

# ESTES 1/4A3T

## CERTIFIED VALUES

Total Impulse: 0.625 newton-seconds  
Delays: 3 seconds

Propellant Type: Black Powder  
Propellant Mass: 0.83 grams

Casing Dimensions: 13 mm × 45 mm

Certification Date: 98-October-1  
Contest Use Date: 98-November-30

Certification Type: Model Rocket

## STATIC TEST DATA

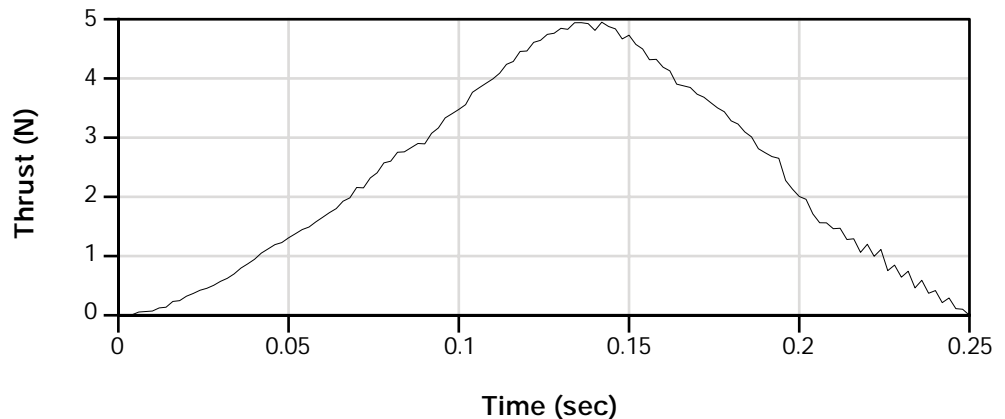
Date Tested: 98-August-23

Total Impulse: 0.59 newton-seconds ( $\sigma$  0.04)  
Peak Thrust: 4.95 newtons ( $\sigma$  0.32)  
Burn Time: 0.25 seconds ( $\sigma$  0.01)  
Average Thrust: 2.36 newtons

Mass After Firing: 3.8 grams

Delay Time	Average Measured Delay	Initial Mass	Mfg Recommended Max Liftoff Weight
3	2.30	6.1 g	

## TYPICAL THRUST-TIME CURVE



## REMARKS

; Estes 1/4A3T RASP.ENG file made from NAR published data  
; File produced October 3, 2000  
; The total impulse, peak thrust, average thrust and burn time are  
; the same as the averaged static test data on the NAR web site in  
; the certification file. The curve drawn with these data points is as  
; close to the certification curve as can be with such a limited  
; number of points (32) allowed with wRASP up to v1.6.

```
1/4A3T 13 45 3 .00083 .0061 E  
0.016 0.243  
0.044 1.164  
0.080 2.698  
0.088 2.851  
0.096 3.312  
0.105 3.804  
0.116 4.325  
0.129 4.754  
0.131 4.754  
0.135 4.950  
0.139 4.815  
0.143 4.814  
0.149 4.660  
0.157 4.289  
0.173 3.548  
0.187 2.808  
0.194 2.592  
0.197 2.130  
0.202 1.913  
0.206 1.512  
0.213 1.389  
0.218 1.112  
0.227 0.802  
0.236 0.493  
0.241 0.277  
0.250 0.000
```

