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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**

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## Chapter 3 Preparatory layers for oil painting; their terminology and function

*...we call a primed canvas, a primed wall, the canvas or wall on which the first layers have been applied, to prepare them to receive the colours that will form the painting.*

*Dictionnaire abrégé de peinture et d'architecture 1746*<sup>59</sup>

Since the use of certain terms employed to describe preparatory layers has changed throughout history, in that some terms have carried different meanings, a clear definition of each term used in this dissertation is of vital importance. Furthermore, some knowledge of the historical uses of each term is required, since without it a proper interpretation of the recipe texts is hampered. Because terminology and function are closely related, words used to describe certain layers are often linked to their function. Therefore a general description of the function of the different layers is included in this chapter.

The information on terminology and function is presented in the order in which the layers are usually applied to the support, starting with descriptions of the size layer, the ground layers and finally isolation layers.

### 3.1 The preparatory system

The term preparatory system, or shorter preparation of the support, is a modern term. It will be used in this dissertation to indicate the complete package of layers that together forms the basis onto which the image is painted. As it is a modern term, it does not appear in any of the historical recipes studied for this dissertation. Words employed to describe the preparatory system in historical recipes are 'priming' or 'ground' (See Table 3.1). However as will be discussed on the next page, there are two reasons to avoid these terms to describe the whole of the preparatory system.

The preparatory system will usually include several layers, each with its own function (See Fig. 3.1 for a graphic representation of these different layers.) Sections 3.1.3 and further will explain the characteristics and function of each layer.

The most important characteristics of a preparatory system are the facts that the layers are present *between* the support and the paint layers and that the layers are *uniformly applied* to the whole surface to be painted. This distinguishes the preparatory system from the underpainting. Underpainting consists of local applications of paint and is considered to be part of the painting stage because it relates the design or image.

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<sup>59</sup> *Dictionnaire abrégé de peinture et d'architecture 1746*, vol. 1: 315

Table 3.1 *Historical terms used to describe preparatory layers in English, Dutch, German, French and Italian historical recipes c. 1550-1900*

Important note: Terms that appear very frequently in historical recipes are not referenced separately. Terms that require further explanation or that have appeared only in a small number of historical sources, are referenced in footnotes.

Category	English	Dutch	German	French
Support	support cloth	drager (schilder)doek bloten grond (=unprepared cloth <sup>61</sup> )	(Bild)trager (Mal)tuch; Mahlertuch Leinwand; Leinewand	support fonds <sup>63</sup> toile
	cloth = 'cloth primed' <sup>60</sup>		Mahlertuch (=primed cloth <sup>62</sup> )	toile (=primed <sup>64</sup> ) (planche de) bois
	board		Brett	panneau
	wood panel	plank hout	Holz; Holcz	bois
	copper plate	paneel; penneel; panneel kopere plaet	Kupferplatte	(planche de) cuivre
Preparatory layers as whole	priming ground	grondering grond; grondt; gront schildergrond	(Mal)grund; Gründung; Grundirung	fonds <sup>66</sup> apprêt <sup>67</sup> enduit <sup>68</sup>
	preparation (= the mixture used)			enduit imprimé <sup>69</sup> enduit préparatoire <sup>70</sup> impression <sup>71</sup>
	sizing <sup>65</sup>			imprimeure <sup>72</sup> imprimure
Act of applying preparatory layers	priming	plumeren; pramuren met koleur beleggen	bestreichen (with ground) anstreichen (with glue, oil ground)	imprimer (=apply aqueous/oil ground, or glue layer <sup>78</sup> )
	preparing for painting	gronden belymen (=applying glue)	gründen (=applying prep.layers)	appliquer
	sizing <sup>73</sup>	planeren (=used for applying paste)	überziehen	faire les premières couches
	clear-coating (= same as whitening <sup>74</sup> )	applying paste)	aufstreichen (oil ground)	preparer
clear-colling (same as whitening <sup>75</sup> )	witten (= chalk/glue	weissen (=applying	étendre	

<sup>60</sup> 'cloth' refers to a primed canvas, according to both the *Excellency of the pen and pencil* 1668: 92 and to Dossie 1758: 202-3.

<sup>61</sup> *Nieuwen verlichter* 1777: 167-8.

<sup>62</sup> Hampel 1846: 22-5.

<sup>63</sup> Piles 1684: 62-3; Pileur d'Apligny 1779: 52.

<sup>64</sup> Bouvier 1827: 563.

