

JMP Output for Injection Molding Experiment

Response Shrinkage - Singularity Details

$A*B*C = E = A*D*F = B*C*D*E*F$
 $B*C = A*E = D*F = A*B*C*D*E*F$
 $A*C = B*E = A*B*D*F = C*D*E*F$
 $C = A*B*E = B*D*F = A*C*D*E*F$
 $A*B = C*E = A*C*D*F = B*D*E*F$
 $B = A*C*E = C*D*F = A*B*D*E*F$
 $A = B*C*E = A*B*C*D*F = D*E*F$
 $\text{Intercept} = A*B*C*E = B*C*D*F = A*D*E*F$
 $A*B*C*D = D*E = A*F = B*C*E*F$
 $B*C*D = A*D*E = F = A*B*C*E*F$
 $A*C*D = B*D*E = A*B*F = C*E*F$
 $C*D = A*B*D*E = B*F = A*C*E*F$
 $A*B*D = C*D*E = A*C*F = B*E*F$
 $B*D = A*C*D*E = C*F = A*B*E*F$
 $A*D = B*C*D*E = A*B*C*F = E*F$
 $D = A*B*C*D*E = B*C*F = A*E*F$

Analysis of Variance

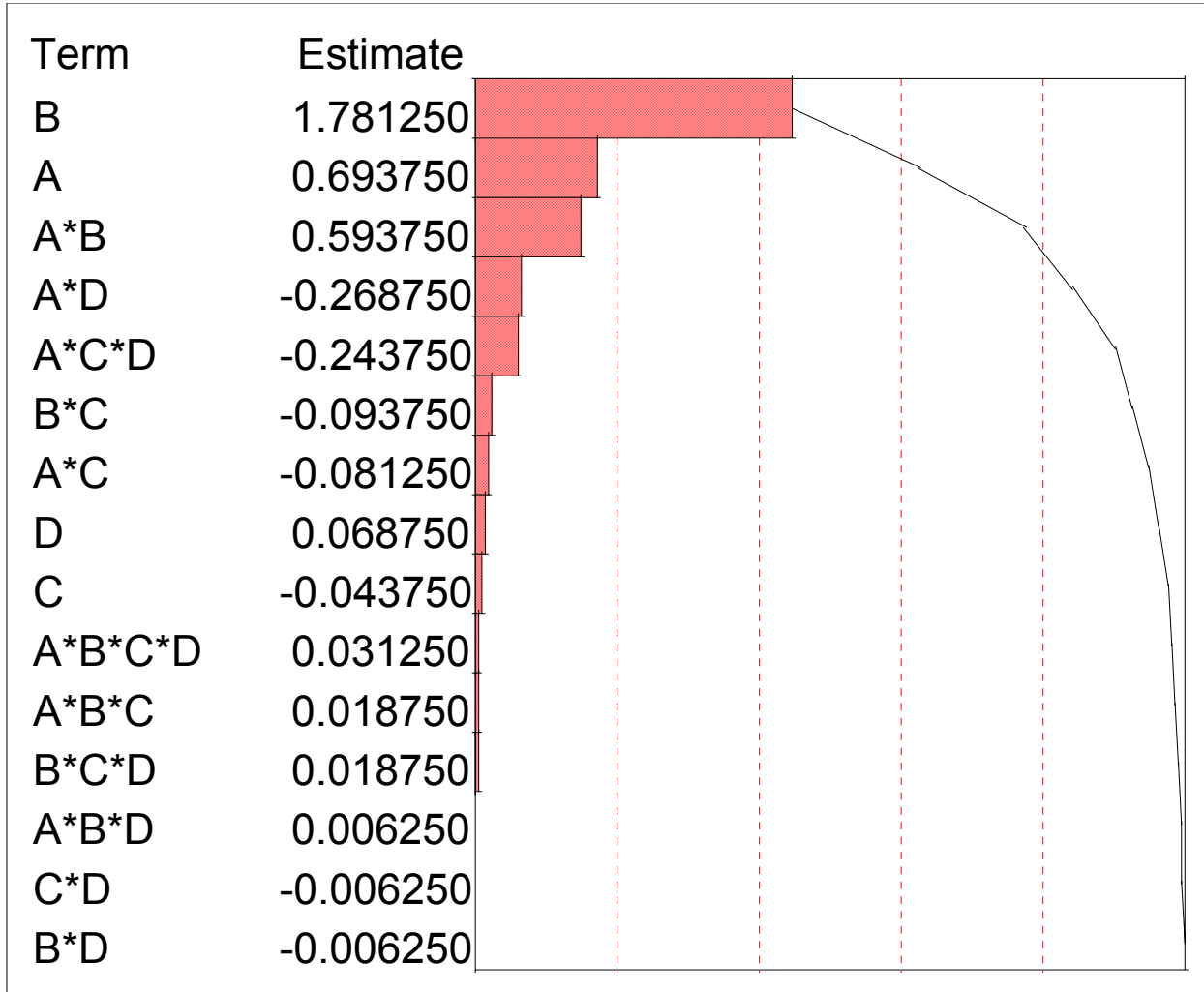
Source	DF	Sum of Squares	Mean Square	F Ratio
Model	15	66.594375	4.43962	.
Error	0	0.000000	.	Prob > F
C. Total	15	66.594375		.

