

# **FlexoTools for Adobe Photoshop 18.1**

User Guide

04 - 2019

# Contents

<b>1. Copyright Notice.....</b>	<b>3</b>
1.1. Third party license information.....	4
<b>2. Installation and Setup.....</b>	<b>18</b>
2.1. Installing the Flexo Tools.....	18
2.2. Esko Setup.....	18
2.2.1. Plug-in Overview.....	19
2.2.2. Network License.....	20
2.2.3. Color Settings.....	21
2.2.4. Flexo Tools.....	21
2.2.5. Press Settings.....	22
<b>3. Where to find the Flexo Tools.....</b>	<b>26</b>
<b>4. ViewX Layers.....</b>	<b>28</b>
4.1. Working with viewX Layers.....	29
4.1.1. Creating viewX Layers.....	29
4.1.2. Deleting viewX Layers.....	30
4.1.3. Using the viewX Layers.....	31
4.2. ViewX Flexo Plate Preview layer.....	31
4.3. ViewX Flexo Print Preview layer.....	32
4.4. ViewX TAC Preview layer.....	33
<b>5. The FlexoClean Filter.....</b>	<b>35</b>
<b>6. The FlexoFix Filter.....</b>	<b>38</b>
<b>7. Reseparate.....</b>	<b>40</b>
<b>8. Viewer.....</b>	<b>42</b>
8.1. About Viewer.....	42
8.2. Define Press Settings.....	42
8.3. The Viewer window.....	42
8.3.1. Navigating in the Preview.....	43
8.3.2. Separation visibility.....	43
8.3.3. Measure Ink Densities.....	44
8.3.4. Quality Control.....	45

# 1. Copyright Notice

---

© Copyright 2019 Esko Software BVBA, Gent, Belgium

All rights reserved. This material, information and instructions for use contained herein are the property of Esko Software BVBA. The material, information and instructions are provided on an AS IS basis without warranty of any kind. There are no warranties granted or extended by this document. Furthermore Esko Software BVBA does not warrant, guarantee or make any representations regarding the use, or the results of the use of the software or the information contained herein. Esko Software BVBA shall not be liable for any direct, indirect, consequential or incidental damages arising out of the use or inability to use the software or the information contained herein.

The information contained herein is subject to change without notice. Revisions may be issued from time to time to advise of such changes and/or additions.

No part of this document may be reproduced, stored in a data base or retrieval system, or published, in any form or in any way, electronically, mechanically, by print, photoprint, microfilm or any other means without prior written permission from Esko Software BVBA.

This document supersedes all previous dated versions.

PANTONE® Colors displayed in the software application or in the user documentation may not match PANTONE-identified standards. Consult current PANTONE Color Publications for accurate color. PANTONE® and other Pantone trademarks are the property of Pantone LLC. © Pantone LLC, 2015

Pantone is the copyright owner of color data and/or software which are licensed to Esko to distribute for use only in combination with Studio Visualizer. PANTONE Color Data and/or Software shall not be copied onto another disk or into memory unless as part of the execution of Studio Visualizer.

This software is based in part on the work of the Independent JPEG Group.

Portions of this software are copyright © 1996-2002 The FreeType Project ([www.freetype.org](http://www.freetype.org)). All rights reserved.

Portions of this software are copyright 2006 Feeling Software, copyright 2005-2006 Autodesk Media Entertainment.

Portions of this software are copyright ©1998-2003 Daniel Veillard. All rights reserved.

Portions of this software are copyright ©1999-2006 The Botan Project. All rights reserved.

Part of the software embedded in this product is gSOAP software. Portions created by gSOAP are Copyright ©2001-2004 Robert A. van Engelen, Genivia inc. All rights reserved.

Portions of this software are copyright ©1998-2008 The OpenSSL Project and ©1995-1998 Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com)). All rights reserved.

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

Adobe, the Adobe logo, Acrobat, the Acrobat logo, Adobe Creative Suite, Illustrator, InDesign, PDF, Photoshop, PostScript, XMP and the Powered by XMP logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation in the United States and other countries.

SolidWorks is a registered trademark of SolidWorks Corporation.

Portions of this software are owned by Spatial Corp. 1986 2003. All Rights Reserved.

JDF and the JDF logo are trademarks of the CIP4 Organisation. Copyright 2001 The International Cooperation for the Integration of Processes in Prepress, Press and Postpress (CIP4). All rights reserved.

The Esko software contains the RSA Data Security, Inc. MD5 Message-Digest Algorithm.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems in the U.S. and other countries.

Part of this software uses technology by Best Color Technology (EFI). EFI and Bestcolor are registered trademarks of Electronics For Imaging GmbH in the U.S. Patent and Trademark Office.

Contains PowerNest library Copyrighted and Licensed by Alma, 2005 – 2007.

Part of this software uses technology by Global Vision. ArtProof and ScanProof are registered trademarks of Global Vision Inc.

Part of this software uses technology by Qoppa Software. Copyright © 2002-Present. All Rights Reserved.

All other product names are trademarks or registered trademarks of their respective owners.

Correspondence regarding this publication should be forwarded to:

Esko Software BVBA

Kortrijksesteenweg 1095

B – 9051 Gent

info.eur@esko.com

## 1.1. Third party license information

This product includes Bonjour SDK.

Copyright (c) 2003-2004, Apple Computer, Inc. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither the name of Apple Computer, Inc. ("Apple") nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY APPLE AND ITS CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL APPLE OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND

ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes Botan.

Copyright (C) 1999-2009 Jack Lloyd  
2001 Peter J Jones  
2004-2007 Justin Karneges  
2005 Matthew Gregan  
2005-2006 Matt Johnston  
2006 Luca Piccarreta  
2007 Yves Jerschow  
2007-2008 FlexSecure GmbH  
2007-2008 Technische Universitat Darmstadt  
2007-2008 Falko Strenzke  
2007-2008 Martin Doering  
2007 Manuel Hartl  
2007 Christoph Ludwig  
2007 Patrick Sona  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions, and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE AUTHOR(S) "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR(S) OR CONTRIBUTOR(S) BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes cereal.

Copyright (c) 2014, Randolph Voorhies, Shane Grant  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of cereal nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL RANDOLPH VOORHIES OR SHANE GRANT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes ICC Profiles.

Some ICC Profiles were created by FFEI Ltd. ([www.ffei.co.uk](http://www.ffei.co.uk)) using Fujifilm ColourKit Profiler Suite ([www.colourprofiling.com](http://www.colourprofiling.com))

This product includes ICC Profiles.

Some ICC profiles are copyright (C) by European Color Initiative, [www.eci.org](http://www.eci.org)

This product includes ICC Profiles.

Some ICC profiles are copyright (C) of WAN-IFRA, [www.wan-ifra.org](http://www.wan-ifra.org)

This product includes ICC Profiles.

Some ICC profiles are copyright (C) IDEAlliance(R). G7(R), GRACol(R) and SWOP(R) are all registered trademarks of IDEAlliance(C).

This product includes PANTONE Color Libraries.

PANTONE® and other Pantone trademarks are the property of Pantone LLC. Pantone is a wholly owned subsidiary of X-Rite, Incorporated.

This product includes curl.

Copyright (c) 1996 - 2015, Daniel Stenberg, <[daniel@haxx.se](mailto:daniel@haxx.se)>. All rights reserved.

Permission to use, copy, modify, and distribute this software for any purpose with or without fee is hereby granted, provided that the above copyright notice and this permission notice appear in all copies.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

This product includes LibTIFF.

Copyright (c) 1988-1997 Sam Leffler  
Copyright (c) 1991-1997 Silicon Graphics, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that (i) the above copyright notices and this permission notice appear in all copies of the software and related documentation, and (ii) the names of Sam Leffler and Silicon Graphics may not be used in any advertising or publicity relating to the software without the specific, prior written permission of Sam Leffler and Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS,

WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

-----  
This product includes FCollada.

Copyright 2006 Feeling Software. All rights reserved.

Copyright 2005-2006 Feeling Software and  
Copyright 2005-2006 Autodesk Media Entertainment.

Copyright (C) 1998-2003 Daniel Veillard. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
This product includes FreeType.

Portions of this software are copyright (C) 2014 The FreeType Project ([www.freetype.org](http://www.freetype.org)) licensed under the FreeType License. All rights reserved.

-----  
This product includes GLEW: The OpenGL Extension Wrangler Library.

The OpenGL Extension Wrangler Library  
Copyright (C) 2002-2007, Milan Ikits <[milan\\_ikits@ieee.org](mailto:milan_ikits@ieee.org)>  
Copyright (C) 2002-2007, Marcelo E. Magallon <[mmagallo@debian.org](mailto:mmagallo@debian.org)>  
Copyright (C) 2002, Lev Povalahev  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* The name of the author may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Mesa 3-D graphics library  
Version: 7.0

Copyright (C) 1999-2007 Brian Paul All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL BRIAN PAUL BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Copyright (c) 2007 The Khronos Group Inc.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and/or associated documentation files (the "Materials"), to deal in the Materials without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Materials, and to permit persons to whom the Materials are furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Materials.

THE MATERIALS ARE PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE MATERIALS OR THE USE OR OTHER DEALINGS IN THE MATERIALS.

-----  
This product includes gSOAP.

EXHIBIT B.

Part of the software embedded in this product is gSOAP software.  
Portions created by gSOAP are Copyright (C) 2001-2007 Robert A. van Engelen, Genivia inc. All Rights Reserved.

THE SOFTWARE IN THIS PRODUCT WAS IN PART PROVIDED BY GENIVIA INC AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes ICU.

Copyright (c) 1995-2014 International Business Machines Corporation and others  
All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.



THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

-----  
This product includes ilmbase.

Copyright (c) 2006, Industrial Light & Magic, a division of Lucasfilm Entertainment Company Ltd. Portions contributed and copyright held by others as indicated. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Industrial Light & Magic nor the names of any other contributors to this software may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes IP\*Works!.

Copyright (c) 2013 /n software inc. - All rights reserved.