<sup>65</sup> Used only by Vibert carrying this meaning. Vibert 1892: 186-8.

<sup>66</sup> De Piles 1673: 215-8; Pileur d'Apligny 1779: 52.

<sup>67</sup> Boutard 1826: 36; Montabert 1829, vol 9: 164.

<sup>68</sup> Montabert 1829, vol 9: 164.

<sup>69</sup> Diderot 1788-91, vol I: 309.

<sup>70</sup> Montabert 1829: 152.

<sup>71</sup> Boutard 1826: 371.

<sup>72</sup> *Dictionnaire universel* 1732, vol. 1: 594.

<sup>73</sup> Tingry 1804: 491.

<sup>74</sup> Dossie 1758: 203.

Category	English	Dutch	German	French
	whiting (=applying chalk/glue)	application)	chalk/glue <sup>76</sup> )	
			leimtrencken (=applying glue <sup>77</sup> ); leimträncken überstreichen (with glue)	encoller; encoler; coller
The size layer	size (= animal glue)	lijm	Leim; Leimwasser	encollage; (enduite de) colle; couche de colle
	paste (= flour paste) starch	pap van meel (= flour paste) styzfel; stijfsel; styzfel	Kleister (=flour paste or starch) Leim aus Stärke oder Mehl <sup>80</sup> Mehlpappe <sup>81</sup>	colle de farine
	priming <sup>79</sup>			
Ground layers, including pigmented isolation layers	ground couch (= ground layer) coat primer (most commonly oil bound)  whiting (= chalk/glue layer)	grond laag plamuersel (= chalk/glue) plamuursel (=chalk/oil <sup>82</sup> ) pluimuur primuersel (=imprimatura) <sup>83</sup>	Grund; Grundirung; Grundfarbe; Grundirfarbe; Grundlage; Farbenlage (=ground layer) Anstrich (=coat) Oel-Farben-Grund, Oel-Grund; Oelgrund	preparation <sup>84</sup> ; enduite préparatoire couche (=layer or coat, glue or ground) couleur à huile imprimeure imprimure en huile (=oil ground <sup>85</sup> ) pâte (=oil ground mixture <sup>86</sup> )
Act of applying an isolation layer	brush over with... <sup>87</sup>  coat of ... oiling over		überstreichen (with oil <sup>88</sup> ) trencken <sup>89</sup>	passer une couche d'huile
Act of pumicing	pumicing	pruymen; puymen	bimsen; schleifen; abschaben; abschleifen	poncer; passer un pierre de ponce; frotter avec la pierre-ponce, adoucir

<sup>75</sup> Field 1850: 153.

<sup>78</sup> Félibien 1676: 47-10; *Dictionnaire universel* 1732, vol. 1: 594; De la Hire 1730: 708-9; Bouvier 1827: 580.

<sup>76</sup> 'Liber Illuministarum' c. 1500: 106v transcribed in Bartl et al. 2005: 182-3.

<sup>77</sup> 'Liber Illuministarum' c. 1500: 100v-102v transcribed in Bartl et al. 2005: 172-4.

<sup>79</sup> Referred to with this term in Smith 1756: 58 and Field 1835: 213.

<sup>80</sup> Bouvier 1828: 428-30.

<sup>81</sup> Hundertpfund 1847: 127-9.

<sup>82</sup> Simis 1801, vol. 1: 158.

<sup>83</sup> See paragraph 3.1.5 for a discussion of the meaning of this term.

<sup>84</sup> Bouvier 1827: 571-2.

<sup>85</sup> Lebrun 1635 (transcribed in Merrifield 1849 (1999): 820-1).

<sup>86</sup> Bouvier 1827: 571-2.

<sup>87</sup> Dossie 1758: 203.

<sup>88</sup> Leuchs 1829: 549.

<sup>89</sup> 'Liber Illuministarum' c. 1500: 107v transcribed in Bartl et al. 2005: 184-5.

Sometimes it is difficult to distinguish in cross sections between a layer belonging to the preparatory system and a local underpainting, because underpainting may cover (nearly) the whole paint surface, and only be distinguishable from a ground layer by the graduations of colour present. This would certainly be the result of the instructions in *Reeves and sons' amateurs' and artists' companion* (1852). It advises to apply a graduated tone, light in the sky but more pronounced in the foreground.<sup>90</sup> A careful description of the characteristics of the layer is particularly important in such cases.

