# 100% Cationic (EPV) UV-curing versus not-100% Cationic UV-curing varnishes

| ***Characteristics*** | ***100% Cationic*** | ***not 100% cationic like Radical*** |
|---|---|---|
| Solvents free and thus low pollutant | +++ | +++ |
| Initiator for polymarisation (resin) | Acid | Radical |
| Breakdown products photo initiator | Long lasting | Short lasting |
| UV-curing | Reaction continues after initial UV exposure as the acid diffuses through the still liquid layers if any are left | Upon UV-exposure free radicals are formed and initiate a (chain) reaction that react with the double bond rasins. Process stops when UV-exposure is stopped |
| Oxigen interference in UV-curing process | No | Yes |
| Humidity interference in UV-curing process | Possible, but heat will increase post-curing after drying | Little as curing is only during UV-exposure |
| In case of not full curing | Curing continues after UV-exposure | Irritation to skin |
| General risk potential | Lower than not-100% cationic varnishes | Higher than cationic varnishes |
| Volume contraction (shrinkage) | 3-5% | 5-15% |
| Odour of liquid and cured varnishes | Less than not-100% cationic varnishes | More than cationic varnishes |
| Adhesion on plastics (Polymer) | Very good | Average |
| Adhesion on cotton-based papers | Very good | Average |
| Abrasion resistance | Excellent | Average |
| Ink-wear protection | Excellent | Bad - average |
| Chemical resistance | Good | Not known |
| Environmental impact | Very low due to free of solvents and continued curing after UV-exposure | Low due to free of solvents |
| Machine cleaning properties | Easy cleaning as per feed back from printers | Not known |
| Raw material prices | More expensive | Cheaper than 100% Cationic |


| Sources: |
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| "UV-radiation curing Technology" by Edwin Tafelmeier; Coates.com, Research and Development |
| "UV Cationic Cure Release Coatings", Craig Adhesives & Coatings, Newark (USA) |
| "What is Cationic UV Technology?" by Dr. Richard M. Podhajny, PhD et al; Published Sunday, 29 February 2004 |