

CHROMAFORCES

INSTRUCTION MANUAL

(Beta version)

1. INSTALLATION

ChromaForces is an application for editing the palette and color map files for the Dark Forces FPS game from LucasArts. It is designed for PC's running Windows™ 95, 98, Millenium, 2000, XP and Vista. Depending on the system configuration, it will require between 0,5 and 5 MB of hard disk space - either way, negligible for today's hard disks.

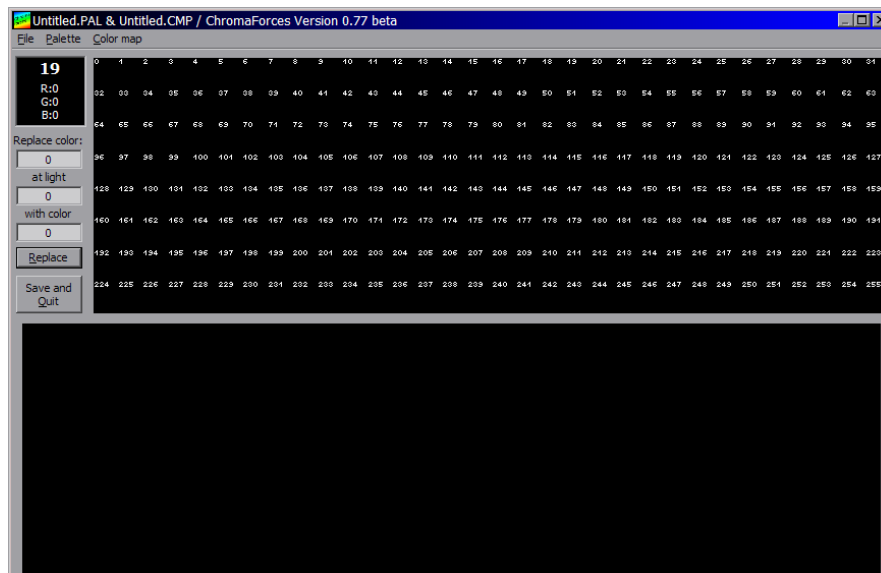
Installation is fairly simple; start the executable file supplied in the pack and follow the instructions. It will offer to install the program to the default folder C:\Program Files\ChromaForces, where you can change it - afterwards, the whole process is automatic and it should end by the ChromaForces icon appearing in your start menu.

At the end of the installation, you might be asked to restart your computer for the program to function properly. It is recommended to do it, although some testing has shown that it isn't always necessary.

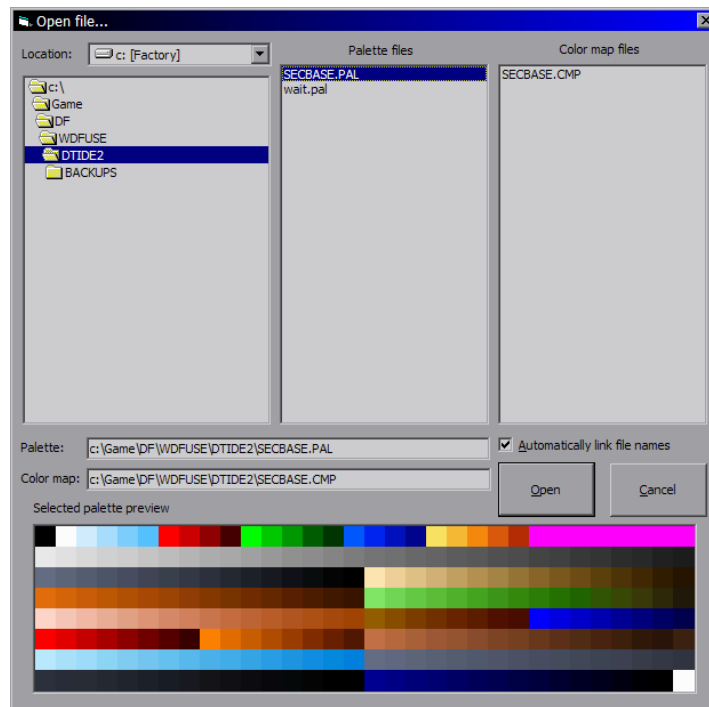
If you will want to uninstall it, do it like with just any other software: Control panel - Add and remove programs - ChromaForces - Remove, and follow the instructions.