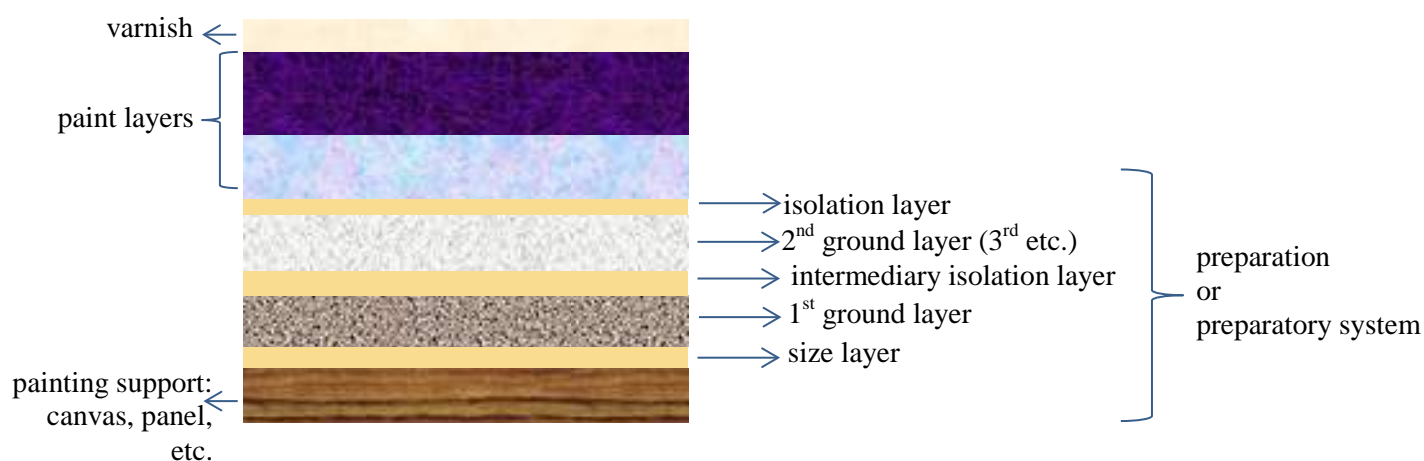


Figure 3.1 Schematic overview of layer build-up of an easel painting

Note: a ground layer is a layer of a homogenous composition. It may have been applied at once, in one application, or it may consist of multiple applications of the same composition. The preparation may only consist of some of the layers mentioned.

Although many historical and modern authors use the term 'ground' to describe all the layers of the preparation of the support, including size and isolation layers, this does not do justice to the possible presence of less obvious layers such as the size and unpigmented isolation layers. Instead the terms 'preparation' or 'preparatory system' are used in this thesis to describe the complete layer package, and the term ground only to refer to layers of pigments/fillers in a binder. The fact that historically the meaning of the term 'ground' varies, is another reason to avoid it in this context (see Table 3.1). In the *Groot schilderboek* of De Lairesse (1707) the word 'ground' carries a number of meanings. It is used to describe a preparatory layer applied to the whole of the support, to describe local areas of colour, but also to describe the sections into which a picture plane is divided, for instance the foreground and background.<sup>91</sup> The anonymous *Practical Treatise* (1795) uses the term 'ground' to describe locally applied colour patches that serve as a basis for

<sup>90</sup> See Carlyle 1991, vol. 1: 284-7 and Carlyle 2001: 209-212 for a discussion of Reeves and sons' instructions and similar painting methods advised in nineteenth century British manuals. Van Hout 2008: 58 provides examples of seventeenth century paintings where similar broad local underpaints were employed.

<sup>91</sup> See De Vries 2011: 207, also De Lairesse 1707 (edition 1712): 328-331

certain passages in painting, a use that would be more precisely described as local underpainting.<sup>92</sup>

A similar use of the Dutch term 'grond' to describe applications of a base tone to certain painted areas is noted in the seventeenth century anonymous manuscript in the Frans Hals Museum (c. 1650), which advises to apply an area of cheaper lead white below areas to be painted with high quality lead white.<sup>93</sup>

In French sources, similar confusing use of terms is evident (see Table 3.1). The term 'fonds' can be used to describe either the support, the support including the preparatory layers, only the preparatory layers or local underpainting.<sup>94</sup> In its meaning as preparatory layer, it would be analogous to 'impression', used in Diderot & d'Alembert's *Encyclopedie* (1788-91).<sup>95</sup>

