H-Nu 470X Powder Blend
Visible/UV-Visible Light Photoinitiator

General Information

- **H-Nu 470X** – broad wavelength use commercial photoinitiator, all ingredients of the blend are either on TSCA or have LVE exemption, broad absorbance range of 300 nm to 530 nm ($\lambda_{\text{max}}=380$ nm) across the mid-UV, UVA and near-UV visible portion of the light spectrum
- **H-Nu 470X** - capable of curing a wide range of resins:
  - Acrylates - free-radical mechanism
  - Epoxides - cationic mechanism

![Absorbance vs Wavelength](image)

**Benefits of Use**

- Capable of significant depth of cure, > 1 inch
- Time and energy savings when one-pass thick cure can replace thin multi-layered coatings
- Cure through UV opaque, pigmented, or colored substrates (e.g. Kapton)
- Initiator bleaching: from bright orange to pale yellow/no residual color
- Bleaching/color change indicator of exposure/cure with UV/visible light
Physical Properties

Appearance Orange Powder
Molecular Weight Mixture (N/A)
Absorbance Maximum 380 nm

Photoinitiator Usage Recommendations

- For free-radical curing formulations recommended starting concentration of H-Nu 470X is 0.5 - 2% by weight. We recommend testing several concentrations in a “ladder” study between 0.5-5% to achieve best results.
- Coinitiators are required – amine acrylates (AA) at 5 - 10 wt.% are recommended and one is included with sample kits

| 0.5 – 2.0 wt.% H-Nu 470X | 5-10 wt.% AmineAcrylate |

- H-Nu 470X dissolves into most resin systems with mixing/stirring for 4-6 hours -- for faster dissolution you may gently heat to 40C – 50C for 1 hour
- H-Nu photoinitiator systems and materials that contain them are light sensitive and should be kept in the dark or in light proof bottles when not in use.
- “Dimmed” light conditions or other form of light shielding for mixing and formulating when using H-Nu photoinitiators are recommended to prevent unwanted pre-polymerization.

Cationic Cure – Epoxides

- H-Nu 470X will activate onium salts to achieve cure in epoxide resins
- Accelerator AN-910-E can greatly enhance cure speed and sensitiviy and is recommended
- H-Nu 470X concentration range spans from 0.5 to 2.0 wt.%, with a good starting point at 1.0 wt.% based on solids
- Recommended starting concentrations:
  - Standard: 1.0 wt.% H-Nu 470X + 2.5 wt.% H-Nu 254 Iodonium Salt
  - With Accelerator: 1.0 wt.% H-Nu 470X + 0.1-1 wt.% AN-910-E + 2.5-3 wt.% H-Nu 254 Iodonium Salt
- Sulfonium salts 
  may work with **H-Nu 470X** but iodonium salts (H-Nu 254) generally achieve better results

- Do not use **Amines** or **DMAA** solvent as they “poison” or quench the superacid formation, thus preventing cationic cure

**Product Safety and Handling**

Please read MSDS information before handling any products described in this brochure.

**Disclaimer**

All Spectra Group Limited, Inc. manufactured materials in this brochure are not intended for use in products which would be regulated by the Food and Drug Administration unless the finished product is tested in accordance with the FDA and other applicable safety testing requirements. Spectra Group Limited, Inc. is not able to recommend these materials for such uses and assumes no liability for any such use. Technical advice furnished by the seller shall not constitute a warranty or condition, statutory or otherwise, which is expressly disclaimed, all such advise being given and accepted is at the buyer's risk. Data and results that the user or buyer achieves may differ. Optimization, scale-up and product performance are the responsibility of the buyer or user.