



BUILDING VISION AND VARIETY

Using the Color Remediation Cartridge

Introduction:

The Color Remediation Cartridge (CRC) is used inline within a hydrocarbon extraction system. The CRC is hooked up between the material column and collection base. Solvent mix is passed over media in the CRC, stripping the extract of pigments, moisture, and heavy metals. Using a CRC can help increase purity and appearance of extracts, whether it is made with fresh or older material.

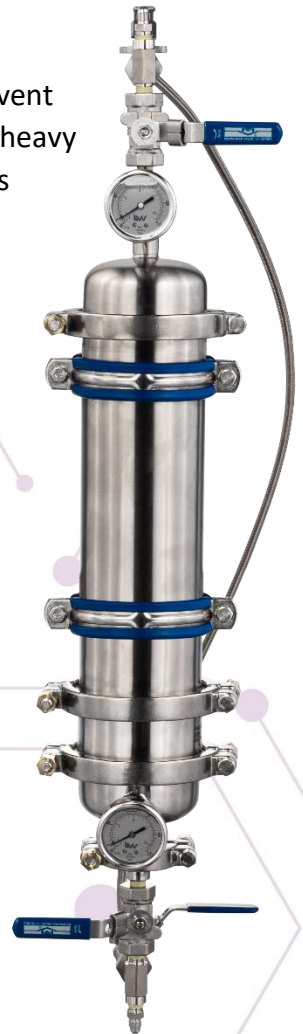
Safety:

It is of utmost importance to reference SDS sheets for all medias and chemicals used in the extraction process. All personal should utilize personal protection equipment (PPE) at all times during extraction and preparation. The following PPE is recommended:

- 1) **Goggles**
- 2) **Gloves**
- 3) **Breathing Mask/Respirator**
- 4) **Lab Coat**
- 5) **Non-slip shoes (ESD recommended)**

Method:

Concentrate will be extracted using the hydrocarbon solvent(s) of choice. Material is processed with a solvent ratio of 5 parts solvent : 1 part material. Solvent is chilled to -50 or colder. Material column is flooded with solvent, then soaked to desired time. Solvent is to be passed over media in CRC, collected, then recovered.



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Setup:

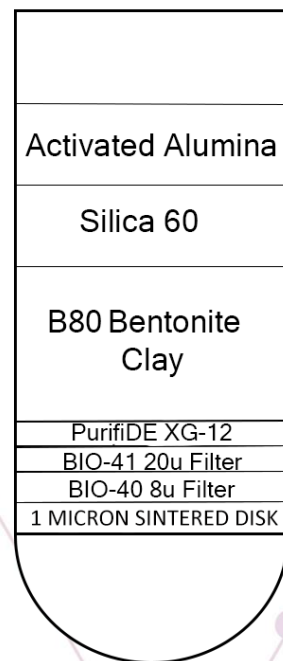
The CRC features a 3-stage filtration on the bottom side of the cartridge. Filter papers are to be arranged with decreasing pore size on top of a 1 micron sintered disk. The CRC kit comes with recommended filter papers. The recommended order of filters and medias is as followed (listed in top down order)

- 1) Activated Alumina
- 2) Silica 60
- 3) B80 Bentonite Clay
- 4) PurifiDE XG-12**
- 5) 20micron Fast filter paper (BIO-41)
- 6) 8micron Medium filter paper (BIO-40)
- 7) 1 micron Dutch Weave sintered disk

** - Listed filter aids are recommended. Other DE products, such as Celite 545, can be substituted.

Use media in the following ratio for each kilogram of biomass:

- 1) Activated Alumina - 100G**
- 2) Silica 60 – 100g**
- 3) B80 Bentonite Clay – 200g**
- 4) PurifiDE XG-12**



PurifiDE is to be packed on top of the 20micron filter papers. Fill center of the retention ring with PurifiDE, pressing down evenly with a flat surface to fill the surface of top ring. Weight is not recorded for this media as it is only used to prevent other medias from slipping through. Once packed, cover with 50micron screen gasket and attach column to the filter assembly.

Layer T5 on top of screen gasket, gently tapping side of column to even out the surface. Repeat process for Silica 60 and Activated Alumina. Place 20micron filter paper and extra retention ring on top of media. Use packing rod to gently tamp the media, using the 20micron paper to keep media layers from being disturbed. Cap cartridge, tighten all clamps and prepare for extraction.

Always Pull vacuum from collection base side of cartridge. Vacuum is never to be pulled from top of cartridge.



Flow of solvent/pressure is always to be top down. Never allow solvent or pressure to flow from top of CRC. Failure to follow this can lead to media contamination of hoses, parts, and extract.



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Application

Activated Alumina: Adsorbs polar compounds, great for removal of micro waxes from oil.

Silica 60: Adsorbs polar compounds. Can have a chromatography effect and separate heavier molecules from lighter ones.