DISCLAIMER OF WARRANTY. THE LICENSED SOFTWARE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. FURTHER, /N SOFTWARE SPECIFICALLY DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE, OR THE RESULTS OF THE USE, OF THE LICENSED SOFTWARE OR DOCUMENTATION IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS, OR OTHERWISE. THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE LICENSED SOFTWARE IS ASSUMED BY YOU. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY /N SOFTWARE OR ITS EMPLOYEES SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY, AND YOU MAY NOT RELY ON ANY SUCH INFORMATION OR ADVICE. FURTHER, THE LICENSED SOFTWARE IS NOT FAULT-TOLERANT AND IS NOT DESIGNED, MANUFACTURED OR INTENDED FOR USE OR RESALE AS ON-LINE CONTROL EQUIPMENT IN HAZARDOUS ENVIRONMENTS REQUIRING FAIL-SAFE PERFORMANCE, SUCH AS IN THE OPERATION OF NUCLEAR FACILITIES, AIRCRAFT NAVIGATION OR COMMUNICATION SYSTEMS, AIR TRAFFIC CONTROL, DIRECT LIFE SUPPORT MACHINES, OR WEAPONS SYSTEMS, IN WHICH THE FAILURE OF THE LICENSED SOFTWARE COULD LEAD DIRECTLY TO DEATH, PERSONAL INJURY, OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE ("HIGH RISK ACTIVITIES"). /N SOFTWARE AND ITS SUPPLIERS SPECIFICALLY

DISCLAIM

ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR HIGH RISK ACTIVITIES.

LIMITATION ON LIABILITY. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF /N SOFTWARE, IF ANY, FOR DAMAGES RELATING TO THE LICENSED SOFTWARE SHALL

BE LIMITED TO THE ACTUAL AMOUNTS PAID BY YOU FOR SUCH LICENSED SOFTWARE.  
/N SOFTWARE'S LICENSORS AND THEIR SUPPLIERS SHALL HAVE NO LIABILITY TO YOU FOR ANY DAMAGES SUFFERED BY YOU OR ANY THIRD PARTY AS A RESULT OF USING THE LICENSED SOFTWARE,  
OR ANY PORTION THEREOF. NOTWITHSTANDING THE FOREGOING, IN NO EVENT SHALL /N SOFTWARE,  
ITS LICENSORS, OR ANY OF THEIR RESPECTIVE SUPPLIERS BE LIABLE FOR ANY LOST REVENUE, PROFIT OR DATA, OR FOR INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER, INCLUDING, WITHOUT LIMITATION, ANY COMMERCIAL DAMAGES OR LOSSES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF THE USE OR INABILITY TO USE THE LICENSED SOFTWARE, OR ANY PORTION THEREOF, EVEN IF /N SOFTWARE,  
ITS LICENSORS AND/OR ANY OF THEIR RESPECTIVE SUPPLIERS HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR  
CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY. EACH EXCLUSION OF LIMITATION IS INTENDED TO BE SEPARATE AND THEREFORE SEVERABLE.

-----  
This product includes IP\*Works! SSL.

Copyright (c) 2013 /n software inc. - All rights reserved.

DISCLAIMER OF WARRANTY. THE LICENSED SOFTWARE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. FURTHER, /N SOFTWARE SPECIFICALLY DOES NOT WARRANT, GUARANTEE, OR MAKE ANY REPRESENTATIONS REGARDING THE USE, OR THE RESULTS OF THE USE, OF THE LICENSED SOFTWARE OR DOCUMENTATION IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS, OR OTHERWISE. THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE LICENSED SOFTWARE IS ASSUMED BY YOU. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY /N SOFTWARE OR ITS EMPLOYEES SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY, AND YOU MAY NOT RELY ON ANY SUCH INFORMATION OR ADVICE. FURTHER, THE LICENSED SOFTWARE IS NOT FAULT-TOLERANT AND IS NOT DESIGNED, MANUFACTURED OR INTENDED FOR USE OR RESALE AS ON-LINE CONTROL EQUIPMENT IN HAZARDOUS ENVIRONMENTS REQUIRING FAIL-SAFE PERFORMANCE, SUCH AS IN THE OPERATION OF NUCLEAR FACILITIES, AIRCRAFT NAVIGATION OR COMMUNICATION SYSTEMS, AIR TRAFFIC CONTROL, DIRECT LIFE SUPPORT MACHINES, OR WEAPONS SYSTEMS, IN WHICH THE FAILURE OF THE LICENSED SOFTWARE COULD LEAD DIRECTLY TO DEATH, PERSONAL INJURY, OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE ("HIGH RISK ACTIVITIES"). /N SOFTWARE AND ITS SUPPLIERS SPECIFICALLY DISCLAIM  
ANY EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR HIGH RISK ACTIVITIES.

LIMITATION ON LIABILITY. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF /N SOFTWARE, IF ANY, FOR DAMAGES RELATING TO THE LICENSED SOFTWARE SHALL  
BE LIMITED TO THE ACTUAL AMOUNTS PAID BY YOU FOR SUCH LICENSED SOFTWARE.  
/N SOFTWARE'S LICENSORS AND THEIR SUPPLIERS SHALL HAVE NO LIABILITY TO YOU FOR ANY DAMAGES SUFFERED BY YOU OR ANY THIRD PARTY AS A RESULT OF USING THE LICENSED SOFTWARE,  
OR ANY PORTION THEREOF. NOTWITHSTANDING THE FOREGOING, IN NO EVENT SHALL /N SOFTWARE,  
ITS LICENSORS, OR ANY OF THEIR RESPECTIVE SUPPLIERS BE LIABLE FOR ANY LOST REVENUE, PROFIT OR DATA, OR FOR INDIRECT, PUNITIVE, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY CHARACTER, INCLUDING, WITHOUT LIMITATION, ANY COMMERCIAL DAMAGES OR LOSSES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF THE USE OR INABILITY TO USE THE LICENSED SOFTWARE, OR ANY PORTION THEREOF, EVEN IF /N SOFTWARE,  
ITS LICENSORS AND/OR ANY OF THEIR RESPECTIVE SUPPLIERS HAVE BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR  
CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY. EACH EXCLUSION OF LIMITATION IS INTENDED TO BE SEPARATE AND THEREFORE SEVERABLE.

-----  
This product includes JBIG2Lib.

Portions of this product copyrights (C) 2002 Glyph & Cog, LLC.

-----  
This product includes JPEGLib.  
This software is copyright (C) 1991-2016, Thomas G. Lane, Guido Vollbeding.

All Rights Reserved.

This software is based in part on the work of the Independent JPEG Group.

-----  
This product includes Little CMS.

Little CMS  
Copyright (c) 1998-2011 Marti Maria Saguer

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
This product includes leptonica.

- Copyright (C) 2001-2016 Leptonica. All rights reserved.
- 
- Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:
- 1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- 2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- 
- THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
- ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
- LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
- A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL ANY
- CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
- EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
- PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
- PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY
- OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
- NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
- SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes libpng.

Copyright (c) 2000-2002 Glenn Randers-Pehrson

The PNG Reference Library is supplied "AS IS". The Contributing Authors and Group 42, Inc. disclaim all warranties, expressed or implied, including, without limitation, the warranties of merchantability and of fitness for any purpose. The Contributing Authors and Group 42, Inc. assume no liability for direct, indirect, incidental, special, exemplary, or consequential damages, which may result from the use of the PNG Reference Library, even if advised of the possibility of such damage. There is no warranty against interference with your enjoyment of the library or against infringement. There is no warranty that our efforts or the library will fulfill any of your particular purposes or needs. This library is provided with all faults, and the entire risk of satisfactory quality, performance, accuracy, and effort is with the user.

This product includes libxml2.

Copyright (C) 1998-2012 Daniel Veillard. All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

-----  
This product includes openexr.

Copyright (c) 2006, Industrial Light & Magic, a division of Lucasfilm Entertainment Company Ltd. Portions contributed and copyright held by others as indicated. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Industrial Light & Magic nor the names of any other contributors to this software may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes OpenJPEG.

Copyright (c) 2002-2012, Communications and Remote Sensing Laboratory, Universite catholique de Louvain (UCL), Belgium  
 Copyright (c) 2002-2012, Professor Benoit Macq  
 Copyright (c) 2003-2012, Antonin Descampe  
 Copyright (c) 2003-2009, Francois-Olivier Devaux  
 Copyright (c) 2005, Herve Drolon, FreeImage Team  
 Copyright (c) 2002-2003, Yannick Verschueren  
 Copyright (c) 2001-2003, David Janssens  
 Copyright (c) 2011-2012, Centre National d'Etudes Spatiales (CNES), France  
 Copyright (c) 2012, CS Systemes d'Information, France  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS 'AS IS' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes OpenSSL.

Copyright (c) 1998-2017 The OpenSSL Project. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:  
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)"
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact [openssl-core@openssl.org](mailto:openssl-core@openssl.org).
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment:  
"This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)"

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT 'AS IS' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
This product includes OpenSSL.

Copyright (C) 1995-1998 Eric Young ([eay@cryptsoft.com](mailto:eay@cryptsoft.com))  
All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:  
 "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)"  
 The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related :-).
4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement:  
 "This product includes software written by Tim Hudson (tjh@cryptsoft.com)"

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
 This product includes PCRE.

Copyright (c) 1997-2016 University of Cambridge  
 All rights reserved.

Copyright(c) 2010-2016 Zoltan Herczeg  
 All rights reserved.

Copyright(c) 2009-2016 Zoltan Herczeg  
 All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of the University of Cambridge nor the names of any contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----  
 This product includes patented technology.

This product and use of this product is under license from Markzware under U.S. Patent No. 5,963,641.

-----  
This product includes Qt.

The Qt Toolkit is Copyright (C) 2015 Digia Plc and/or its subsidiary(-ies).

-----  
This product includes QtMigration.

Copyright (C) 2013 Digia Plc and/or its subsidiary(-ies).

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

- \* Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
- \* Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
- \* Neither the name of Digia Plc and its Subsidiary(-ies) nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE."

-----  
This product includes tesseract.

Copyright (C) 2016 Google, Inc. Licensed under the Apache License, Version 2.0

-----  
This product includes LibTIFF.

Copyright (c) 1988-1997 Sam Leffler  
Copyright (c) 1991-1997 Silicon Graphics, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that (i) the above copyright notices and this permission notice appear in all copies of the software and related documentation, and (ii) the names of Sam Leffler and Silicon Graphics may not be used in any advertising or publicity relating to the software without the specific, prior written permission of Sam Leffler and Silicon Graphics.

THE SOFTWARE IS PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EXPRESS, IMPLIED OR OTHERWISE, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT SHALL SAM LEFFLER OR SILICON GRAPHICS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

-----  
This product includes XercesC.

