



German Made Class B Rocket



Figure 1: Rocket Specimen.

Manufacturer: *German, company unknown*
Total Weight: 389g
Stick Weight: 92g
Stick Size: 48" long x 9/16" square, spruce

Engine Specs:

Length: 4-1/16"
O.D.: 1-1/16"
I.D.: 15/16"
Weight: 100g

Header Specs:

Length: 4" long including nose cone
I.D.: 3" w/2-1/4" O.D. ball shell inside
Weight: 90g facade + 70g ball shell
Ball Hemis: 2" I.D., 2-1/8" O.D.
Paste Layers: 4
Stars: 37g variegated, size range from 3/32" to 7/32"
Burst: 13g flash coated rice hulls, 4:1 ratio

Analysis:

This rocket zips into the sky with a charcoal tail, then immediately breaks into a nice round spread of yellow, red, green, blue and white variegated stars. The only thing it lacks is a brief delay between the rockets flight and the header burst, which creates an unexpectedly early break while the rocket is still moving upward.

The rocket was chosen for autopsy due to its suspiciously large heading. While the rocket did produce a good break, and it is not impossible for a 3 lb rocket to take up a 3" canister shell, there was just an underlying suspicion that this header contained more air than a bag of Doritos from an airport vending machine.

As can be seen in figures 2 through 4, the large 3" dia x 4" long cylindrical heading is a facade for a 2-1/4" paper ball shell. You have to admit, Figure 1 looks far more impressive than Figure 3, which suggests that this rocket was designed for consumer purchase in its country of origin. The amount of flash used in the heading keeps this rocket off the Class C shelves in America



Figure 2: Heading contains over 50% empty space.



Figure 3: The 2-1/4" ball shell heading, likely made in China.



Figure 4: High quality modular plastic pieces for quick assembly.



Figure 5: Aluminum engine casing.

however.

The engine consists of an aluminum pipe that is open at one end, with the fuel loaded to within 1/2" below the edge of the open end. A noticeable deformity in the wall of the aluminum pipe may be designed to keep the composition from blowing out the unplugged end of the tube. This engine was encased inside a spiral wound tube that added 1/8" to the O.D. and provided a glueable surface for the plastic components.

The ball shell heading was probably made in China and imported by the German manufacturer. Four layers of typical strip pasted paper enclosed a set of Chinese hemispheres containing a poka style charge of flash hulls and small multi-colored stars. The star compositions all appeared to contain magnalium to brighten the colors. The stars also seem to have been rolled without any cores at all, which helps achieve the maximum burn time from such small stars as these. It is possible that these small core-less stars are byproducts from larger star rolling operations, screened out and put aside for products that require them. The wide variance in size between the smallest and largest stars is further evidence that they may indeed be star rolling scraps. All stars contained a thin 1/64" outer layer of black powder type prime.

While the rice hulls seem to have been coated with flash while wet, there was also a good deal of loose flash amongst the stars and hulls. The type of flash used had a rather slow burn rate, failing to produce the "thump" that faster burning flash creates when small amounts are burned in open air. The type of aluminum used was something similar to American Dark flake aluminum.

The ball shell was fused by inserting several pieces of black match through a tube that protruded through the shell wall. The ball was glued to the plastic flange which was mounted onto the cardboard tube that sheathed the aluminum driver.

Weighing in at only 70 grams, the hobbyist would do well to develop a similar version of this header for use on rockets and girandolas. With no need to impress hapless consumers with illusions, which added an unnecessary 90 grams to the payload of this rocket, such a heading should work well on two or even one pound rockets. 🔥



Figure 6: Inside the header, flash coated rice hulls with core-less colored round stars.