

# SepaFlash® HP Fusion Series Column for the Separation of Complex Phthalocyanines Compound



Santai Science Inc.

Chromatography Application Note ANSS-011

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Phthalocyanines are a class of organic compounds that are composed of four isoindole units connected through nitrogen atoms to form a macrocycle. They have a flattened, disc-shaped structure that resembles the structure of porphyrins, but with a larger central cavity. Phthalocyanines are of great interest in materials science, organic electronics, and biomedical applications due to their unique electronic and optical properties. Phthalocyanines are widely used as pigments, particularly in blue and green inks and dyes. They are also used as sensitizers in photodynamic therapy (PDT) for cancer treatment, where the phthalocyanine molecule is excited by light to produce singlet oxygen, a reactive species that can destroy cancer cells.

| Instrument     | SepaBean™ Machine 2.0   |               |
|----------------|---|---------------|
| Column         | 40g SepaFlash® HP Fusion Series (irregular silica, 25-40µm, 60Å, SW-5102-040) |               |
| Wavelength     | 254 nm; 365 nm  |               |
| Mobile Phase   | Solvent A: Hexane; Solvent B: DCM   |               |
| Flow rate      | 25 ml/min   |               |
| Sample loading | 200 mg  |               |
| Gradient       | CV  | Solvent B (%) |
|                | 0   | 12            |
|                | 3   | 12            |
|                | 6.3   | 37            |
|                | 12  | 40            |
|                | 22  | 95            |

Phthalocyanine synthesis involves several different methods, including condensation reactions between diamines and dinitriles, as well as cyclization reactions of phthalic anhydride derivatives. The



choice of synthesis method can depend on the specific phthalocyanine being synthesized and the desired purity level.

Purification of phthalocyanines can be challenging due to their strong tendency to aggregate, therefore using the right column for such separation is very important. Here we are using our latest product, the SepaFlash® HP Fusion Series (irregular silica, 25-40µm, 60Å, SW-5102-040) to isolate this target phthalocyanines. This product features our ultra-pure silica with small particle size (25-40µm), its separation capacity is comparable to the spherical silica gel with similar particle size. As shown in the following chromatogram, this well-known difficult to separate compound is nicely isolated from all the impurity within 11 CV.

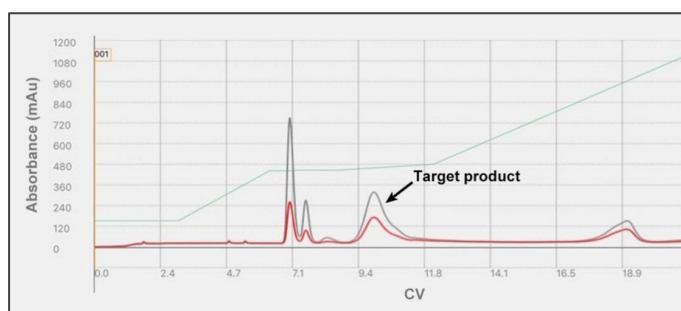
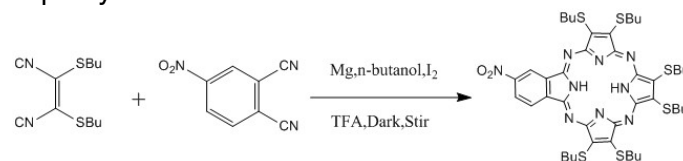


Figure 1. The flash chromatogram of the sample on HP Fusion column (SW-5102, 25 - 40 µ m, 60 Å)

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