2. MAIN WINDOW

When started, ChromaForces will have no palettes or color maps loaded, and should look approximately like this.



To get a better idea how the interface works, open any pair of color map and palette files (with extensions CMP and PAL). Click *Open* in the *File* menu or just hit a keyboard shortcut Ctrl+O. You will be confronted by the following dialog:

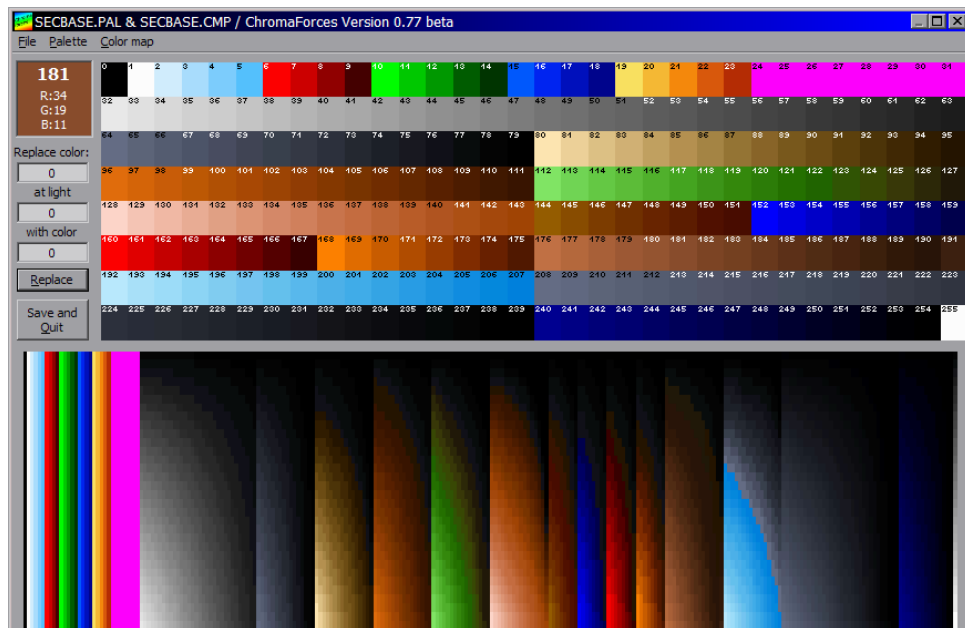


As you can see, it resembles just any typical "Open File" dialog that you will find in any program, but has two file lists, for palette and color map files separately, and two text boxes. Keep in mind that ChromaForces always works with pairs (CMP and PAL) of files.

Choose the drive and the folder path on the left, and the according files on the right side. If you choose a palette file, it will automatically try to locate and specify the according color map file in the same folder and with the same name, but different extension. If you don't agree, feel free to write the file paths and names directly into the text boxes, or generally disable this option by unchecking the *Automatically link file names* box.

Palette files that are clicked in the file list will be previewed in the panel at the bottom of the window. When ready, click the *Open* command. As an example, you can open the default Dark Forces files (Default.PAL and Default.CMP) supplied with the program.

Anyway, the interface will return to the main window, that should look approximately like this.



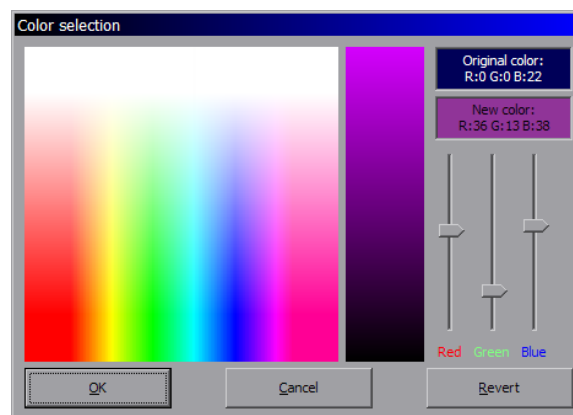
Each of the 256 colors in the palette will receive its box in the top panel, and marked by its index number. Unlike some other bitmap files, Dark Forces palettes always have 256 colors, so the whole panel will be full. If you hover a mouse pointer above any of these colors, the information box to the left will take it, display its index number and the RGB values. Each color channel is defined by six bits - that is, each can hold 64 values ranged from 0 to 63.

