

United States Department of Agriculture
Agricultural Marketing Service | National Organic Program
Document Cover Sheet

<https://www.ams.usda.gov/rules-regulations/organic/national-list/petitioned>

Document Type:

National List Petition or Petition Update

A petition is a request to amend the USDA National Organic Program's National List of Allowed and Prohibited Substances (National List).

Any person may submit a petition to have a substance evaluated by the National Organic Standards Board (7 CFR 205.607(a)).

Guidelines for submitting a petition are available in the NOP Handbook as NOP 3011, National List Petition Guidelines.

Petitions are posted for the public on the NOP website for Petitioned Substances.

Technical Report

A technical report is developed in response to a petition to amend the National List. Reports are also developed to assist in the review of substances that are already on the National List.

Technical reports are completed by third-party contractors and are available to the public on the NOP website for Petitioned Substances.

Contractor names and dates completed are available in the report.

Addendum to: Petition for newspaper, hemp paper or other unbleached paper, without glossy or colored inks, as a plant pot or growing container.

Submitted by John Hendrickson, *Small Farm Works* and *Stone Circle Farm*

Based on communication with the NOSB Crops Subcommittee, please accept the following to help support the petition and specifically the request to extend the allowed use of paper pots on certified organic farms in 2019 (and perhaps beyond) while the petition is reviewed.

Our understanding is that the NOP requires documentation that the adhesives used in the paper pots are materials that would be found in paper and thus allowed under the current “newspaper/recycled paper” allowance. The materials in question are: vinyl-acetate resin (specifically, polyvinyl acetate), ethylene-vinyl-acetate resin, and acrylic acid ester copolymer.

We believe all of these materials are explicitly or implicitly covered in the 2017 technical review.¹ Lines 192 through 195 note that “Many paper products have adhesives (Onusseit et al. 2000)” and that “modern adhesives are mostly petroleum derivatives.” The TR continues, stating that “various glues and adhesives are also used in envelopes, packaging, paper bags, and a wide variety of consumer, office and industrial paper products. Most of the adhesives were found to be proprietary.” As such, it is clear there are many different types of papers adhesives and that the TR does not contain a detailed and exhaustive list of such adhesives.

The complex network of additives that can be found in paper is covered in the TR on lines 270-274: “Paper is composited with a wide range of materials (Hagiopol and Johnston 2012). In addition to ink and glossy coatings, paper can be combined with adhesives, glues, asphalt, resins, rosins, polymers, waxes, softeners and binders. Resins used to increase wetting strength in paper bags and packaging may include urea, formaldehyde, melamine, polyamines, polysaccharides, polyisocyanates, polycarboxylic acids, polyethers and rosin (Hagiopol and Johnston 2012).” The TR goes on to note that “most modern adhesives are synthesized from polyvinyl, ethylene, or polyurethane (Onusseit et al. 2000). Adhesive compounds, like inks, are generally proprietary formulations.” As a result, it is not generally possible to identify or know exactly what is contained in paper OR recycled paper which is made from paper. That being said, the NOSB has had several extensive TRs done on paper and has come to the conclusion that these materials are not dangerous or incompatible with the tenets of organic agriculture.

The following sections document the use of the three adhesives used in the paper pots as common paper adhesives.

Vinyl acetate is mentioned in line 182 of the TR: “Various petrochemical polymers, such as acrylonitrile, polyethylene (LDPE), styrene, butadiene, vinyl acetate, and polyvinyl chloride may also be used to create a glossy finish (Wesslau et al. 1968; Nadeau et al. 1970; Whitfield Associates 2008).” This reference is to glossy finishes on paper, which could go into recycled paper. While certifiers would almost assuredly not allow paper that's glossy to be used outright, there is no way of knowing that glossy paper is not a component of “recycled”

¹<https://www.ams.usda.gov/sites/default/files/media/Newspaper%20TR%20Final%2001%2011%2017.pdf>

papers. Indeed, based on the TR, it is clear “recycled paper” is likely to have a very large number of unknown components included in the source material and these materials could be present in the final recycled paper.

In addition to its use as a gloss, however, vinyl acetate is well known as a key component of adhesives that are used in paper products (Wiki, Independent Chemical Information Service, 2007; National Institutes of Health).² The specific vinyl acetate resin used by Nitten is polyvinyl acetate (PVA).³ PVA is the compound used for a wide variety of well-known adhesives such as Elmer’s Glue, wood glue, carpenter’s glue, craft glue, etc. It is widely used with paper as an adhesive in packaging, on envelopes, in bookbinding, etc.⁴ The TR mentions polyvinyl as a glue on line 292-293: “...most modern adhesives are synthesized from polyvinyl, ethylene, or polyurethane (Onusseit et al. 2000).