B80: Adsorbs pigments, usually associated with the removal of yellow/amber

PurifiDE XG12: Filter aid, used to prevent medias from leaving the CRC.

Procedure:

- 1) Pull vacuum on entire system from collection base.
- 2) Start run per system SOP.
- 3) Once material has been soaked, slowly open CRC, about ½ way open. Be careful not to rush solvent into CRC, as this can bind or clog the medias. This can drastically slow solvent flow.
- 4) Once CRC is filled with solvent, open to collection base.
- 5) Monitor solvent flow into collection base. If solvent flow stops/slows prematurely, a gently nitrogen assist may be used. Pressure variances can be monitored on the CRC.
- 6) Once all solvent has been flushed across material and media, use a nitrogen assist to push the remaining solvent from material.
- 7) Start recovery per system SOP.

If a clog occurs within the CRC, and solvent flow stops completely, the bypass can be used. Refer to flow chart on the next page for solvent bypass.



Before using CRC bypass valves, make sure both top and bottom valves of CRC are closed. This will prevent media from escaping the CRC.

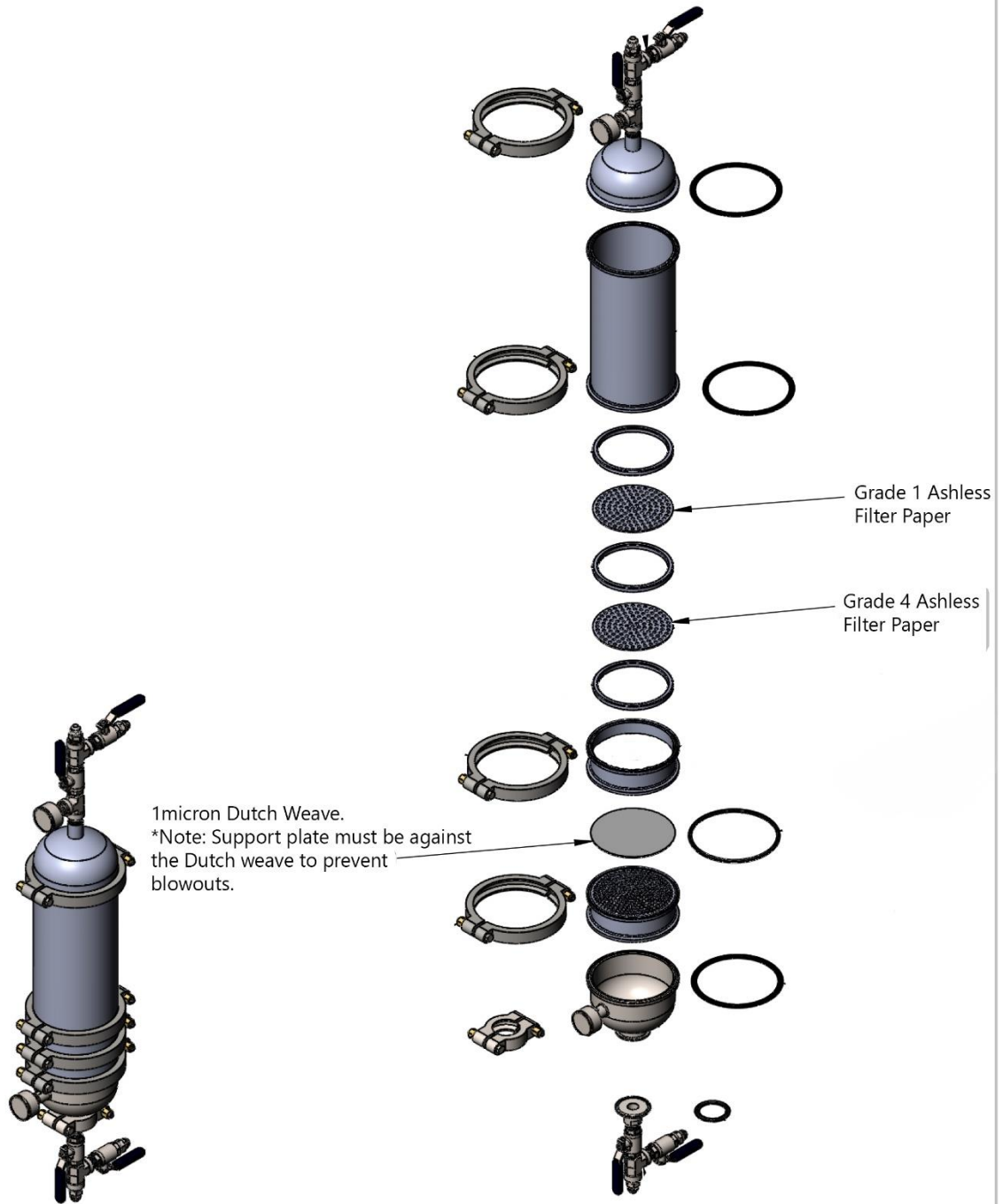


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Color Remediation Column Diagram



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