NOTICE file corresponding to section 4(d) of the Apache License, Version 2.0, in this case for the Apache Xerces distribution.

```

This product includes software developed by
The Apache Software Foundation (http://www.apache.org/).

Portions of this software were originally based on the following:
- software copyright (c) 1999, IBM Corporation., http://www.ibm.com.

-----

This product includes XMP Toolkit.

Copyright (c) 1999 - 2010, Adobe Systems Incorporated
All rights reserved.

Redistribution and use in source and binary forms, with or
without modification, are permitted provided that the following
conditions are met:

* Redistributions of source code must retain the above copyright notice,
this list of conditions and the following disclaimer.
* Redistributions in binary form must reproduce the above copyright notice,
this list of conditions and the following disclaimer in the documentation
and/or other materials provided with the distribution.
* Neither the name of Adobe Systems Incorporated, nor the names of its
contributors may be used to endorse or promote products derived from this
software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS
"AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT
LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR
A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR
PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF
LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING
NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

This product includes xxHash.

xxHash Library
Copyright (c) 2012-2014, Yann Collet
All rights reserved.

Redistribution and use in source and binary forms, with or without modification,
are permitted provided that the following conditions are met:

* Redistributions of source code must retain the above copyright notice, this
list of conditions and the following disclaimer.

* Redistributions in binary form must reproduce the above copyright notice, this
list of conditions and the following disclaimer in the documentation and/or
other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND
ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE
DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR
ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES
(INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES;
LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON
ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

-----

This product includes zlib.

(C) 1995-2017 Jean-loup Gailly and Mark Adler

This software is provided 'as-is', without any express or implied
warranty. In no event will the authors be held liable for any damages
arising from the use of this software.

```



Permission is granted to anyone to use this software for any purpose, including commercial applications, and to alter it and redistribute it freely, subject to the following restrictions:

1. The origin of this software must not be misrepresented; you must not claim that you wrote the original software. If you use this software in a product, an acknowledgment in the product documentation would be appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Jean-loup Gailly  
jloup@gzip.org

Mark Adler  
madler@alumni.caltech.edu

-----  
This product includes ZXing C++ Library.

-----  
NOTICES FOR C++ Big Integer Library  
-----

I, Matt McCutchen, the sole author of the original Big Integer Library, waive my copyright to it, placing it in the public domain. The library comes with absolutely no warranty.

-----

## 2. Installation and Setup

---

### 2.1. Installing the Flexo Tools

---

- Open the `Photoshop.mpkg` package on the installation disk and follow the instructions on screen.



This will install the **Flexo Tools** in your Adobe Photoshop® Plug-Ins folder and the **License Manager** in your Applications folder.

### 2.2. Esko Setup

---

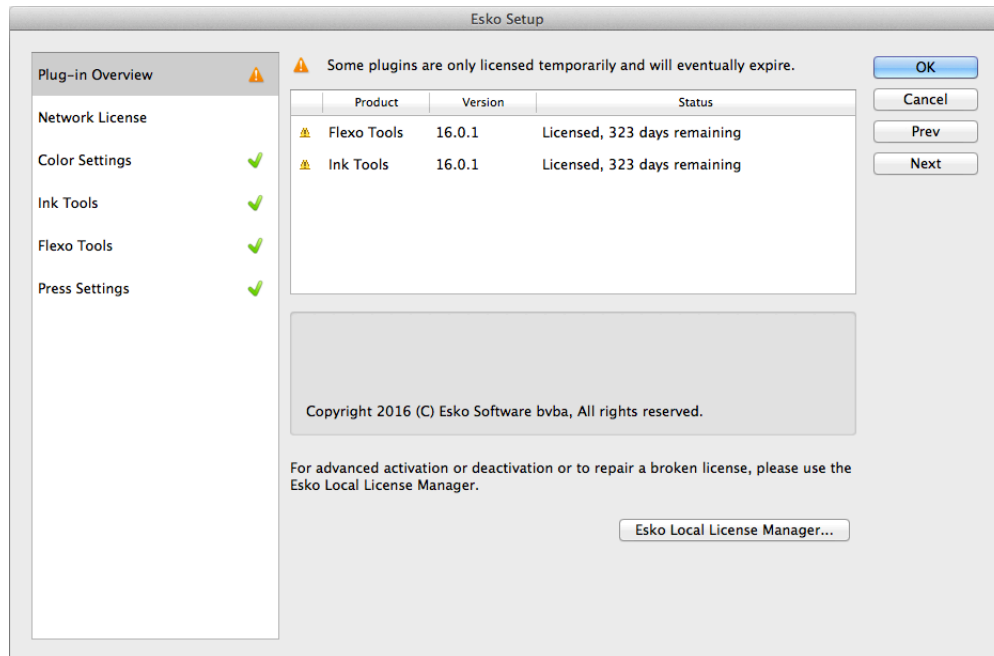
You can open the Esko Setup dialog by choosing **File > Automate > Esko Setup**

The Esko Setup contains multiple tabs:

- [Plug-in Overview](#) on page 19
- [Network License](#) on page 20
- [Color Settings](#) on page 21
- [Flexo Tools](#) on page 21
- [Press Settings](#) on page 22

You can change the tab by clicking it on the left, or by using the **Prev** and **Next** buttons.

## 2.2.1. Plug-in Overview

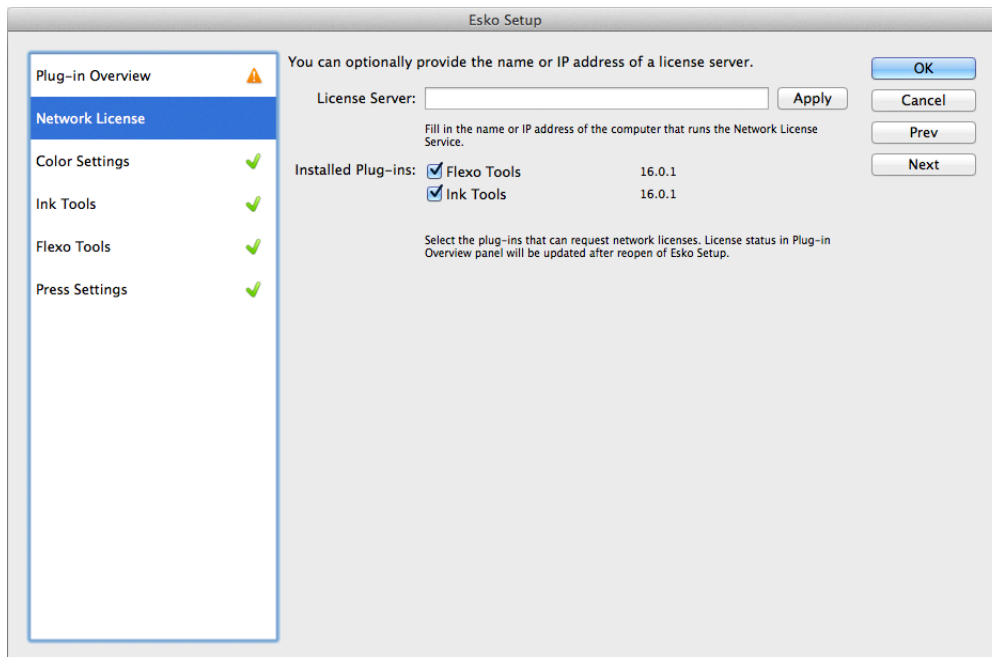


The Plug-in Overview gives an overview of the currently installed Esko Plug-ins, their version and their license status.

You can use the **Activate** button to activate a single product key online.

For more activation, deactivation and repair options, you can click the **Esko Local License Manager...** button to open the Esko Local License Manager. For more information, we refer to the Local License Manager documentation.

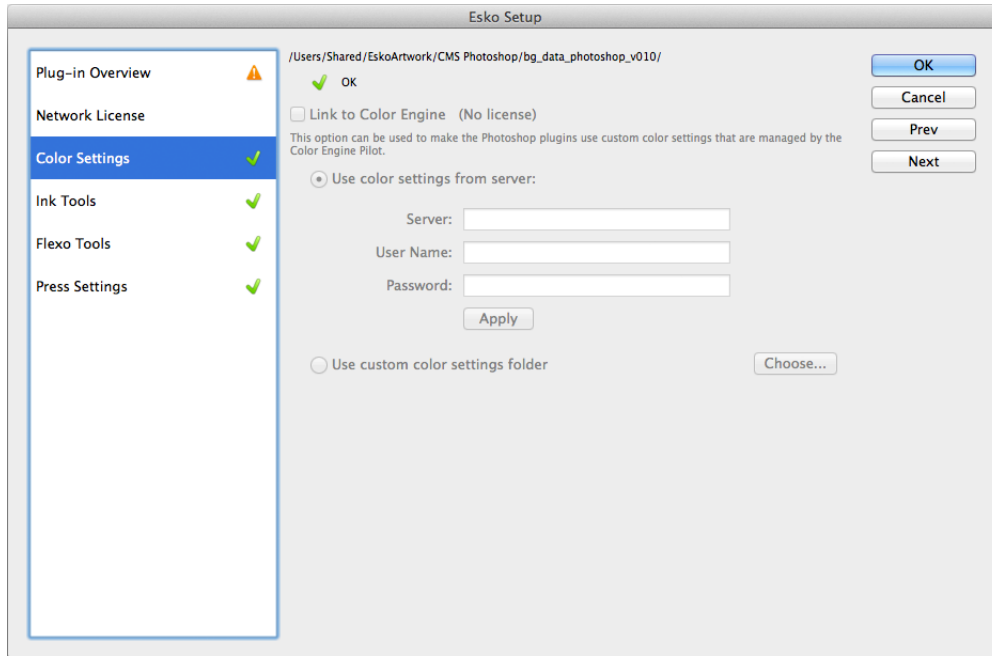
## 2.2.2. Network License



In the Network License tab, you can define the name or the IP address of the computer that runs the Network License Service, and the plug-ins that should use a Network License.

For more information, we refer to the Network License Manager documentation.

### 2.2.3. Color Settings



The Color Settings tab shows the current color setting folder path. Enable **Link to Color Engine** to use custom color settings that are managed by Color Engine Pilot.

You can either use the color settings from the server, or use a custom color settings folder, managed by Color Engine Pilot.

