

9. The aluminum bottle, first introduced in 1991 by CCL Container for mainly personal household items such as lotions, has become popular with beverage manufactures. Besides being lightweight and requiring less packaging, the aluminum bottle is reported to cool faster and stay cold longer than typical glass bottles. A small brewery tests this claim (in minutes) required to chill a bottle of beer from room temperature (75° F) to serving temperature (45° F). Test the claim that the aluminum bottle chills faster than the typical glass bottle.

			Sample Date	
√/Claim	$H_0: \mu_1 = \mu_2$		<u>Glass</u>	<u>Aluminum</u>
√/Data	$H_1: \mu_1 < \mu_2$ ← claim		$n_2 = 42$	$n_1 = 35$
√/α			$\bar{x}_2 = 133.8$	$\bar{x}_1 = 92.4$
√/TS	$\sigma = 0.05$ (our choice)		$s_2 = 9.9$	$s_1 = 7.3$
√/P-Value				
√/Con				

Test Statistic (No pooling)

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad t = \frac{(92.4 - 133.8) - 0}{\sqrt{\frac{(7.3)^2}{35} + \frac{(9.9)^2}{42}}} \quad t \approx \boxed{-21.08}$$

P-Value $\approx \boxed{0^+}$

Reject H_0

There is sufficient evidence to support the claim that the aluminum bottle chills faster than the typical glass bottle.