The French term 'apprêt' also carries different meanings. Boutard (1826) explains 'apprêt' as 'preparation that one applies to the surface of copper, canvas, wood, or masonry on which one desires to paint a picture'. He writes that 'the *apprêt* generally consists of a layer of glue and several layers of paint, either in oil, or in distemper'.<sup>96</sup> De Montabert (1829) uses the term to describe 'a layer that serves to complete the polish [of the support], and which contributes at the same time to the beauty and conservation of colours'.<sup>97</sup>

### 3.1.1 The purpose of the preparatory system

Armenini (1587) calls the ground or preparation the 'bed [that] is required as reinforcement for the other colours'.<sup>98</sup> De Piles (1684) writes that the ground serves to equalize the support,<sup>99</sup> Beurs (1692) that the ground makes the picture plane smooth and suited to receive the paints.<sup>100</sup> Grace (1881) explains that the application of preparatory layers on canvas is required because of 'the totally absorbent quality of canvas, and the more or less partial transparency of oil colours'. The preparation will 'prevent the painting sinking into the canvas'.<sup>101</sup> The fact that many preparatory systems are recommended as never cracking, signifies that cracking is considered an important issue.<sup>102</sup> Suppleness is a quality mentioned to advertise certain preparations, especially for flexible supports such as canvas.<sup>103</sup> Vibert (1892) explains that towards the end of the nineteenth century, the fact that paintings travel more makes suppleness so important that 'suppleness is now the

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<sup>92</sup> *Practical Treatise* 1795: 94-5.

<sup>93</sup> 'Receptenboeck' c. 1650-1700, Frans Hals Museum: 1 [143, counting from previous section].

<sup>94</sup> For instance see Watelet, *Nouveau dictionnaire de peinture*, Paris: Prault, vol 2, 1792: 341.

<sup>95</sup> Le Pileur d'Apligny 1779: 52; Diderot and d'Alembert 1788-91: vol 1: 309.

<sup>96</sup> Boutard 1826: 36; 371.

<sup>97</sup> De Montabert 1829, vol. 9: 152-3.

<sup>98</sup> Armenini 1587 (translated in edition Burt Franklin 1977: 192): 124-5 'un letto così per cagione dell'aiuto de gli altri colori'.

<sup>99</sup> De Piles 1684: 62-3.

<sup>100</sup> Beurs 1692: 20.

<sup>101</sup> Grace 1881: 86.

<sup>102</sup> Cracking of preparatory layers is discussed by for instance: Bate 1633 (1654): 167; Pacheco 1649 (translated in Veliz 1986: 68); Symonds 1650-52: f. 98v (quoted in Talley 1981: 197); Salmon 1672: 178; *Valuable secrets* 1775: 133-5; Anonymous, *Golden Cabinet* 1793: 112; Fielding 1839: 81-2.

<sup>103</sup> For example: De Mayerne 1620-44: 5; Bouvier 1827: 570-1.

chief property considered in its [=prepared canvas] manufacture'.<sup>104</sup> Vibert has a clear idea of the duties of the preparatory system:

[a preparatory system must be] sufficiently supple to lend itself to the peculiarities of the painting, as it contracts when drying, and yet it must be of sufficient resistance to preserve the painting from too sudden movements of the support. It should absorb the excess of oil and varnish which comes to it from the painting, and it should reject all which might penetrate through the support. In short, compelled to obey the slightest caprices of the one and to resist all the attacks of the other, it is required from it, as from all servants, to be equal to the occasion.<sup>105</sup>

### 3.1.2 *The size layer*

The first layer that may be applied to the support can be a size or sizing layer. The Merriam Webster online Dictionary (accessed January 2013) notes that the word size is used to describe a layer applied to stiffen or fill pores in different surfaces.<sup>106</sup> As a general rule, size layers do not seem to contain pigments or fillers; however small additions of pigments that render the layer distinguishable from the support are mentioned in some sources (see Chapter 6). Confusingly, in the English translation of Vibert (1892) the term size is used as synonymous to preparatory system.<sup>107</sup>

The function of the size layer is discussed in detail in Chapter 6. Size layers are not required for metal supports. Hampel (1846) even warns against their use, since applied to metal supports their often hygroscopic nature is considered to promote corrosion.<sup>108</sup>

### 3.1.3 *The ground layers; fillers and pigments*

In this dissertation, the term ground is reserved for those layers of the preparatory system that consist of pigments or fillers in a binder.<sup>109</sup> The distinction between pigments or fillers lies in the function of the particles. Fillers function mainly to provide bulk, although they may also influence rheological behavior, whereas pigments consist of particles that have a distinct effect on the layer's colour. Sometimes a material is both a filler and pigment. Pigments may provide bulk if present in large quantities. And vice versa, fillers may co-determine the colour of the ground. For instance chalk is sometimes used by itself with a

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<sup>104</sup> Vibert 1892: 100.