In the bottom panel, you can see the complete contents of the color map. Color indexes from 0 to 255 range from left to right. Ambient lighting, ranging from 0 to 31, increases from top to bottom. Hovering the mouse pointer above any of the colors will display it in the information panel, together with the current color index number, ambient color value and the original color index (the one represented in the full-light palette).

You can resize the window and maximize it; the panels will automatically adjust their dimensions according to the new size.

3. EDITING COLORS AND MAPS

To edit a color in the palette, simply click its box in the top panel. The following dialog will appear.



The original color you selected will be displayed at the top right, together with its RGB values, and below it you can see the preview of the color to take its place, also with its values. You can adjust them directly by adjusting three sliders on the right hand side, or using the color mix panel. Click on it to choose the hue and saturation value, and the choice will be shown in the lightness gradient bar in the middle. Click anywhere within it with a mouse pointer for the new color to acquire its values.

When you are ready, click *OK* to replace the color in the palette, and you can revert the current settings to the original by clicking the *Revert* command.

To modify the color map, you will mostly like to use the tools that calculate it. However, if you want to define a specific color in the color map, click its position in the bottom panel with a mouse pointer. The values to the left side (under the info panel) will automatically adjust themselves to its values, and offer you to type the new color index in the third number box. Click the *Replace* button for the change to occur, and you will immediately see the effect. Of course, you can change it also by directly typing the values in the text boxes, if you specifically know the values you want to change.

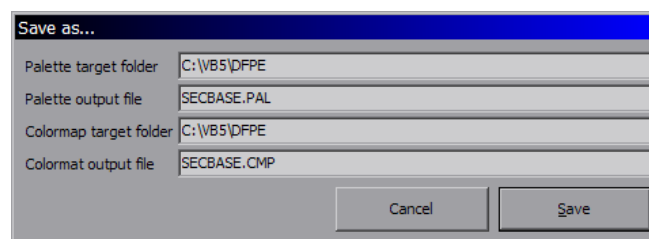
4. FILE MENU

These commands will be clear to just anybody that has ever used a Windows application.

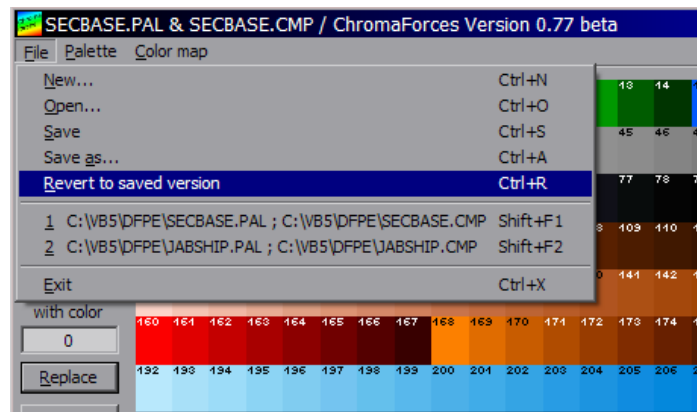
New clears a current project and resets the filenames. That is, all the colors in the palette will become black, and all reference indexes in the color map will get the zero value.

Open is discussed in detail earlier, in the second chapter.

Save will simply save the current palette and the color map. If dealing with a new project (Untitled), ChromaForces will ask for the specific filenames. If, however, you want to specify them anew regardless of the current setting, click on *Save as*. You will be offered to type them in directly in this rudimental dialog.



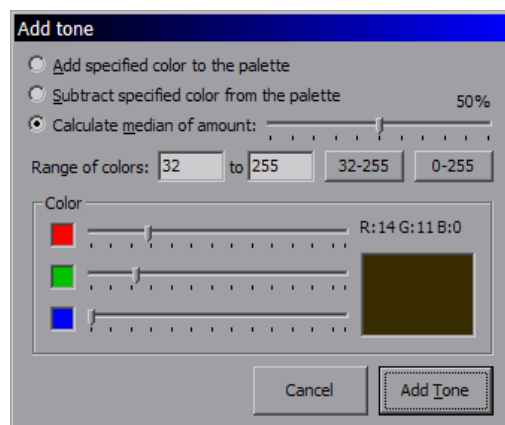
If you want to restore the currently opened palette and the color map to the values stored in the original file, click on *Revert to saved version*. Keep in mind that, of course, this option will lose effect as soon as you save it edited for the first time.



