

Cole Steel (MW-12) PCE											
General Statistics											
Total Number of Observations					6	Number of Distinct Observations					6
Number of Detects					5	Number of Non-Detects					1
Number of Distinct Detects					5	Number of Distinct Non-Detects					1
Minimum Detect					0.58	Minimum Non-Detect					0.47
Maximum Detect					0.9	Maximum Non-Detect					0.47
Variance Detects					0.0165	Percent Non-Detects					16.67%
Mean Detects					0.8	SD Detects					0.128
Median Detects					0.85	CV Detects					0.16
Skewness Detects					-1.813	Kurtosis Detects					3.423
Mean of Logged Detects					-0.235	SD of Logged Detects					0.178
Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,											
refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,											
but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).											
The Chebyshev UCL often results in gross overestimates of the mean.											
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.											
Normal GOF Test on Detects Only											
Shapiro Wilk Test Statistic					0.801	Shapiro Wilk GOF Test					
1% Shapiro Wilk Critical Value					0.686	Detected Data appear Normal at 1% Significance Level					
Lilliefors Test Statistic					0.3	Lilliefors GOF Test					
1% Lilliefors Critical Value					0.396	Detected Data appear Normal at 1% Significance Level					
Detected Data appear Normal at 1% Significance Level											
Note GOF tests may be unreliable for small sample sizes											
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
KM Mean					0.745	KM Standard Error of Mean					0.0737
90KM SD					0.162	95% KM (BCA) UCL					0.845
95% KM (t) UCL					0.894	95% KM (Percentile Bootstrap) UCL					0.853
95% KM (z) UCL					0.866	95% KM Bootstrap t UCL					0.842
90% KM Chebyshev UCL					0.966	95% KM Chebyshev UCL					1.066
97.5% KM Chebyshev UCL					1.205	99% KM Chebyshev UCL					1.479
Gamma GOF Tests on Detected Observations Only											
A-D Test Statistic					0.661	Anderson-Darling GOF Test					
5% A-D Critical Value					0.678	Detected data appear Gamma Distributed at 5% Significance Level					

K-S Test Statistic				0.32	Kolmogorov-Smirnov GOF					
5% K-S Critical Value				0.357	Detected data appear Gamma Distributed at 5% Significance Level					
Detected data appear Gamma Distributed at 5% Significance Level										
Note GOF tests may be unreliable for small sample sizes										
Gamma Statistics on Detected Data Only										
k hat (MLE)				42.33	k star (bias corrected MLE)					17.06
Theta hat (MLE)				0.0189	Theta star (bias corrected MLE)					0.0469
nu hat (MLE)				423.3	nu star (bias corrected)					170.6
Mean (detects)				0.8						
Gamma ROS Statistics using Imputed Non-Detects										
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)										
For such situations, GROS method may yield incorrect values of UCLs and BTVs										
This is especially true when the sample size is small.										
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
Minimum				0.538	Mean					0.756
Maximum				0.9	Median					0.825
SD				0.157	CV					0.208
k hat (MLE)				25.28	k star (bias corrected MLE)					12.75
Theta hat (MLE)				0.0299	Theta star (bias corrected MLE)					0.0593
nu hat (MLE)				303.3	nu star (bias corrected)					153
Adjusted Level of Significance (β)				0.0122						
Approximate Chi Square Value (153.00, α)				125.4	Adjusted Chi Square Value (153.00, β)				116.4	
95% Gamma Approximate UCL				0.923	95% Gamma Adjusted UCL				0.994	
Estimates of Gamma Parameters using KM Estimates										
Mean (KM)				0.745	SD (KM)					0.162
Variance (KM)				0.0261	SE of Mean (KM)					0.0737
k hat (KM)				21.27	k star (KM)					10.75
nu hat (KM)				255.3	nu star (KM)					129
theta hat (KM)				0.035	theta star (KM)					0.0693
80% gamma percentile (KM)				0.926	90% gamma percentile (KM)				1.047	
95% gamma percentile (KM)				1.154	99% gamma percentile (KM)				1.373	
Gamma Kaplan-Meier (KM) Statistics										
Approximate Chi Square Value (128.97, α)				103.7	Adjusted Chi Square Value (128.97, β)				95.56	
95% KM Approximate Gamma UCL				0.926	95% KM Adjusted Gamma UCL				1.005	

Lognormal GOF Test on Detected Observations Only												
Shapiro Wilk Test Statistic					0.766	Shapiro Wilk GOF Test						
10% Shapiro Wilk Critical Value					0.806	Detected Data Not Lognormal at 10% Significance Level						
Lilliefors Test Statistic					0.327	Lilliefors GOF Test						
10% Lilliefors Critical Value					0.319	Detected Data Not Lognormal at 10% Significance Level						
Detected Data Not Lognormal at 10% Significance Level												
Lognormal ROS Statistics Using Imputed Non-Detects												
Mean in Original Scale					0.756	Mean in Log Scale					-0.3	
SD in Original Scale					0.158	SD in Log Scale					0.225	
95% t UCL (assumes normality of ROS data)					0.886	95% Percentile Bootstrap UCL					0.852	
95% BCA Bootstrap UCL					0.842	95% Bootstrap t UCL					0.863	
95% H-UCL (Log ROS)					0.939							
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
KM Mean (logged)					-0.322	KM Geo Mean					0.725	
KM SD (logged)					0.242	95% Critical H Value (KM-Log)					2.132	
KM Standard Error of Mean (logged)					0.111	95% H-UCL (KM -Log)					0.941	
KM SD (logged)					0.242	95% Critical H Value (KM-Log)					2.132	
KM Standard Error of Mean (logged)					0.111							
DL/2 Statistics												
DL/2 Normal						DL/2 Log-Transformed						
Mean in Original Scale					0.706	Mean in Log Scale					-0.437	
SD in Original Scale					0.258	SD in Log Scale					0.52	
95% t UCL (Assumes normality)					0.918	95% H-Stat UCL					1.382	
DL/2 is not a recommended method, provided for comparisons and historical reasons												
Nonparametric Distribution Free UCL Statistics												
Detected Data appear Normal Distributed at 1% Significance Level												
Suggested UCL to Use												
95% KM (t) UCL					0.894							
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.												
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												