<sup>105</sup> Vibert 1892: 96-8.

<sup>106</sup> <http://www.merriam-webster.com/dictionary/size>, accessed 28-1-2013.

<sup>107</sup> Vibert 1892, see for instance: 96-7. This was commented upon earlier by Carlyle 1991, vol. 1: 244; Carlyle 2001: 175.

<sup>108</sup> The corrosive effect of water is not mentioned in historical recipes before Hampel (Hampel 1846: 26-7). Earlier references to the preparation of copper plates do not warn against size layers but just advise the application of oil or varnish based preparatory layers instead. see Appendix 8.

<sup>109</sup> The term 'binder' has been chosen since its alternative 'vehicle', is nowadays used mainly in paint technical literature, while 'binder' seems to be preferred in a wider circle. 'Medium' in nineteenth century British sources referred to a 'material intended to modify paints formed of pigments ground in oil', as can be read in Carlyle 1991, vol. 1: 141; Carlyle 2001: 101.

binder. In that case it provides both bulk and colour. At other times it is mixed pigments such as lead white and brown pigments, which determine the colour, while the chalk itself only plays a minor role in the determination of the colour.

Historically, the term ground frequently carries the same meaning as it has in this dissertation, besides the more general use of the term 'ground' that has been discussed above. The term is used both for aqueous and oil-bound preparatory layers.<sup>110</sup>

In seventeenth century sources written in English, oil-based ground layers applied to canvas are often described with the term priming.<sup>111</sup> The act of applying a preparatory layer is referred to in historical recipes as priming.<sup>112</sup> 'The art of painting in oyle' (1664) makes a distinction between 'whitening' and 'priming', the first term being used to describe the application of aqueous layers that contain chalk and the second term reserved for oil-based pigmented ground layers.<sup>113</sup>

In later British recipes it is evident that this term is also used to describe aqueous layers. This is the case for instance in Dossie (1758),<sup>114</sup> De Burtin (in the English translation of 1845)<sup>115</sup> and Field (1850), who use the term to describe both oil-bound and aqueous preparatory layers.<sup>116</sup>

In this dissertation, the term priming is restricted to primer, by which is meant a professional occupation or the person who applies the preparation layers to painting supports.

A ground layer may have been applied in one or more coats, which is synonymous with applications. A coat is the term used to describe each application, this is a similar meaning as the term carried in historical recipes (see Table 3.1).<sup>117</sup>

No matter whether one or more coats have been applied, if the composition is the same, it is called a single layer or a single ground in this dissertation. This terminology decision has been made because multiple coats of the same composition cannot always be distinguished in cross-sections; if individual coats are called for, the layer will be described as a 'single ground consisting of multiple coats or applications'. Double or triple grounds consist of two or three layers of a different composition.<sup>118</sup>

### 3.1.4 Isolation layers

Isolation layers may be encountered at different levels of the preparatory system. The term isolation layer is used to describe non-pigmented layers of binder that are applied with the intention of isolating the underlying layer from subsequently applied layers or to provide a more even saturation of the surface in view of the application of subsequent

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<sup>110</sup> for instance see Sully 1809-71: 019 for use of the term to describe aqueous layers.

<sup>111</sup> for instance: King 1653-57: 48, 'Art of painting in oyle by the life' 1664: 94-5, Stalker and Parker 1688: 54.

<sup>112</sup> For instance in: Furetière 1690, vol. 2: no page nrs, entry 'imprimer', *Compendium* 1808: 67.

<sup>113</sup> Anonymous, 'Art of painting in oyle by the life' 1664: 97.

<sup>114</sup> Dossie 1758: 203-4 used the verb 'priming' to include a layer of animal glue and chalk.

<sup>115</sup> De Burtin 1845: 276.

<sup>116</sup> Field 1850: 153-4. Confusingly, Smith (1756: 58) refers to a size layer with the words 'when your first priming is dry'.

<sup>117</sup> Although more frequently the term 'layer' is used to describe several applications of the same composition.

<sup>118</sup> This naming system was introduced in Witlox and Carlyle 2005.



layers. This definition of isolation layer would include the size layer, which isolates the support from the ground layers. However because of the special nature and position of the size layer, it is described separately in the present context.