Finally, click on *Exit* to quit ChromoForces. Keep in mind that you can save and exit the program by using the command button in the main window.

5. PALETTE MENU

You can tone the current palette by choosing the *Add tone* command in the *Palette* menu. Following window will appear.

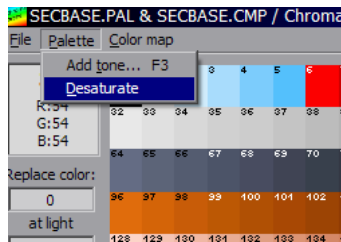


Firstly, define the operand color using the three sliders. You can see its preview in the adjacent window, together with its RGB values.

Then, choose the method through which that color will affect the palette. *Add* will simply add the RGB values and *Subtract* will, quite obviously, subtract them. If any of the resulting values becomes larger than the maximum 63, it will be fixed to 63 - in the same manner in which all the negative values will be set to zero. Keep in mind that subtracting colors will actually add a tone of color that is complementary to the chosen color. In other words, if the operand color is red and the original color white, the result will be cyan.

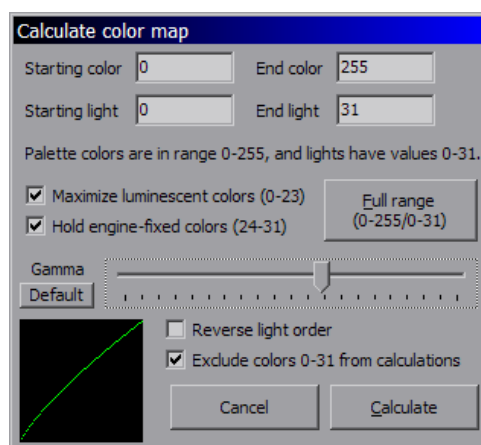
Third option, *Calculate median*, will calculate the average value between the original and the operand color - much like the effect one gets by watching through the colored sunglasses. Use the slider to adjust the percentage amount of its "influence". You will mostly want to keep this setting between 15 and 50 percent, because less will be hardly noticeable, and more would be intolerably tinted.

Finally, in the text boxes you can choose the range of colors in the palette that will be affected. Use the command buttons to quickly set it to 32-255 (skipping the engine-fixed and luminescent colors), or to the complete palette: 0-255.



The second option in the menu, *Desaturate*, converts the whole palette to grayscale. You might want to use it as a special effect, or to make some monochrome palettes (combine with *Add Tone*). Also you can check out how will your level look on the archaic monochrome screens, if you're a compatibility fanatic.

6. COLOR MAP MENU



The first command in the *Color map* menu offers you to automatically calculate the whole color map. The process is quite simple: program calculates how would the optimal (full-light) color appear under the given light, searches for the closest one among those available in the palette, and places it in its position in the color map. The whole operation is completely dependent on the palette, but does not affect it.

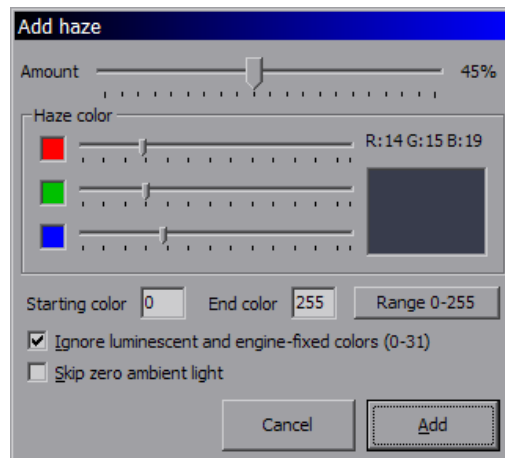
In the four text boxes at the top, choose the range of ambient lights and colors that will be affected. By default, it will be set to a whole color map - colors 0-255 and lights 0-31. Using the *Full range* button, you can always reset it to these values.

Check the *Maximize luminescent colors* box to have the values 0-23 always with the full lightness, regardless of the ambient light. That way they will glow in the dark during the game. *Hold engine-fixed colors* does something similar, though for colors 24-31. These colors (pink in the default palette) are used by the engine, and it's highly recommended to keep this option on by default.

Normally, the color map is calculated linearly (that is, the light to dark gradients are uniform). If you want to change that, adjust the gamma using the slider (reset it using *Default* button), and check the current lightness function in the black graph.