In the first case, you need to provide the server name and credentials, in the second you need to define the color settings folder location.

### 2.2.4. Flexo Tools

Before you can work with any of the Flexo Tools, you need to specify a **DeskPack Folder**. This folder is used internally by the Flexo Tools to store settings.

- Use the **Choose...** button to select an existing folder or to create a new one to use as **DeskPack Folder**.

**Note:**

If you are running several copies of the Flexo Tools on a network, we recommend that you use the same **DeskPack Folder** for all copies. With this setup, all Flexo Tools can use the same Press Settings.

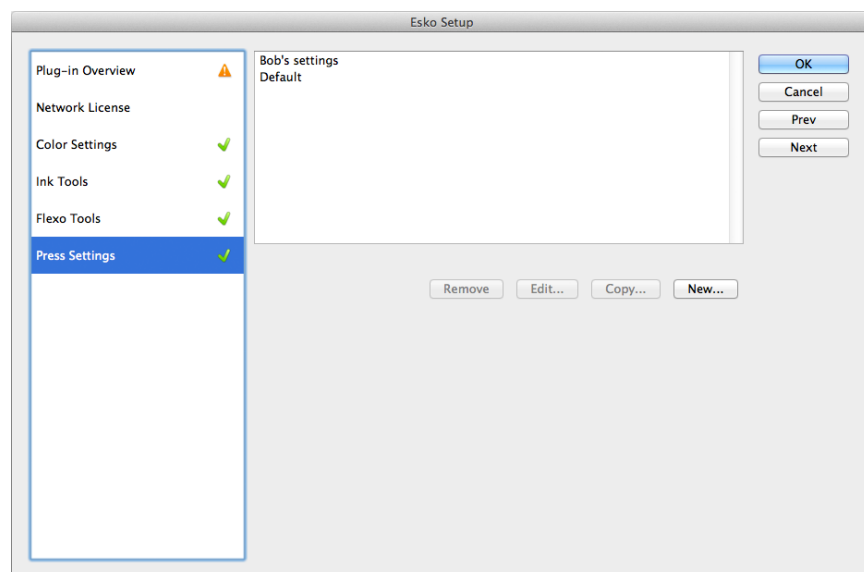
If you also have DeskPack products on Adobe Illustrator®, we suggest that you use the **DeskPack Container** as DeskPack Folder.

## 2.2.5. Press Settings

The Flexo Tools allow you to create and maintain a list of press configurations. Each configuration holds technical parameters of the output process (RIP + platemaking + press + inks + substrate). You can guarantee a consistent retouching workflow by having all Flexo Tools use the same press configuration.

There is always one press setting called 'Default' which can be edited but not removed.

If it doesn't exist yet, Flexo Tools will create a default press settings folder. On Windows: C : \Users\Public\Documents\EskoArtwork\DeskPack Photoshop and on Mac: /Users/Shared/EskoArtwork/DeskPack Photoshop



### Making new Press Settings

Press **New...**, this will show the New Press dialog:

**Name:** Enter the name of the new press setting.

**First Dot:** You can specify which first percentage that yields a dot on the plate. Toggle First Dot on and enter the first percentage. As you can see, the percentage value has a decimal digit (see [About High Precision Percentages](#) on page 24).

**Note:**

The percentage you enter here is a job-percentage. It corresponds with the grayvalue of the pixels in the digital file that yield the first dot on plate when the RIP and platemaking are in normal operational conditions. This means after the DGC has been set up completely. The value does not correspond with any measurement that has been made prior or during DGC set up, nor does it correspond with any densitometer measurement on plate or on print. In fact, this value is (implicitly) chosen by the person who set up the DGC and plate-making. See the FlexoFix whitepaper for more details. Typical values range from 0.4% to 1.6%.

**Note:**

When you don't specify a first dot, you won't be able to use the following Flexo Tools using this press setting:

- The [ViewX Flexo Plate Preview layer](#) on page 31
- The [ViewX Flexo Print Preview layer](#) on page 32
- [The FlexoFix Filter](#) on page 38
- [The FlexoClean Filter](#) on page 35

**Dot gain in highlights:** When you specified a first dot job percentage, you can (optionally) specify how dark it actually prints. Toggle on Dot Gain In Highlights and specify the dot gain parameters.

**First dot prints as:** Here you can enter the dot gain of the first dot. Typical values range from 5% to 15% depending on the substrate. The value is a job-percentage that will print on an ideal reference press as dark as the first dot prints on this press.

The images that are supplied to you are made to look good on an offset press with typical offset dot gain. Your color management is also configured to display the image on your screen with typical offset dot gain. In that case, when you enter 10% here, you're saying that your flexo press prints its first dot as dark as the ideal offset press is printing a 10%.

**Range:** The previous value measured the amount of dot gain in the highlights, this value expresses how far this effect penetrates into the midtones. Typically plate making is configured in such a way that the mid-tones print like an offset press.

**Note:**

When you don't specify Dot Gain In Highlights, you won't be able to use the following Flexo Tools:

- The [ViewX Flexo Plate Preview layer](#) on page 31
- [The FlexoFix Filter](#) on page 38

**Limited Total Area Coverage:** Total Area Coverage is the sum of percentages of the different channels on the same location. A higher total area coverage means more ink on top of each other. If you want you can specify the maximum amount of ink that the substrate can take on the same spot. Toggle on Limited Total Area Coverage and specify the maximum amount.

## Viewing, Editing and Removing Press Settings

Use the **Copy...** button to create a duplicate of the selected press settings.

Use the **Edit...** button to edit existing Press Settings. You can also double click a press.

Use the **Remove** button to delete the selected Press Settings.



**Caution:**

Removing press settings might also affect other workstations. See [Flexo Tools](#) on page 21.

**Note:**

The default press setting cannot be removed, you can, however, edit it.

## About High Precision Percentages

The Flexo Tools user interface often makes use of percentages with a decimal digit. Internally Photoshop has an 8-bit precision, yielding 256 different possible grey-values. A single grey value in an image may make the difference between a dot or no dot on a flexo plate. Wherever this precision is needed, the Flexo Tools will use percentages with a decimal digit.

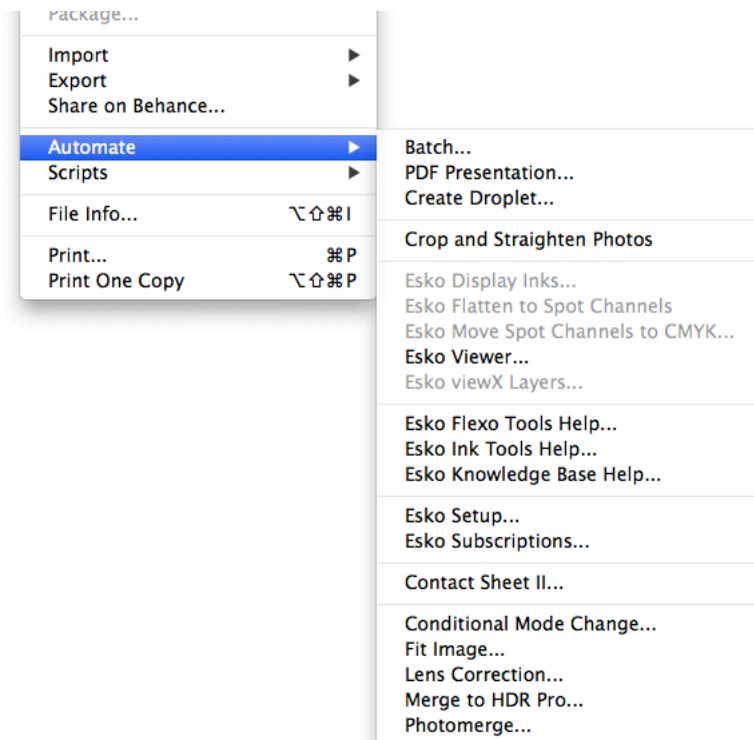
Grayvalue	Percentage
-----------	------------



0	0.0%
1	0.4%
2	0.8%
3	1.2%
4	1.6%
...	...
254	99.6%
255	100.0%

### 3. Where to find the Flexo Tools

1. Open a **CMYK** image in Photoshop.
2. Go to **File > Automate**, and you will see the Flexo Tools:



Use the **Press Settings...** in **Esko Setup** to store technical parameters of the output process (RIP, platemaking, press, inks and substrate). Having all Flexo Tools use the same Press Settings guarantees a consistent retouching workflow.

Use the **viewX Layers...** to visualize certain print characteristics, to help you detect possible printing problems.

Use the **Viewer** to get a very accurate separation viewer. See [Viewer](#) on page 42

See [Press Settings](#) on page 22 and [ViewX Layers](#) on page 28 for more information.

**Note:**

You can find other Flexo Tools in the **Filter > DeskPack** menu.

Use the **FlexoClean...** filter to clean up the separations and prevent scattered dots or holes on the plate.

Use the **FlexoFix...** filter to improve the printing quality of images on a flexographic press.

Use the **Reseparate** filter to modify the CMYK separations without changing the appearance of the image.

For more information, see [The FlexoClean Filter](#) on page 35, [The FlexoFix Filter](#) on page 38 and [Reseparate](#) on page 40.

## 4. ViewX Layers

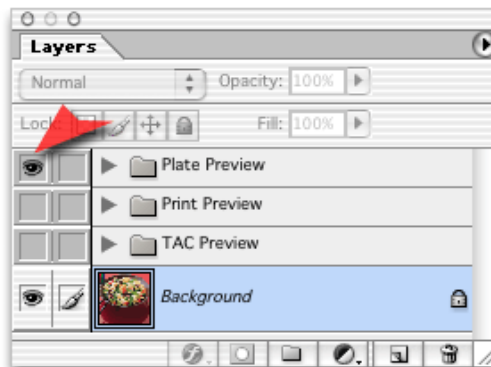
ViewX Layers are Photoshop layer-sets, created by the Flexo Tools. You can find them under **File > Automate**. They can help you visualize certain print-characteristics. This makes it easier to detect possible printing problems.

There are three ViewX Layer sets, each serving a different purpose:

1. Flexo Plate Preview: shows a single separation as a processed flexo-plate. This makes it easy to see where there will be dots and where there will be no dots in the highlights. ([ViewX Flexo Plate Preview layer](#) on page 31.)
2. Flexo Print Preview: shows the effect of highlight dot gain on a composite image. Shows the desaturation and tonal jumps in the image due to the dot gain of the first dot. ([ViewX Flexo Print Preview layer](#) on page 32.)
3. TAC Preview: shows where the sum of densities exceeds the TAC limitation of the printing substrate. ([ViewX TAC Preview layer](#) on page 33.)