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.73125	.	.	.
A	0.69375	.	.	.
B	1.78125	.	.	.
A*B	0.59375	.	.	.
C	-0.04375	.	.	.
A*C	-0.08125	.	.	.
B*C	-0.09375	.	.	.
A*B*C	0.01875	.	.	.
D	0.06875	.	.	.
A*D	-0.26875	.	.	.
B*D	-0.00625	.	.	.
A*B*D	0.00625	.	.	.
C*D	-0.00625	.	.	.
A*C*D	-0.24375	.	.	.
B*C*D	0.01875	.	.	.
A*B*C*D	0.03125	.	.	.

Effect Screening

Pareto Plot of Estimates



Response Shrinkage - Reduced Model (A, B and AB)

Summary of Fit

RSquare	0.962647
RSquare Adj	0.953309
Root Mean Square Error	0.455293
Mean of Response	2.73125
Observations (or Sum Wgts)	16

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	64.106875	21.3690	103.0864
Error	12	2.487500	0.2073	Prob > F
C. Total	15	66.594375		<.0001

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.73125	0.113823	24.00	<.0001
A	0.69375	0.113823	6.09	<.0001
B	1.78125	0.113823	15.65	<.0001
A*B	0.59375	0.113823	5.22	0.0002

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
A	1	1	7.700625	37.1487	<.0001
B	1	1	50.765625	244.8995	<.0001
A*B	1	1	5.640625	27.2111	0.0002

Response Shrinkage - Full Factorial Model in A, B and C.

Summary of Fit

RSquare	0.966889
RSquare Adj	0.937917
Root Mean Square Error	0.525
Mean of Response	2.73125
Observations (or Sum Wgts)	16

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	7	64.389375	9.19848	33.3732
Error	8	2.205000	0.27562	Prob > F
C. Total	15	66.594375		<.0001

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.73125	0.13125	20.81	<.0001
A	0.69375	0.13125	5.29	0.0007
B	1.78125	0.13125	13.57	<.0001
A*B	0.59375	0.13125	4.52	0.0019
C	-0.04375	0.13125	-0.33	0.7475
A*C	-0.08125	0.13125	-0.62	0.5531
B*C	-0.09375	0.13125	-0.71	0.4954
A*B*C	0.01875	0.13125	0.14	0.8899

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
A	1	1	7.700625	27.9388	0.0007
B	1	1	50.765625	184.1837	<.0001
A*B	1	1	5.640625	20.4649	0.0019
C	1	1	0.030625	0.1111	0.7475
A*C	1	1	0.105625	0.3832	0.5531
B*C	1	1	0.140625	0.5102	0.4954
A*B*C	1	1	0.005625	0.0204	0.8899

Response Shrinkage - Full Factorial Model in A, B and D.

Summary of Fit

RSquare	0.981155
RSquare Adj	0.964665
Root Mean Square Error	0.396074
Mean of Response	2.73125
Observations (or Sum Wgts)	16

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	7	65.339375	9.33420	59.5009
Error	8	1.255000	0.15687	Prob > F
C. Total	15	66.594375		<.0001

Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	2.73125	0.099019	27.58	<.0001
A	0.69375	0.099019	7.01	0.0001
B	1.78125	0.099019	17.99	<.0001
A*B	0.59375	0.099019	6.00	0.0003
D	0.06875	0.099019	0.69	0.5071
A*D	-0.26875	0.099019	-2.71	0.0265
B*D	-0.00625	0.099019	-0.06	0.9512
A*B*D	0.00625	0.099019	0.06	0.9512

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
A	1	1	7.700625	49.0876	0.0001
B	1	1	50.765625	323.6056	<.0001
A*B	1	1	5.640625	35.9562	0.0003
D	1	1	0.075625	0.4821	0.5071
A*D	1	1	1.155625	7.3665	0.0265
B*D	1	1	0.000625	0.0040	0.9512
A*B*D	1	1	0.000625	0.0040	0.9512