Metallized Disposable Cutlery – FAQ

November 11, 2011

1. Q: How is metallized disposable cutlery made?
   A: Metallized cutlery is made by depositing a thin metal coating on plastic cutlery.

2. Q: What kind of metal is used in WNA's Reflections™ product?
   A: WNA's Reflections product is coated with a thin layer of stainless steel.

3. Q: Were there specific reasons for selecting a coating of stainless steel for Reflections™ product?
   A: We selected a coating of stainless steel because it offered the best combination of coating durability, appearance and safety for use with a broad variety of foods.

4. Q: What is it about stainless steel that made it better suited to this application than other metals?
   A: As the term "stainless" implies, stainless steel offers greater corrosion, abrasion and chemical resistance. Since the metal coating on cutlery is very thin and light, having a tough coating is therefore critical to the cutlery maintaining its stainless appearance during shipping, in-use (e.g. cutting meats) and when subjected to aggressive and acidic foods. Stainless-coated plastic cutlery also looks more like permanent flatware.

5. Q: Do you consider a coating of aluminum to be a suitable alternative for this application?
   A: No. We found aluminum coatings to be unsuitable for this application and determined that we would not offer an aluminum-coated product.

6. Q: What problems did you find with aluminum-coated cutlery?
   A: Aluminum is a soft metal so it chips and scratches very easily in shipment and in use. An aluminum coating is not as durable as stainless. If aluminum-coated cutlery is placed in a residential dishwasher all or most of the coating washes off.

   Photographs of the dishwashing results are shown in Appendix-A. Photograph 1 shows aluminum-coated products with a reflective appearance prior to dish washing. Photograph 2 shows aluminum-coated product after dishwashing. As shown in photograph 2, all of the metal coating has been washed-off from plastic parts showing the parts in their respective "unmetallized" states (clear or black).

7. **Q:** How do aluminum-coated products perform when subjected to acidic foods?
   A: We tested aluminum-coated products in tomato-based spaghetti sauce. As shown in Photograph 3, the exposure to spaghetti sauce caused the aluminum coating to flake off from the fork.

8. **Q:** What is the general relevance of the dishwashing and food-exposure results?
   A: When we tested aluminum-coated products in a dishwasher and against acidic foods we found a number of instances where the aluminum coating was either completely washed away or had flaked off. There is, therefore, a risk that in use with hot liquids (tea, coffee, soup, etc.) and acidic foods some of the aluminum coating may migrate into these foods and/or beverage products and be ingested.

9. **Q:** What are some of the potential health hazards linked with ingesting aluminum?
   A: Aluminum consumption has been widely linked to Alzheimer's, neurotoxicity and other mental illnesses. Although the quantity of aluminum used in aluminum-coated cutlery is very small (and unlikely to pose a significant hazard) it is nonetheless unpalatable to many customers that their food may be contaminated with aluminum particles or that they may ingest minor quantities of aluminum with their food.

10. **Q:** How did the stainless steel-coated cutlery products perform under the same test conditions?
    A: Stainless steel-coated products were subjected to the same conditions and to even more stringent conditions than those used for aluminum coatings. Stainless steel-coated products did not exhibit any coating loss under these tests.

11. Q: Are there any downsides to using stainless for disposable cutlery applications?
    A: Stainless-coated cutlery is generally priced at a premium versus aluminum-coated cutlery. The question is the value proposition of stainless-coated disposable cutlery vs. aluminum-coated product. Based on this broader evaluation, our position is that stainless offers the **best value** as it relates to performance, look and safety for consumers at a reasonable price.

12. **Q:** Does it really matter that the aluminum coating washes off if the cutlery is used only once?
    A: The fact that the aluminum coating washes off indicates that the coating will come off during usage as well. Additionally, our experience is that customers will sometimes reuse these products one or more times, which is possible with a stainless coating but not possible with an aluminum coating.

13. **Q:** I use aluminum pans and aluminum foil all the time. Why aren't these a problem?
    A: There is a big difference between a solid metal article such as an aluminum pan and a very thin coating of that same metal placed onto plastic cutlery. The key to success of this product line is the selection of the metal used and, in particular, having an acceptable bond between the metal coating and the plastic substrate. No such bonding between two different materials is required with a solid aluminum article.

14. **Q:** I've been told that some aluminum-coated cutlery products have a protective overcoat. Doesn't that solve all these problems?

    A: No it does not. As the term implies, a "protective overcoat" is intended to provide protection against environmental challenges or use conditions. In the case of aluminum coatings, a protective overcoat is required to compensate for certain inherent weaknesses of aluminum coatings. A protective overcoat also introduces an additional concern since now the protective overcoat itself must meet the demanding "use-conditions" to which cutlery is subjected such as high temperatures and challenges from acidic and tough-to-cut foods which could cause the protective overcoat itself to degrade. We have, for instance, seen some imported aluminum-coated products that have a non-food approved polyurethane overcoat. Moreover, protective overcoats are normally applied via a spray system and it is difficult to guarantee that the entire part is fully coated.

15. **Q:** What else should I consider in my decision-making?
    A: When evaluating stainless-coated disposable cutlery versus aluminum-coated options, WNA encourages a potential purchaser to do their own research and testing on the performance of metallized cutlery including presence of any protective overcoats. Please do your due diligence in your decision-making process to ensure safety and a positive use experience for your customers. One question that can simplify decision making is the following: "If you knew that part of the aluminum coating could potentially come off into your food, would you be comfortable having your children, family and guests use these products?"

    WNA launched Reflections cutlery in 2003, after extensive testing with a variety of foods including acidic foods, abrasion resistance testing and dishwashing tests. We have only offered Reflections™ cutlery with a stainless coating and would not consider offering a different coating unless it offered improved properties over Stainless Steel.

For more information or samples of WNA's Reflections™ stainless–coated cutlery, please visit us at www.wna.biz or contact us at (888)962-2877.

APPENDIX-A

Photograph 1
Aluminum-coated product as-purchased before dishwashing.

Photograph 2
Aluminum-coated product after dishwashing. As shown, all coating has been washed off and parts show their original "unmetallized" appearance (i.e., clear or black).

Photograph 3
Aluminum coated fork subjected to spaghetti sauce for an hour. The coating flaked off in several locations on the fork head.