Please refer to [Working with viewX Layers](#) on page 29.

After you created one or more viewX layers, you can easily show and hide the effect by showing and hiding the viewX layer.



### Caution:

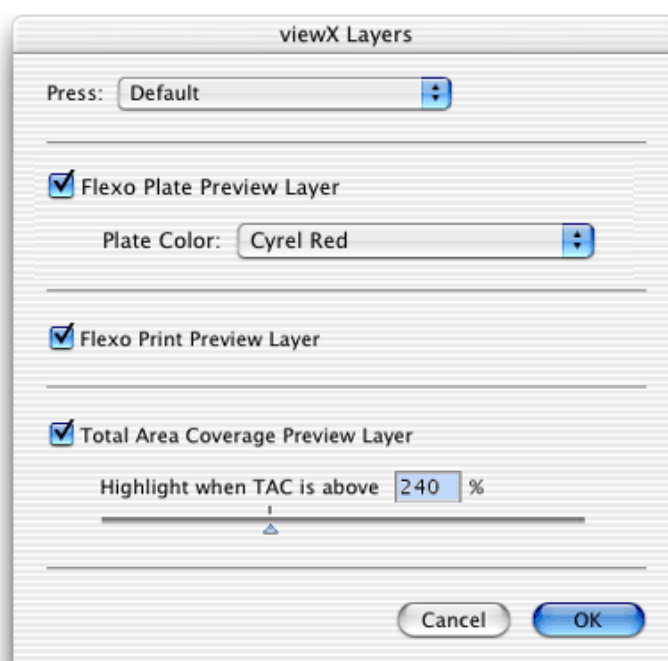
- When flattening the file when one of the viewX layers is visible, the adjustment will be calculated into the separations. This is probably not the intention. Make sure to toggle the viewX layers invisible prior to flattening or saving to a flat file-format (Esko-Graphics CT, EPS, ... ).
- The visible viewX layer will affect the number of the densitometer in the Info palette. To measure the real densities, hide the viewX layer.
- viewX layers are adjustment layers. Photoshop does not support adjustment layers on multi-channel images. That's why the viewX layers are only available on composite CMYK images.

The **Viewer** is an alternative way to check printing characteristics and measure pixels, without the limitations mentioned above. The Viewer is explained here: [Viewer](#) on page 42. For more specific info on the Flexo Print or Flexo Plate preview in the Viewer, you can go directly to [Quality Control](#) on page 45

## 4.1. Working with viewX Layers

### 4.1.1. Creating viewX Layers

To create viewX layers, go to **File Menu > Automate > Esko viewX Layers ...** A dialog pops up:



**Press:** shows the list of all press-configurations. See [Press Settings](#) on page 22 on how to edit these configurations.

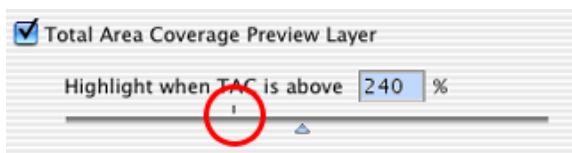
**Flexo Plate Preview Layer:** toggle this on if you want a Flexo Plate Preview layer. When the selected press has no first dot setting, this checkbox is disabled. (More on [ViewX Flexo Plate Preview layer](#) on page 31).

**Plate Color:** pick the plate color that is to be used for the preview. This is strictly a visual setting. Just pick the one you like.

**Flexo Print Preview layer:** toggle this on if you want a Flexo Print Preview Layer. When the selected press has no highlight dot gain settings, this checkbox is disabled. (More on [ViewX Flexo Print Preview layer](#) on page 32).

**TAC Preview layer:** toggle this on if you want a TAC Preview layer. (More on [ViewX TAC Preview layer](#) on page 33).

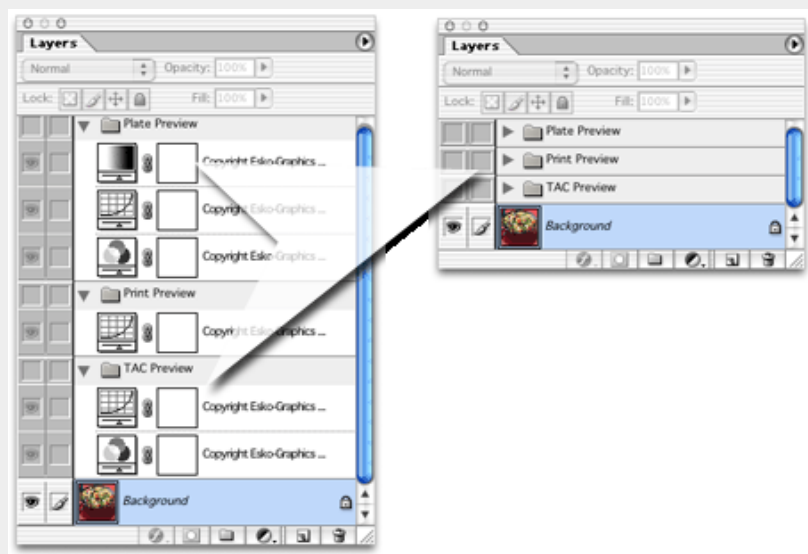
**Highlight when TAC is above x %.** Areas in the image will be highlighted if the local sum of densities is higher than the value you select here. If there is a TAC-limit set for the selected press, that value will be shown by a marker on the scale. You're free to use a different setting for the visualization. A little marker indicates the TAC limit specified in the selected press settings. See [Press Settings](#) on page 22.



Press OK to create or modify the viewX layers. The different layer sets will be created.

**Tip:**

The content of the viewX layers are controlled by Flexo Tools. So after creating the viewX layers, we strongly recommend to close them in the Layers palette.



## 4.1.2. Deleting viewX Layers

To delete one or more of the viewX layers, go to **File Menu > Automation > Esko viewX Layers...** and toggle off the layers you no longer need. Another way to quickly delete all viewX

layers, is by hiding the viewX layers and using the Photoshop functions Delete Hidden Layers or Flatten Image. You can also drag the viewX layers to the trash button.

### 4.1.3. Using the viewX Layers

ViewX layers work much like regular Photoshop adjustment layers: when toggled visible, an adjustment layer applies an effect on all underlying visible layers. The other layers are not really changed, only the visualization and the densitometer measurements are affected.



**Caution:**

Make sure the viewX layers are not visible when you merge layers. When regular layers are merged or flattened together with adjustment layers, the adjustments are calculated into the result. This can also happen when changing the image mode or saving to an unlayered file.



**Caution:**

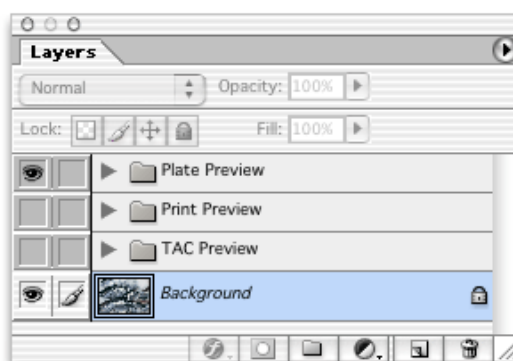
The color values in the Info palette are incorrect when the viewX layers are visible.

ViewX layers are not completely like Photoshop's adjustment layers: viewX layers cannot be selected or changed since they are managed by Flexo Tools and created with the 'viewX layers...' option. You can only hide/show them. There can only be one viewX layer visible at a time.

**Note:** The **Viewer** is an alternative way to check printing characteristics and measure pixels, without the limitations mentioned above. The Viewer is explained here: [Viewer](#) on page 42. For more specific info on the Flexo Print or Flexo Plate preview in the Viewer, you can go directly to [Quality Control](#) on page 45

## 4.2. ViewX Flexo Plate Preview layer

This viewX layer shows the selected channel as a processed flexo plate.



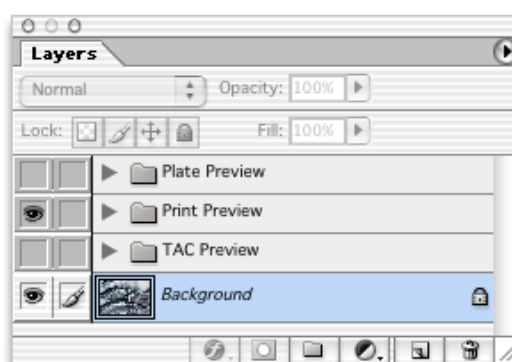
With the flexo plate preview, areas on the plate with dots can be easily distinguished from the areas without dots. There can only be one channel selected when this viewX layer is visible.

The Flexo Plate Preview Layer will use the first dot percentage from the [Press Settings](#) on page 22. Pixels with a percentage lower than the first dot percentage will be shown as areas without dots. Pixels with a percentage equal or higher than the first dot percentage will be shown as areas with dots.



### 4.3. ViewX Flexo Print Preview layer

This viewX layer shows the effect of highlight dot gain on the image.



This effect is equivalent with curve adjustment. To determine this curve, the Flexo Print Preview Layer will use the first dot and the highlight dot gain settings from the selected press. Going from light to dark, the Print Preview layer will display percentages below the first dot percentage as 0%. The first dot percentage will be shown darker (using the First Dot prints As value). Towards the midtones this darkening effect will fade out until the Range value. Percentage larger than Range, are displayed unchanged.

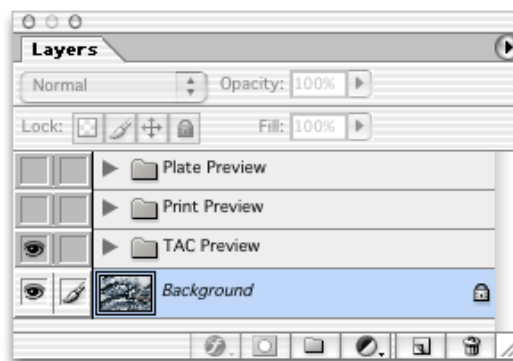
See also: [Press Settings](#) on page 22.





## 4.4. ViewX TAC Preview layer

This viewX layer clearly highlights the areas in the image where the sum of the densities exceeds the total area coverage limit of the printing substrate.

