



STF 4" Red Scrambling Comet Mine

by *Michael Fales*



Figure 1: Outside packaging of the mine.

Manufacturer:	STF
Total Weight:	363.5 g
Lift Charge:	36 g 4FA
Stars:	250g Red Scrambling Comets
Case O.D.:	3-5/8"
Case Thickness:	1/8"
Case Height:	3"



Figure 2: Bottom of mine sealed with a cardboard plug.

Here we delve into a Chinese commercial mine product. Mine construction is not very complicated hence this article will not reveal any ground breaking new construction techniques. However, the scrambling comets provided with this mine are of unique construction and warrant the inspection.

The body of the mine is a thin corrugated tube of 3-5/8" OD and 3" tall. This tube houses all the contents including the lift. A paper plug is placed at the bottom of the tube and glued in place around the circumference of the plug. The mine body tube has one turn of medium weight kraft glued onto the top 1/2" and is tall enough to gather together and tie around the quickmatch leader. Figure 3 shows the wrap partially removed, revealing the quickmatch leader and contents of the mine. The scrambling red comets completely fill the mine to the top of the case.

After removing the comets a perforated plug is shown just above the lift. The quickmatch leader resides along the wall of the tube and the perforated plug holds it in place with a snug press fit. Although it is actually a plug, this style of construction is commonly known as the perforated disk method. Only three holes are provided for fire transfer from the lift and seem sufficient to ignite all the comets. Below the plug a plastic lift bag is tied off around the end of the

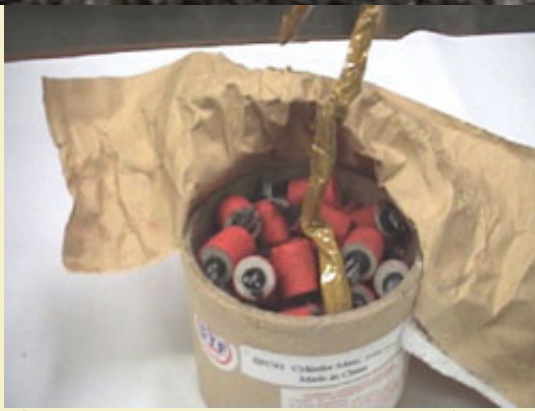


Figure 3: Mine tube is nosed with a few turns of kraft paper.



Figure 4: Perforated "piston" disk above the lift charge.



Figure 5: Mine components disassembled.

leader. The reason for bagging the lift charge is to prevent the powder grains from migrating through the holes of the disk and entering into the star compartment, which would diminish the lift charge and under-lift the mine. The lift bag contains 36 grams of 4FA black powder lift. The end of the leader is tied off into the bag and no black match has been bared. It appears enough fire will blast from the match pipe to reliably light the lift bag. This method of mine construction will produce a wider and lower effect than the cup or piston method. This may provide a better display considering the stars are self propelling and will stray from the typical mine pattern.

The real interest here is the construction of the scrambling comets. They are not go-getter type stars or manufactured in a tube at all for that matter. The photograph may appear to be a thick walled tube filled with black powder composition, but they are actually pressed comets that have a primed cavity in the center of one end. This cavity is the primary area of ignition using four strands of Chinese style paper fuse embedded in a black slurry filling the cavity completely. A coating of thick red paint covers the sides and opposite end of the comet to prevent ignition. By burning from the center out at one end, the comet essentially works as a small colored rocket motor with no stabilization. This creates the scrambling effect in the sky. The use of red paint on the red scrambling comets leads one to presume that the paint might possibly match the effect. Unfortunately, no other colors were available for autopsy to confirm this. 🔥



Figure 6: Lift charge and leader.



Figure 7: Close-up of scrambling cavity star.