Nitten, the manufacturer of the paper chain pots, confirms polyvinyl acetate resin is used as a water soluble adhesive and not as a gloss. Indeed, examination of the paper pots proves the paper is a dull, craft paper and not a glossy paper product.

Ethylene vinyl acetate (EVA) is referred to in the TR in the *Adhesives and Glues* section, specifically on lines 199-200: “Historically, the main hot melt adhesive was ethylene vinyl acetate (EVA) (Midwest Research Institute and Franklin Associates 1975). Nitten can confirm that ethylene vinyl acetate resin is used as a water insoluble adhesive in their paper pots.

In addition, EVA has been deemed to be a food safe material according to the FDA: “Ethylene-vinyl acetate copolymers may be safely used as articles or components of articles intended for use in producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food...”⁵

Acrylic acid ester copolymer is one of large family of compounds and searches generally lead to information regarding generic “acrylic acid” or related copolymers that contain acrylic acid. As for the TR, synthetic polymers are mentioned in line 51-52: “Modern paper products also use a wide variety of synthetic polymers and co-polymers that change the functionality and performance of the paper compared with simple cellulose-starch blends (Auhorn 2012; Hagiopol and Johnston 2012).”

Synthetic polymers and polyacrylamides are referred to again in the TR on lines 214- 217: “As mentioned above, a growing number of paper products are manufactured as composites of

² https://en.wikipedia.org/wiki/Polyvinyl_acetate and <https://www.icis.com/resources/news/2007/11/07/9076564/vinyl-acetate-monomer-vam-uses-and-market-data/> and <https://webwiser.nlm.nih.gov/getSubstanceData.do?substanceId=153&displaySubstanceName=Acetic%20Acid%20Vinyl%20Ester&STCCID=&UNNAID=&selectedDataMenuItemID=22&catId=24>

³ The petition on the use of paper pots made from hemp paper submitted to the NOSB listed vinyl acetate and not polyvinyl acetate. This error resulted from communication challenges with the Japanese company. This section should be considered an update to the petition in this regard.

⁴ https://en.wikipedia.org/wiki/Polyvinyl_acetate

⁵ <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=177.1350>

cellulose and synthetic polymers (Auhorn 2012; Hagiopol and Johnston 2012). These include polyethylene, polyacrylimides and polyesters.”

While these references do not name “acrylic acid ester copolymer” specifically, the TR does not specifically name ALL compounds and materials used in paper. Based on a review on on-line resources, acrylic acid ester copolymer is a synthetic polymer that is used in paper and packaging adhesives.⁶ Nitten confirms that acrylic acid ester copolymer is used in their products as an adhesive.

Conclusion

The Technical Review lists many different types of additives and adhesives that are common in the manufacture of paper products. A few of these materials are named but it is clear there are many substances used in paper and paper products that are un-named in the TR. A thorough and thoughtful reading of the TR can only lead to the observation that paper (INCLUDING recycled paper) contains a very diverse array of materials and additives. As a practical matter, the additives and adhesives used in the paper pots have been previously allowed under the listings of paper on the National List for other, nearly-identical uses: as a mulch and compost feedstock. Extending the use of paper to paper pots is a logical step in the evolution of the organic guidelines, especially since the materials have benign environmental impacts.

In addition to the evidence presented here regarding the additives in question, we believe this particular use of paper has a less significant presence in the environment compared to an operation that uses cardboard as mulch which would leave far more paper and additives behind to decompose into the soil. If paper is allowed as mulch and a feedstock in compost, it is logical that it would be also allowed as a plant pot. We can also look to the positive impact these pots bring with the decrease in use of black plastic mulch, due to its incompatibility with this system. Waste overall has decreased on operations according to public comments so far.

More than 12 years ago, my certifier, in good faith, approved the use of these pots on my farm operation and since then our farm has been able to be more sustainable. Comment after comment submitted so far points toward the economic benefit the system has brought to farming operations. Some have commented that if forced to choose between paper pots and organic certification, they would have to choose the paper pots. Another comment noted they need both. We feel that it would be a disservice to the organic community to not allow for an extension during the petition process. Indeed, after up to 12 years of having these pots allowed, what's one more year in the grand scheme of things? The additives are common in paper products and would surely be in paper that is already being allowed. We are confident that the NOSB will recommend listing paper pots.

⁶ <https://ihsmarkit.com/products/acrylic-acid-acrylate-esters-chemical-economics-handbook.html> and <https://adhesives.specialchem.com/product-categories/polymers-acrylics-acrylic-copolymers-acrylic-ester-copolymers> and <https://patents.google.com/patent/US5543446> and <https://smartech.gatech.edu/bitstream/handle/1853/30192/tps916.pdf> and <http://www.chemicaland21.com/industrialchem/functional%20Monomer/METHYL%20ACRYLATE.htm>