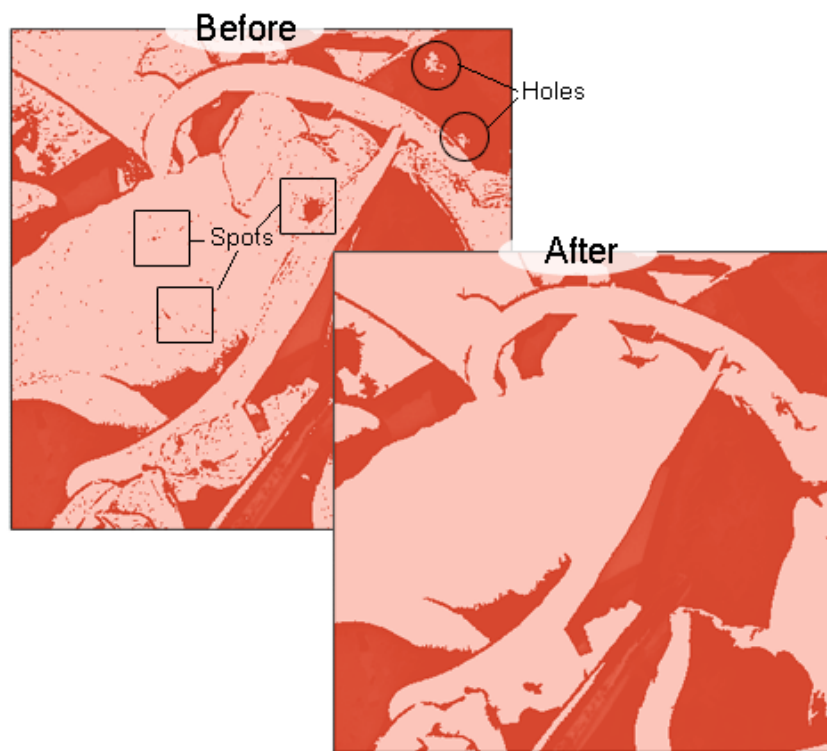


This limit-value is chosen when [Creating viewX Layers](#) on page 29...



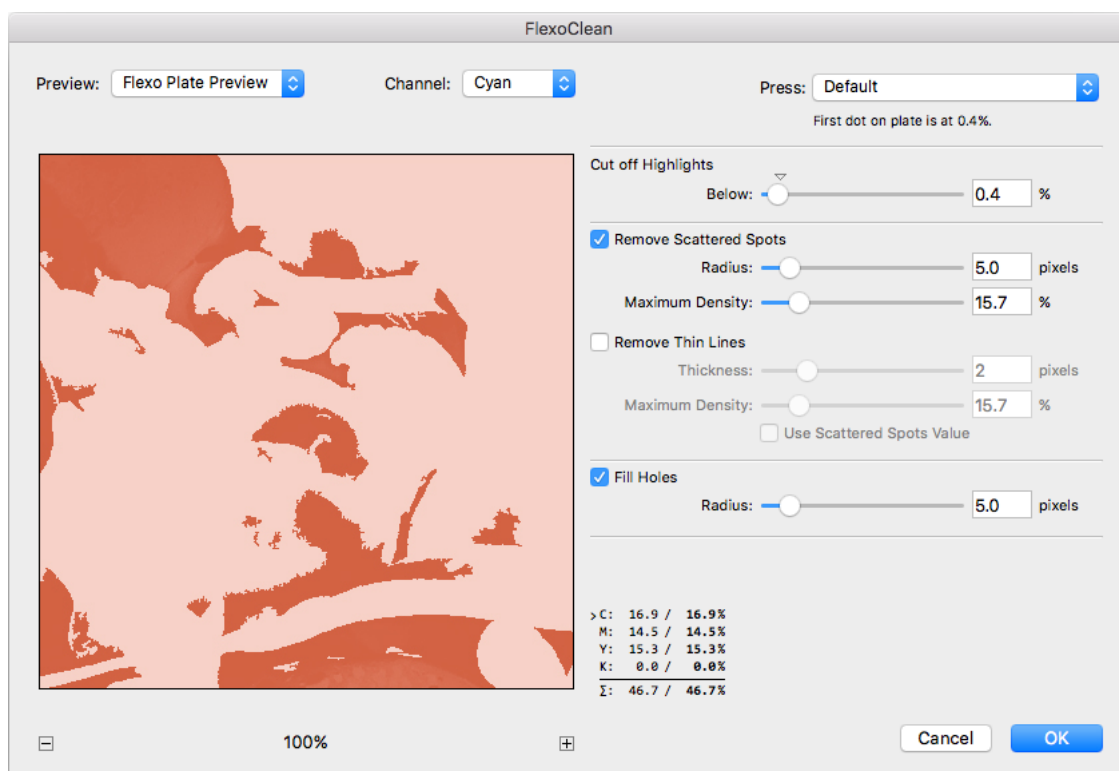
## 5. The FlexoClean Filter

The FlexoClean filter is an image filter that prevents scattered dots or holes on the plate by cleaning up the separations. You can run the filter on one or on all CMYK channels. All selected channels will be cleaned (independently from each other). Multi-channel images can also be cleaned, but then you have to filter the channels one at a time.



To open the filter, choose **Filter Menu > DeskPack > FlexoClean**.

A dialog will pop up:



On the right hand side are the filter parameters. Pressing OK (or hitting the enter key) will apply the filter on the current Photoshop selection. Pressing Cancel (or hitting the escape key) will close the dialog. On the left hand side of the dialog there is the possibility to compare the original image with a preview of the filter.

**Press:** Shows the list of all press-configurations. See [Press Settings](#) on page 22 on how to edit these configurations. The first dot percentage value from the selected press will be used by the filter to determine where there will be dots on the plate. The filter will also make sure that all highlight percentages below the first dot percentage are pulled down to 0% or pulled up to the first dot percentage.

**Cut off Highlights Below:** Normally the plate making process will cut off the highlights below the First Dot Percentage (see [Making new Press Settings](#) on page 22). With this slider however you can influence this cut-off point for this image: All pixels with a percentage below this value will be set to 0% so that they will definitely not generate dots on the plate. If you choose a value of 0%, the highlights will not be cut-off at all and the plate will have dots everywhere.

**Remove Scattered Spots:** When this toggle is on, the filter will scan the selected channels one by one, looking for groups of pixels that will end up as an isolated dot or group of dots on the plate. When such a group of pixels is found the filter will replace it by 0% pixels.

**Radius:** Spots will only be removed if they are smaller than the given radius.

**Maximum Density:** Spots will only be removed if the darkest pixel of the spot is not darker than this given value.

**Remove Thin Lines:** when this toggle is on, the filter will scan the selected channels one by one, looking for thin lines of pixels. When such lines are found the filter will replace it by 0% pixels.

**Thickness:** Lines will only be removed if they are smaller than the given thickness.

**Maximum Density:** Lines will only be removed if the darkest pixel of the line is not darker than this given value.

**Use Scattered Spots value** will disable the sliders for the Thin Line parameters, and the **Scattered Spots** parameters will be used.

**Fill Holes:** When this toggle is on, the filter will scan the selected channels one by one, looking for groups of pixels that will end up as an area without dots completely surrounded by dots. When such a group of pixels is found, and it is not too big, it will be replaced by pixels that yield the smallest stable dot, filling the hole. Radius: Holes will only be filled if they are smaller than or equal to the given radius.

**Preview Area:** On the left, there is a big preview area, where a preview of the filter's result is shown. Use the Plus and minus buttons below to change the zoom. Click and drag in the preview image to pan and show a different part. Just click and hold in the preview image to see the original image. This can be used to compare the filter's result with the original image.

**Channel:** Choose which channel(s) to view in the preview area. This only affects the visualization in the preview area, not the effect of the filter.

**Preview:** The image in the preview area can be shown with one of the viewX visualization modes:

- Image (default): No visualization mode, the preview (and original image) is shown with normal Photoshop visualization.
- Flexo Plate Preview: The image in the preview area is shown as a flexo plate. The effect is the same as with the [ViewX Flexo Plate Preview layer](#) on page 31.
- Flexo Print Preview: The image in the preview area is shown with extra dot gain in the highlights. The effect is the same as with the [ViewX Flexo Print Preview layer](#) on page 32.

**Color Values:** use the mouse pointer in the filter's preview area to measure the color values and the Total Area Coverage. The first column are the original values, the second column are the values after the filter will be applied (see [About High Precision Percentages](#) on page 24).

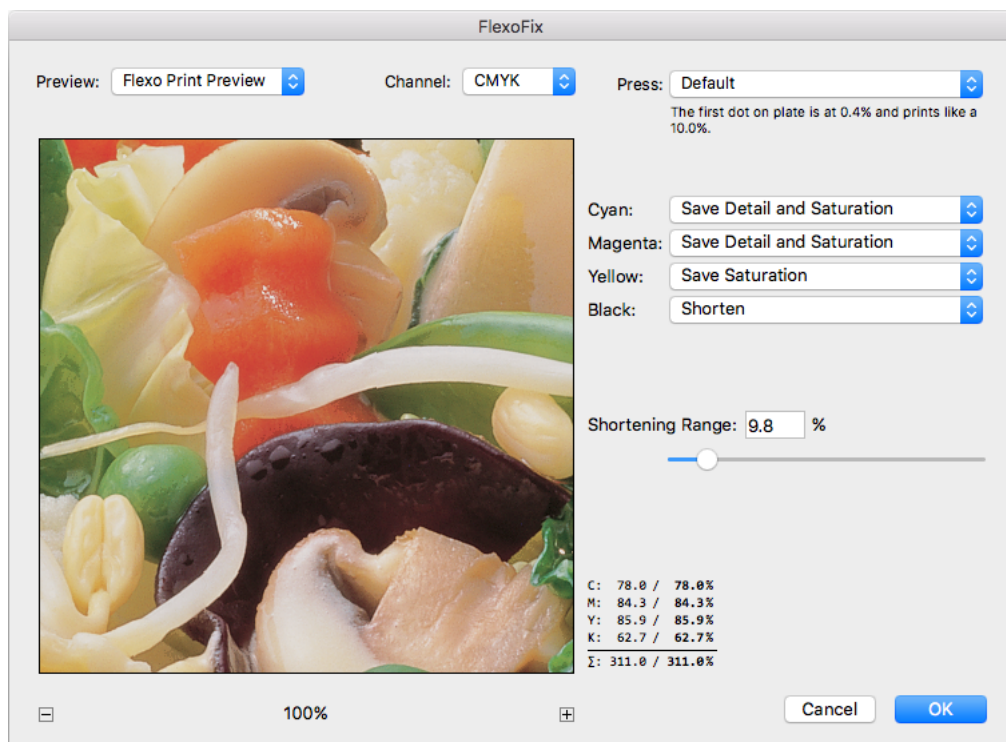
**Note:**

The selected preview mode will always affect the preview areas display. So when you click inside the preview area, the original image will also be displayed with the selected preview mode.

