Composition of the pigments:

Table 1 Chemical composition and source of pigments used in mock-up, and elemental markers detectable by XRF

Pigment	Colorant composition	XRF marker	Manufacturer	Catalog No.
Azurite , natural, standard	$2\ CuCO_3 \cdot Cu(OH)_2$	Cu	Kremer[a]	1020
Calcium carbonate	$CaCO_3$	Ca	Cons. Supp.[b]	CH-10340-0100
Carbon black	C	-	Unknown	unknown
Lead tin yellow	Pb_2SnO_4	Pb, Sn	Kremer[a]	1010
Lead white	$2\ PbCO_3 \cdot Pb(OH)_2$	Pb	Kremer[a]	46000
Madder lake 'Salmon'	Organic	-	Kremer[a]	372052
Mars black	iron oxide (synth.)	Fe	Gamblin[c]	Series 1
Sienna, raw	$Fe_2O_3 \cdot H_2O$	Fe	Rembrandt[d]	+++ 234, Series 1
Sienna, burnt	Fe_2O_3	Fe	Rembrandt[d]	+411, Series 1
Umber, raw	$Fe_2O_3 + MnO_2 + H_2O$	Fe, Mn	Gamblin[c]	Series 1
Umber, burnt	$Fe_2O_3 + MnO_2$	Fe, Mn	Gamblin[c]	26712
Vermilion	HgS	Hg	Rowney[e]	559
Yellow ochre	$Fe_2O_3 \cdot H_2O$	Fe	Rembrandt[d]	+++ 227, Series 1

[a]Kremer Pigmente GmbH & Co KG, Hauptstr. 41-47, 88317 Aichstetten, Germany
[b]Conservation Support Systems, 924 West Pedregosa Street, Santa Barbara, CA, USA
[c]Gamblin Artist's Colors Co., PO Box 625, Portland, OR 97207, USA
[d]Rembrandt Oil Colors, Talens, Postbus 4, 7300 AA Apeldoorn, The Netherlands
[e]Rowney Artist Colors, Rowney House, Peacock Lane, Bracknell Berkshire, RG12 8SS England

Calculations for sensitivity and Limits of detection:

The sensitivity (Y) was calculated by means of equation 1:

$$Y_i = \frac{N_{signal}}{c_i \times t} \qquad (1)$$

where N_{signal} is the net intensity of the peak of this element, c_i is the concentration of element *i* in the standard and *t* the real time of the measurement.
For the calculation of the limits of detection (LOD) of element *i* the following relation was used:

$$LOD_i = 3 \times \frac{\sqrt{N_{back}}}{N_{signal}} \times c_i \qquad (2)$$

where N_{back} is the intensity of the background below the peak in question. For the calculation of the background intensity four σ of the Gaussian function fitted to the peak were taken as its width.