Use the *Reverse light order* option to have the darkest nuance at number 31, and the brightest at zero. That way, the light will appear brighter in the distance, while the explosions, fires and headlight will actually seem dark - an interesting effect you might want to use in your level.

Finally, you might want to exclude the luminescent and engine-fixed colors from the choice while searching for the best matching color. That way you will have a full compatibility and avoid the occasional dreaded pixels (usually pink) appearing on some textures. Check the *Exclude colors 0-31* option for that purpose.



Next menu command is *Add haze*. Use it to add an atmospheric haze effect - similar to adding a tone to the color map, however only gradiently - increasing from light to dark ambient. Something similar can be seen in the Gromas Mines, with a dark red/brown color, combined with a toned palette.

Choose a haze color using the three sliders, the preview panel and the RGB indicator. Regulate the amount of haze to be added using the top slide bar. Full 100% will make the zero-light correspond to the specified haze color, while all other amounts will create gradient semitones. Try not to adjust this amount too high, as it might do some very unrealistic and ugly results.

Below, in the text boxes, type the indexes of the color range on which the haze is to be applied, or use the auto-range button to set it to color 0-255. First check box, *Ignore luminescent...* will skip the colors 0-31 while adding a haze (recommended as the luminescent colors should be visible through the haze/fog).

If you have already set the zero ambient light separately (next chapter), check also the last box *Skip zero ambient light*. The process will then skip it and apply the haze only to the remaining ambient light settings, 1-31.

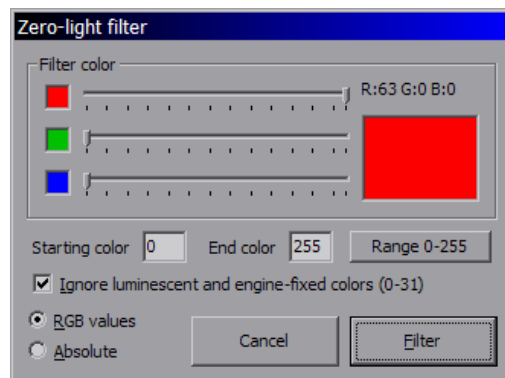
Finally, you can use a zero-light filter to make a monochromatic ambient in the sectors with light adjusted to zero (as seen in Condition Red, Assassination on Nar Shaddaa, etc.) clicking on the *Zero-light filter* command.

When the following window appears, first choose the filter color using already familiar interface, as well as the color range, auto-default button and the option to ignore the 0-31 color indexes for special uses.

You can, however choose what type of filtering will be used - *RGB values* or *Absolute*. RGB values will function like just any typical color filter, or sunglasses - limiting the original's RGB to the "mask" defined by the filter color. For example, a pure blue color would be represented as black through a red filter and vice versa, but a purple color through a red filter would remain red (of course, with the same amount of lightness).

The other method, *Absolute*, is not really realistic like the previous one, but looks a little bit better. This time, the lightness of the filter color is corresponding to the brightest of the three RGB channels in the original color. Although generally

better (and employed in the two mentioned levels), note that some inscriptions might not be very visible that way. It's probably best to experiment until you find an optimal setting for your project.



7. KEYBOARD SHORTCUTS

New files	<i>Ctrl+N</i>
Open files	<i>Ctrl+O</i>
Save files	<i>Ctrl+S</i>
Save files as	<i>Ctrl+A</i>
Revert to saved	<i>Ctrl+R</i>
Quit	<i>Ctrl+X, Esc</i>
Add tone	<i>F3</i>
Calculate color map	<i>F2</i>
Add distance haze	<i>F4</i>
Zero-light filter	<i>F5</i>

8. LEGAL

ChromaForces is freeware and can be freely distributed, as long as it is supplied in a complete package, not anyhow modified and there is no fee asked for it.

The author is not anyhow responsible for any kind of damage caused by using this program. In the other words, use at your own risk.

9. NOTE

For any extra comments or questions, please contact the author at the DF-21 forums, where he resides under the name Fish. This is still a beta version, and will progress together with the executable. Probably.

Have fun with ChromaForces and try not to take it too seriously. Many thanks to Cindy Winter and Rod Long (yes, that's his name, not his specification).

Oton "Fish" Ribic, Nar Shaddaa, June 2006