## 6. The FlexoFix Filter

The FlexoFix filter is an automatic way to improve the printing quality of an image on a flexographic press.

To start the FlexoFix filter, choose FlexoFix from the DeskPack submenu of the Filter menu. This will open a dialog:



On the right hand side are the filter parameters. Press OK (or hit the Enter key) to apply the filter on the current Photoshop selection. Pressing Cancel (or hit the Escape key) to close the dialog.

**Press:** Shows the list of all press-configurations. See [Press Settings](#) on page 22 on how to edit these configurations.

**Channel Actions:** For each selected channel, there is a list of possible actions to choose from. For regular CMYK images (with a 'skeleton' Black channel), the default actions will give you the best results.

For composite selection:

- **Save Detail and Saturation:** this means that the filter will raise all percentages above the first dot percentage and will compensate for the dot gain in the highlights. This compensation is done in a context-sensitive way to ensure that the detail and contrast of the original image is maintained. In some areas the midtones will be raised to compensate for de-saturation that results from the remaining highlight dot gain in the other channels.

- **Save Saturation:** this means that the filter will raise all percentages above the first dot percentage and will compensate for the dot gain in the highlights. In some areas the midtones can be raised to compensate for de-saturation that results from the remaining highlight dot gain in the other channels.
- **Shorten:** this action will remove highlight dots from the plate, sacrificing some highlight detail.
- **None:** the filter will not change this channel.

For single channel selection, there is no such thing as 'saturation' so the list is slightly different:

- **Save Detail:** this means that the filter will raise all percentages above the first dot percentage and will compensate for the dot gain in the highlights. This compensation is done in a context-sensitive way to ensure that the detail and contrast of the original image is maintained.
- **Shorten:** this action will remove highlight dots from the plate, sacrificing some highlight detail.
- **None:** the filter will not change this channel.

**Shortening Range:** applies to the shorten action and specifies how far the highlights will be shortened. All highlights below this value will be reduced to 0%.

**Color Values:** use the mouse pointer in the filter's preview area to measure the color values and the Total Area Coverage. The first column are the original values, the second column are the values after the filter will be applied (see [About High Precision Percentages](#) on page 24).

In this example (a composite orange), the Cyan is slightly lightened, as a partial compensation for the highlight dotgain. The remaining highlight dotgain of the Cyan will still desaturate the composite color, to compensate for this desaturation Magenta and Yellow especially are raised. The shorten action removed the marginal amount of Black in this pixel.

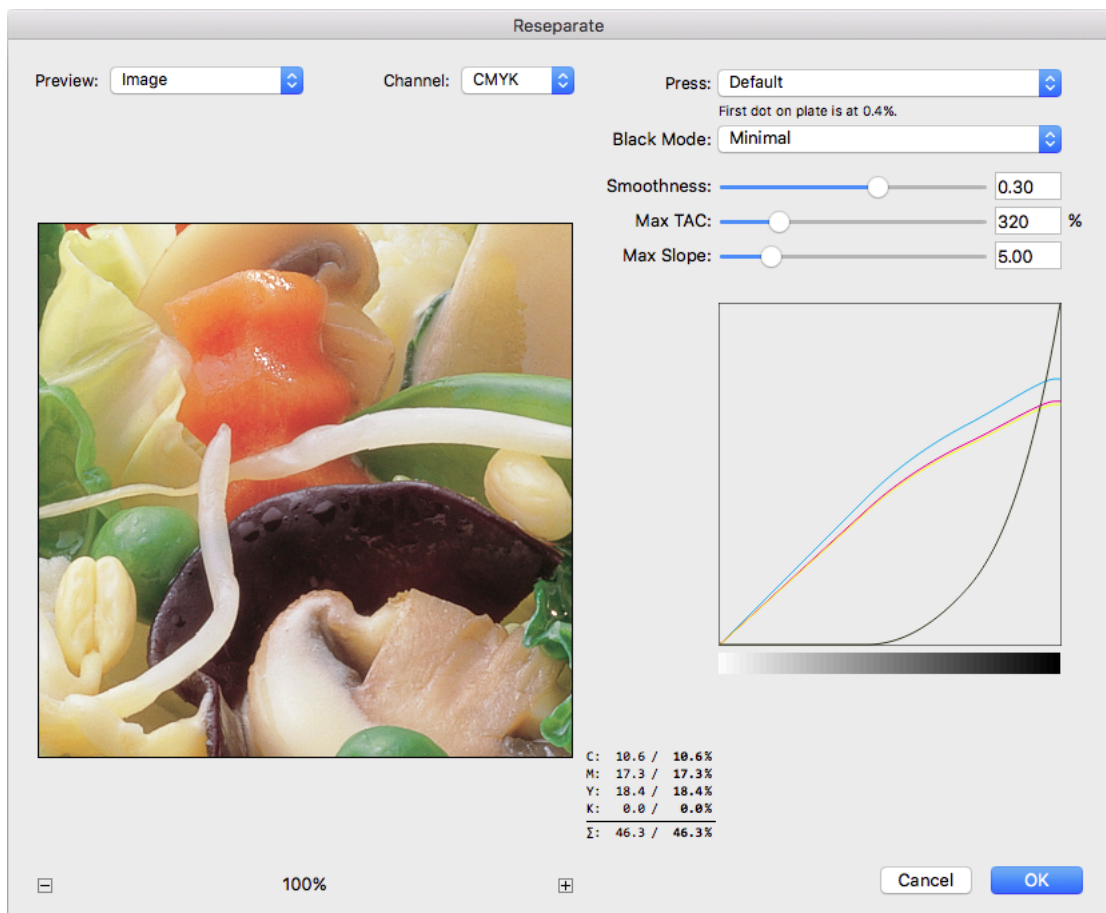


## 7. Reseparate

In CMYK, the same color can often be produced in different ways. To reproduce a certain gray color, you could use only black, or a balanced mixture of Cyan, Magenta and Yellow. In between those two options is a whole range of different CMYK combinations that all produce the same gray. A similar logic applies to non-gray colors, especially for darker colors.

Based on this, you can use **Reseparate** to modify the CMYK separations without changing the appearance of the image, in order to improve the printing stability of the images.

1. To open the filter, choose **Filter Menu > DeskPack > Reseparate**.



2. Apply the settings you want to use.
  - a) **Black Mode** can be "Minimal" or "Maximal". While Minimal turns down black and turns up CMY, Maximal does the exact opposite. The curves underneath represent the transition.
  - b) **Smoothness** defines the smoothness of the curves, while **Max Slope** defines how steep the curve can be.
  - c) **Max TAC** defines the maximum allowed Total Area Coverage, i.e. the sum of all ink percentages at a specific spot.
3. Use the **Preview** window to check the result of the current settings.



- a) Use the Plus and minus buttons below to change the zoom. Click and drag in the preview image to pan and show a different part. Just click and hold in the preview image to see the original image. This can be used to compare the filter's result with the original image.
  - b) If you move the mouse pointer over the Preview, the table at the bottom right will show the values for every separation and the Total Area Coverage for the original image (left) and the result after applying the filter (right).
  - c) **Preview:** choose between the Image, the Flexo Plate Preview (see [ViewX Flexo Plate Preview layer](#) on page 31) or the Flexo Print Preview (see [ViewX Flexo Print Preview layer](#) on page 32)
  - d) **Channel:** Choose which channel(s) to view in the preview area. This only affects the visualization in the preview area, not the effect of the filter.
  - e) **Press:** Shows the list of all press-configurations. See [Press Settings](#) on page 22 on how to edit these configurations.
4. Click **OK** to apply the filter.

## 8. Viewer

---

The **Viewer** is available if you have the Flexotools, Ink Tools or Equinox plug-in installed.

### 8.1. About Viewer

---

#### Benefits of using Viewer

**Viewer** is a very accurate separation viewer with a lot of extra production tools. It eliminates the need for separated proofs and will help you to avoid bad plate-making.

In this preview, you have access to advanced tools such as the Densitometer.

To open the Viewer window, choose **File > Automate > Esko Viewer...**

### 8.2. Define Press Settings

---

Before you can start working with Viewer in a meaningful way, you should define your **Press Settings**. Without basic information on the properties of the press you are using, Viewer cannot simulate accurately.

You can open the Press Settings window by selecting **Press Settings...** in the fly-out menu of the Quality Control section, or choose **File > Automate > Esko Setup** and select the Press Settings tab.

See [Press Settings](#) on page 22

### 8.3. The Viewer window

---

To open the Viewer window, choose **File > Automate > Esko Viewer...**

When opening a document, or changing to a different job, Viewer will (re)calculate the Preview. Viewer will only work when the active document is a CMYK or Multichannel image, at 8 bits per channels. Otherwise the Viewer will show a warning "The current document is not in the CMYK or Multichannel mode".

When changes are made in the Photoshop document, you have to click the **Refresh** button for the changes to become visible in Viewer.

**Note:** Viewer will take the Photoshop Layer visibility into account, but will disregard Photoshop's Channel visibility settings.

By clicking the **Minimize** button, the Viewer window is minimized, showing only the **Maximize** button. You can maximize the Viewer window by clicking the **Maximize** button. If you choose **File > Automate > Esko Viewer...** the Viewer window will be maximized and refreshed.

### Equinox profile

If you have either an Ink Tools or Equinox license, you will get an accurate preview of documents using an Equinox Profile. If you only have Flexotools license, the Equinox document with Equinox Profile will not work. A message at the bottom of the Viewer palette will inform you that color will not be accurate.

## 8.3.1. Navigating in the Preview

The Viewer window shows the preview of your document in the left pane, and the list of used inks in the right pane of your Viewer palette.

