Colors: A Litepaper

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Abstract

Colors aims to be a building block in the Solana NFT metaverse. Each NFT represents a hexadecimal color. Any two Colors can be combined (burned) to mint their composite color. Colors are designed to be integrated with other NFT projects, so that holders can be empowered with new modes of personalization and artistic expression.

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1. Pixels

Pixels is an experiment in generative art and recursion, as well as a homage to several great minds in Mathematics and Computer Science. In addition to the art itself, it serves as the first way to mint a Color.

Burning. Each Pixel contains its color palette as an attribute in its metadata. Pixel holders will be able to dissolve (burn) their NFTs into their component colors. For example, a Nakamoto color palette can be dissolved into #FFFFFF, #F7931A, #4D4D4D, #1A1A1A, and #010101.

Through the burn mechanism, Pixels will become a self-curated project. Our hope is that the first-generation Pixels collection will eventually only contain the most valued Pixels and become highly sought-after, thus benefiting our holders.

2. Colors

We will hold a mint for a limited amount of each of the five base colors. The base colors are #FFFFFF (white), #FF0000 (red), #00FF00 (green), #000000FF (blue), and #000000 (black). Combining these base colors and dissolving a Pixel will be the only two ways to mint new Colors.

Mixing. Combining colors will work by sending both colors to a smart contract which will burn the colors and return the composite. For example, combining #0000FF (blue) and #00FF00 (green) will mint #008080 (cyan).

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Color mixing will follow the following formula:

- Separate #0000FF (blue) into its three RGB components: RedA = 0, GreenA = 0, and BlueA = 255.
- Separate #00FF00 (green) into its three RGB components: RedB = 0, GreenB= 255, and BlueB = 0.
- Average each of the two corresponding colors:

$$\frac{0\ (RedA) + 0\ (RedB)}{2} = \ 00\ (Hex)$$

$$\frac{0\ (GreenA) + 255\ (GreenB)}{2} = \ 80\ (Hex)$$

$$\frac{255\ (BlueA) + 0\ (BlueB)}{2} = \ 80\ (Hex)$$

$$Result \ = \ \#008080$$

Lineage. Each Color NFT will save its lineage as a JSON-represented binary tree in the metadata. There will also be a small fee associated with combining two colors. Thus, a color with a larger depth of lineage will be inherently more valuable, as it was more expensive to create.

Our hope is that a micro economy will form between producers who are interested in minting certain colors they believe will be popular, and consumers who simply wish to purchase their desired color quickly on a secondary market.

Pixels holders will hold an advantage, as they will be able to mint colors otherwise difficult to obtain. Even without burning them, Pixels will hold the additional value of the potential colors they can create.

3. Pixels^2

Pixels^2 will be the follow-up release to the original Pixels collection. It will contain many improvements, such as new patterns and resolutions, however the primary feature will be its integration with the Colors ecosystem.

Customization. When minting an NFT from the Pixels^2 collection, minters will be able to choose the color scheme of the NFT by flagging colors they hold in their wallet. These colors will not be burned. All smart contracts developed for this purpose will be open-sourced, so that other projects may use them to develop their own integrations.

4. Collaborations

Our goal with Colors is to enhance the Solana metaverse as a whole. As such, any interested project can collaborate with us to implement both on-chain and off-chain Colors integrations.

On-chain Examples.

(1) New NFT projects will be able to integrate Colors NFT into their minting process, allowing the user to change the appearance of the minted NFT – i.e. the background color, hair color, eye color etc.
(2) Existing NFT projects will be able to create customizable contracts that would update an NFTs metadata and image, assuming the collection is still mutable.

Off-chain Examples.

(1) Web3 enabled websites can allow exclusive customization options, i.e. page color, font color, etc. by reading the colors available in a user's wallet.
(2) Discord communities could enable Colors NFT integration and set up custom color Roles for users.
(3) Twitter could enable Colors NFT so verified owners could customized their PFP borders or any other page design attribute.