### 3.1.5 *The 'Imprimatura', the 'primuersel', the 'imprimeure' and the 'priming'*

Some historical and modern authors use the term isolation layer to describe pigmented layers. However, both in historical recipes and modern literature, the term *imprimatura* is more often used in this context. The exact connotation of this term varies with different authors and in different languages.<sup>119</sup> Some modern authors reserve the term to describe thin, *semi-translucent* oil-bound layers applied to a wooden panel first prepared with a chalk and glue ground.<sup>120</sup> For instance Bergeon (1986) writes: 'the *imprimatura* is a greyish layer primarily spread with a large brush and which lets the white ground show through'.<sup>121</sup> In this position, the layer is supposed to saturate an absorbent chalk and glue ground layer, thus facilitating the application of subsequent oil-bound paint layers by preventing the sinking-in of these oil-bound paint layers, while simultaneously providing a base-tone.

Bergeon's definition of the *imprimatura* is likely to have been based on the one provided in the famous *Schilderboeck* by Van Mander (1604), who describes the *imprimatura*, or 'primuersel' as a semi-translucent layer through which the underdrawing remains visible.<sup>122</sup> This use of the term however does not seem to be universally applied in the sources studied for this dissertation. In general, authors use the term *imprimatura* in a wider sense that also includes *opaque* oil-based ground layers. This is true in particular for Italian authors. Vasari (1550) uses the term to describe an oil-bound second ground layer that is applied on top of a first aqueous gesso ground,<sup>123</sup> The anonymous *Introduzione* of 1821 writes that the *imprimatura* is a 'layer of colour, that is given to canvas, wood, to gesso, to copper, or to other materials, on which one wants to paint'.<sup>124</sup>

Also historical recipes in French and German sources seem to generally employ the term *imprimatura* in a wider sense. 'Imprimeure' means preparatory layer in publications by Félibien (1676) and Dupuy du Grez (1699).<sup>125</sup> It follows from the verb 'imprimer', used to signify the application of both glue- and oil-bound priming layers, whereas De Mayerne, writing much earlier in 1620-44, uses the term only for oil-bound ground layers.<sup>126</sup> The fact that the German equivalent 'imprimiren' can also carry a wider meaning is clear from Dauw's explanation (1755): 'one says, to prime ('imprimiren') a cloth or other things for

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<sup>119</sup> See for a discussion of the different uses of the terms 'imprimatura' and 'primuersel': Van Hout 1998: 199-226. In Van Hout 2008: 58, the author also uses the term also to describe a toning layer that is not applied to the whole of the support, or which colour can differ according to the area of the painting. Van Hout writes that in those cases the *imprimatura* functions as 'a broad local underpaint'.

<sup>120</sup> See for instance Noble 2004.

<sup>121</sup> A note shows that Bergeon is aware that the colour may vary. Bergeon 1986: 38, note 39. See also Koller 1984: 351 for a discussion on *imprimaturas*.

<sup>122</sup> Van Mander 1604: 47v, 48r. Vandivere concludes on the basis of the examination of paintings and based on reconstructions of *imprimatura* layers that Van Mander refers to a 'specific kind of intermediate layer with particular qualities' and furthermore states that other fifteenth and sixteenth century artists used intermediate pigmented layers that do not follow Van Mander's description to the letter. Vandivere 2011: 7.

<sup>123</sup> Vasari 1550 (1568): 52.

<sup>124</sup> *Introduzione* 1821: 157.

<sup>125</sup> Félibien 1676: 409-10; Dupuy du Grez 1699: 243-4.

<sup>126</sup> De Mayerne 1620-44: 5; Ms. Sloane 1990: 78-9 [page numbering uncertain].

painting, when one first applied the paints, which serve as a ground for the painting, which is made on top'.<sup>127</sup> The use of the term 'priming' in British sources has been discussed earlier.

In this dissertation, the term *imprimatura* is used in the wider sense, independent of the layer's translucency or opaqueness.

### **3.2 Applications to the reverse of the support**

Historical recipes describe applications to the reverse of supports of layers that are similar in nature to ground layers. Such layers are called reverse side applications in this dissertation. The motives for their application to panel lie in prevention of warping and of woodworm, although in some cases they may also have an aesthetic role. Reverse side applications to canvases only appear in the late eighteenth century and in nineteenth century recipes.<sup>128</sup>

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<sup>127</sup> Dauw 1755: 509.

<sup>128</sup> See Chapter 10 for detailed information on the role of reverse side applications in protecting panel and canvas from chemical alterations and mechanical damage.