NL				yellow ochre, little white, turpentine water (with rather large brush)			lead white made yellow by heating, boiled oil, little turpentine (x 6-8, with brush)	after layer has hardened 4-5 weeks: sieved pumice stone, woolen cloth dipped in water, rub smooth and even	
Ibbetson 1803: 11- 12	UK				'flattening' [=spirit of turpentine, linseed oil, lead white], strong drying oil, spirit of turpentine (x 3-4, first layer with brush, subsequent layers more stiff and applied with palette knife)	taken off with the knife while wet				

<i>source</i>	<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>
Montabert 1829: FR 163					copal, elemi resin, spike oil, a third of this mixture, two thirds poppy oil, white or ochre					
Montabert 1829: FR 163					copal, elemi resin, spike oil, caoutchouc, copaiva balsam, white or ochre					
Vergnaud 1831: FR 138-9	dressed and polished		normal strong glue or cheese glue		As canvas					
Fielding 1839: 81-2 UK					'flattig' (lead white, [oil] turpentine), strong drying oil, spirits of turpentine (x 1, with brush, brushmarks in the direction of the grain)			"the stiff colour" [=probably the same material as used for the first layer, but less or un-diluted] (x 2-3, with a palette knife)		take off as 'clean' as possible with the palette knife
Cawse 1840: 20-1; UK 26		pumice-stone			tobacco-pipe clay, Spanish white, drying oil, colour (with trowel or palette-knife)	rub over with pumice-stone and linseed oil				
Cawse 1840: 20-1; UK 26		pumice-stone			common lead white (with palette-knife or trowel)	rub over with pumice-stone and linseed oil				

<i>source</i>		<i>support repair</i>	<i>smoothing</i>	<i>sizing layer</i>	<i>smoothing</i>	<i>first ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>	<i>second ground layer</i>	<i>smoothing</i>	<i>isolation layer</i>
Susse 1845: 22	NL			leather glue (with a knife)	Pumice stone	oil, lead white, little ochre (x 3-4)	pumice stone applied after each coat				
Hampel 1846: 26	GE			oil varnish (x until it absorbs no more)		lead white, ochre, varnish (x a few thin layers)	every coat evened with a pumice stone. If wanted extra smooth: polished with shaving knife or with shard of glass.				
Blockx 1881: 3-4	BE					lead white, linseed oil (enough to cover well the pores of the wood without being a thick layer)					
Blockx 1881: 31	BE	wash with rectified turpentine essence or water				thin layer of oil [paint] (x 1)					
Oughton 1892: 36	UK			sized		flake white, little bright red	fine sandpaper				