

# Chip Challenge Event Rules

## **Description:**

A team of students will design and test a container for shipping a single “Pringles” potato chip via the United States Postal Service. Upon arrival the packages will be evaluated and scored using the format in the scoring section. The goal is to design the package that has the smallest volume/mass and protects the chip so that it arrives at its destination undamaged.

## **Rules and Regulations:**

1. Students will use 1 (regular) Pringles potato chip and materials of their choosing to create a device that will protect the chip on its journey through the postal system. The outer package (box) must be constructed using single-ply cardboard rather than 2-ply or reinforced cardboard materials.

NOTE: Acceptable cardboard includes the type used for Kleenex or cereal boxes. Thick or reinforced cardboard, such as jewelry boxes and special shipping boxes, are not acceptable. You are also not allowed to add materials to the outside of the box except the mailing paper and tape!

2. Students may choose a variety of items for packing materials; however, the materials cannot be wood, metal, glass, or hard plastic and must not leave a wet or greasy spot on a paper towel.

3. The chip must be a plain Pringles chip and may not be modified in any way.

4. The package must have a mass less than 300 grams in the “ready to mail” form, which means it is loaded with a chip, wrapped in paper, and sealed with tape. Students should take into account the mass of the chip, mailing paper, and tape as they prepare their chip containers to make sure they don’t go over the limit.

5. An entry form must be completed for each package, which includes unpacking instructions. The entry form cannot be a part of the packing material or container.

6. Once the package is completed and a single chip has been “loaded”, the package must be wrapped in white or brown mailing paper and sealed with tape. The group number (listed on entry form) must be clearly written on the outside of the package. The following measurements must be made by the sending team after the package is wrapped and recorded on their entry form:

(1) Mass of the package rounded to the nearest tenth of a gram.

(2) Volume of the package in cubic centimeters. Measurements should be taken to the nearest tenth of a centimeter.

NOTE: All measurements must be made using the “ready to mail” form!

*Version A - Individual Package Option*

### **Mailing Procedure:**

Packages must be mailed using the cheapest option available through the United States Postal Service or other mail service agreed upon by the Chip Pals. Each package must be have the To/From addresses written clearly on the outside of the box along with the phrase “Chip Challenge.” No other information is allowed on the outside of the package, such as “Fragile” or “Handle with Care”. All the entry forms must be sealed in one envelope and mailed at the same time as the packages. Chip Pals are not allowed to open the packages until they have received the entry forms!

### **Scoring Procedures:**

Once the entry forms and all of the packages have been received, the receiving team members may open the individual packages under their teacher’s supervision. Receiving teams should review the unpacking instructions on the entry form before opening the package. Receiving teams will need to determine the rating of the chip using the rating scale and record that information on the entry form.

### **Overall Score:**

Final scores will be divided into two categories: Perfect Pringles and Pringles Pieces. Receiving teams will need to use the information on the entry form to calculate the final score. The lowest overall score will be the one used to determine the winner. In the case of a tie, the package with the smallest mass will be declared the winner.

$$\text{Final Score} = [\text{Mass (g)} \times \text{Volume (cm}^3)] \div \text{Rating}$$

### **Scoring Examples:**

Team 1:

Mass = 145 g

Volume = 240 cu. cm

Rating = 100 (perfect chip)

SCORE =  $(145 \times 240) \div 100 = 348$  points

Team 2:

Mass = 145 g

Volume = 240 cu. cm

Rating = 50 (cracked chip)

Score:  $(145 \times 240) \div 50 = 696$  points

# Chip Challenge

## Final Check List

- (1) Are all the packages made out of single-ply cardboard not 2-ply or reinforced?
- (2) Are the materials acceptable?
  - No wood, metal, glass, or hard plastic materials have been used.
  - Materials do not leave a wet or greasy mark on a paper towel.
  - The chip has not been modified in any way.
- (3) Does each package contain only 1 Pringles potato chip?
- (4) Are the entry forms complete?
  - Team members have included the basic information (team name, team number, members, school, & grades)
  - Team members have written unpacking instructions.
  - Team members have recorded mass and volume of the “ready to mail” packages.  
NOTE: Ready-to-mail refers to packages that are wrapped in mailing paper and sealed with tape.
- (5) Did the students include their team number (listed on entry form) on the outside of each package?
- (6) Are you ready to mail the packages?
  - Did you wrap all the packages in mailing paper and seal the edges with tape?
  - Did you write the To/From addresses on the outside of each package?
  - Did you write “Chip Challenge” on the outside of each package?  
NOTE: No other information is allowed on the outside of the packages, such as “Fragile” or “Handle with Care”.
  - Did you put all the forms (entry and school information page) in one envelope? Be sure to make a copy for your records!

Note for teachers:

Make copies of all entry forms for your records. Enclose all forms (entry forms and the school information page) in a separate envelope and mail with your packages. Receiving teams are not allowed to open packages until all the forms and packages have been received!