At the bottom of the palette, you will find:



1. a Pan tool (see below), a Zoom tool (see below) and a Densitometer tool (see [Measure Ink Densities](#) on page 44)
2. a zoom-in and zoom-out button and a field showing the current zoom percentage.
3. the Refresh button.
4. the Minimize button.

### Zoom in - zoom out

To zoom in the preview pane of the Viewer palette, select the zoom tool and just click, and the view will zoom in using the clicked point as center point.

To zoom out, click while holding the ALT key pressed, and the view will zoom out using the clicked point as center point.

You can also drag a rectangle to zoom in, and the new viewport will be a closest match to the rectangle you dragged.

You can also use the default Photoshop shortcuts: cmd-0 to fit the image in the window, cmd-1 to set the zoom factor to 100%.

To pan the view, select the Pan tool or hold down the spacebar and drag a line in the preview pane. The view will move the direction and the length of the line you drag.

## 8.3.2. Separation visibility

In the Ink list, you can:

- Click the eye icon in front of a separation/color name to show or hide it.
- Alt-click an eye button to quickly hide all other separations and go in single-separation mode. Alt-click the same eye button again to show all separations.
- You can also use the Photoshop shortcuts: Cmd-2 to show all separations, and Cmd-3 to show only the first separation, Cmd-4 for the second, etc.

- Double-click an ink to open the **Display Inks** window (for CMYK inks) or **Spot Color** dialog for spot colors. See [Display Inks](#) or [Spot Colors](#)

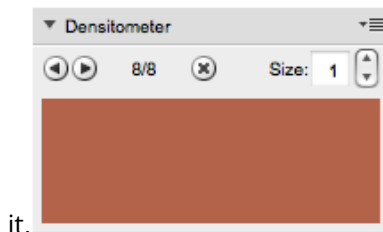
If only one ink is selected, you can choose in the fly-out menu of the Separations section if you want to see the single separation

- in RGB, using the actual color
- in grayscale, as the image might appear on film / plate
- in grayscale but inverted

### 8.3.3. Measure Ink Densities

#### Densitometer

In the middle of the right side of the Viewer window, you can see the Densitometer section. You can show or hide the section by clicking the triangle in front of



it.

- Select the **Densitometer** tool, and click on an area of your document to measure the separation densities in that area.

Every time you click, a new measuring point is set. The densities are shown to the right of each separation, and the color patch in the Densitometer section shows the measured color. The total density of all inks on the point that is being measured (the TAC value) is shown at the bottom of the separation list.

**Note:** If the TAC value exceeds the TAC limit specified in the currently selected press settings, a warning icon is shown next to the Total Area Coverage

- Use the left and right arrow buttons to browse through the different measuring points. The according densities and color patch will be shown

**Note:** If you are zoomed in and navigate to a measuring point not in the Viewer window, the Preview will pan to show the selected measuring point.

- Click the **Remove** button (X) or use backspace to delete the current measuring point.
- Change the **Size** of the current measuring point by clicking the up and down arrow. If the size is set to e.g. 3, the densitometer will take the average density of a 3 by 3 pixel area.

**Note:** When creating a new measuring point, the current Size will be used.

- Select **Show bubbles** to show the measured densities next to every measuring point.



When in **Flexo Print** or **Flexo Plate** preview, the bubble will show a black dot next to the density for channels with a percentage equal or higher than the first dot percentage.

When in **Breakout** preview, the bubble will show a red triangle icon next to the density for channels with a percentage below the first dot percentage.

When in **Total Area Coverage** preview, the bubble will show a black dot next to the density for channels with a percentage equal or higher than the first dot percentage, and it will show a yellow triangle icon next to the total area coverage if it exceeds the currently set TAC value.

The densities of separations that are not visible, are shown dimmed in the bubbles.

### 8.3.4. Quality Control

#### Registration Error

The Registration Error Preview is a simulation of a design printed with misregistration. It can be very helpful to see if trapping is applied sufficiently and correctly.

Use the slider to set the **Registration Error**, or enter a value in the input field.

The separations are randomly shifted. In fact, all separations are moved exactly the distance of the Registration Error, but all under a random angle.

If you want to see another random registration error simulation, click the **Simulate Again** button.



In the example above, you can see a small area of a job in regular preview (left) and with registration errors (right). In this case, you can clearly see no trapping was applied, so white lines appear at the registration shifts.

## Flexo Print

This **Viewer** preview mode shows the effect of highlight dot gain on the image.



This effect is equivalent to a curve adjustment. To determine this curve, the Flexo Print Preview will use the **First dot** and the **Dot gain in highlights** settings from the Press Settings (see [Define Press Settings](#) on page 42).

Going from light to dark:

- The Flexo Print Preview will display percentages below the **First visible dot** percentage as 0%.
- The **First visible dot** percentage will be shown using the **First Dot Prints as** percentage.
- Percentages above the **First visible dot** percentage will be shown darker.
- Towards the midtones this darkening effect will fade out until the **Range** value.
- Percentages above the **Range** value are displayed unchanged.

## Flexo Plate

If you change the **Viewer** Preview mode to **Flexo Plate**, a single separation (by default the first in the list) will be shown as a simulated flexo plate.

**Note:**

In this Preview mode, only one separation can be viewed at a time.

**Note:** This gives a preview similar to using ViewX layers.



## First Visible Dot

The Flexo Plate preview will use the **First Visible Dot** percentage from the press settings (see [Define Press Settings](#) on page 42).

Pixels with a percentage lower than the First Visible Dot percentage will be shown as areas without dots.

Pixels with a percentage equal or higher than the First Visible Dot percentage will be shown as areas with dots.

## Plate Color

The Flexo Plate preview predicts how clean your flexo plates will be. Especially in very light or very dark areas, you could end up with isolated dots or holes on the flexo plate, and those areas are difficult to hold on the plate or the substrate.

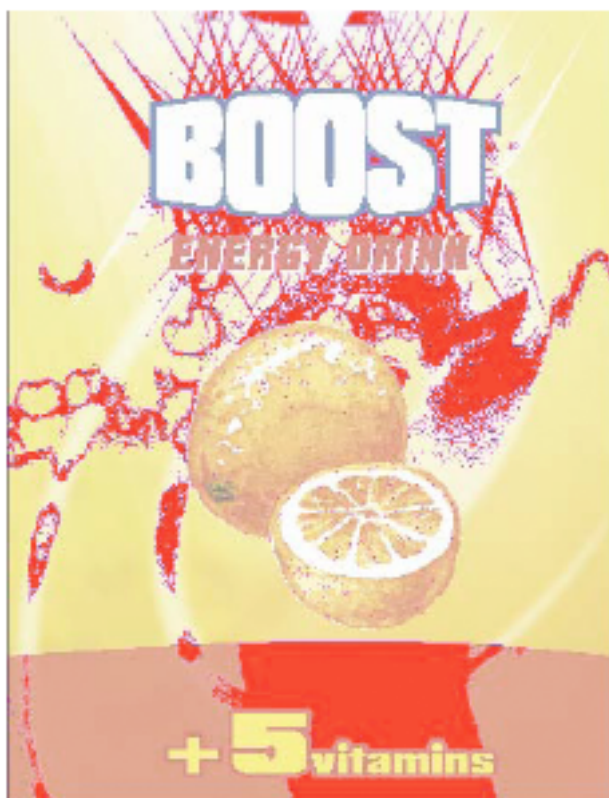
You can choose the plate color (Cyrel® Red, Blue, Green or Safran Yellow, or a High Contrast Blue&White) to match the type of plate you are using.

## Breakout

A Breakout is an area where the percentage of a single separation is lower than the **First Visible Dot** value. This can be used to track areas that won't show up on print because the values are too low.

Your printer should provide you with the First visible Dot value. The First visible dot is set in the Press Settings: see [Press Settings](#) on page 22. When switching to Breakout mode, the preview will be dimmed and all areas where a single separation has a value lower than the **First Visible Dot** value (but higher than 0%), will be displayed in highlight color.

You can measure the actual percentages in that specific area using the densitometer (see [Densitometer](#) on page 44).



## Total Area Coverage

The Total Area Coverage (TAC) is the sum of all separation-densities at a certain point in your document.



## TAC Limit

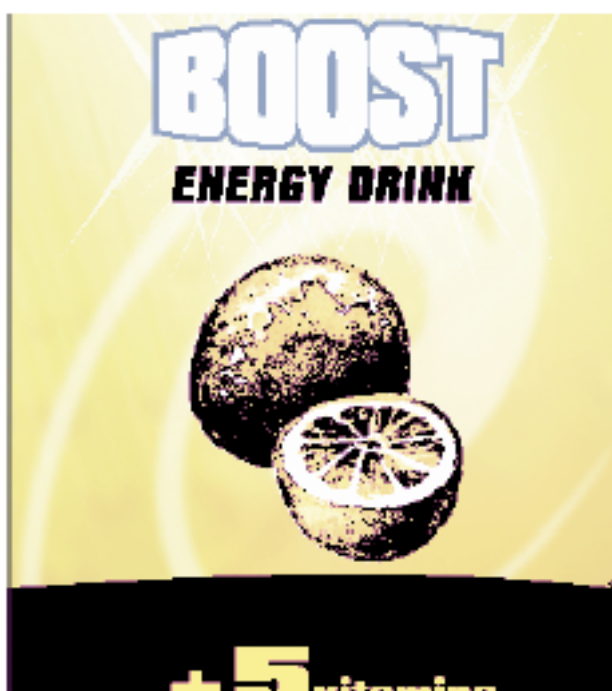
The **TAC Limit** is the maximal Total Area Coverage that your document may contain. This value depends on the press and the substrate your design will be printed on. Your printer should provide you with the TAC Limit value to use.

### Defining the TAC Limit

The TAC limit is defined in the Press settings. See [Press Settings](#) on page 22). By default the TAC Limit is set to 270%.

### Viewing areas over the TAC Limit

When you switch to the **Total Area Coverage** preview, the image in the preview pane will be dimmed and all areas where the sum of the densities is higher than the TAC limit specified in the current Press Setting will be displayed in 100% black.



#### Note:

You can click the Densitometer button to use the Densitometer tool, and measure the actual TAC amount in that specific area. See [Densitometer](#) on page 44.

To quickly see the maximum TAC in your document, use the **TAC Limit** slider.

Move the slider to the right to use a TAC Limit value higher than that used by your current Press Setting. The more you move the slider to the right, the less pixels will typically be over the TAC Limit.