

Fig. 1

	Comp. Ex. 1	Comp. Ex. 2	Comp. Ex. 3	Comp. Ex. 4	Comp. Ex. 5	Comp. Ex. 6
API Group I Base Oil	96	96	96	95	96	96
Detergent 1	2	2			1	1
Detergent 2	1	1				
Detergent 3						2
Detergent 4			3	4	2	
Detergent 5						
Detergent 6						
ZDDP 1	0.25					
ZDDP 2		0.4	0.4	0.4	0.4	0.4
ZDDP 3		0.2	0.2	0.2	0.2	0.2
Other Additives	0.4	0.4	0.3	0.3	0.4	0.4
Zinc to Calcium Ratio	0.103	0.245	0.210	0.157	0.199	0.263
ASTM D2896 Total Base Number	6	5.7	7.6	9.9	7.7	6
Komatsu Hot Tube Test, 285°C	5.5	3.5	0.5	8	2	3.5
Komatsu Hot Tube Test, 300°C	1	1		4.5		
High Shear Demulsibility Test						
Free Water, mL	4	4.4	0	1	4.4	2.8
Emulsion, mL	0.2	0.1	100	4	0.2	2.2
Oil Layer, mL	93	92.6	0	94	95.4	95
Water in Oil, wt%	0.60	0.67	3.77	1.13	0.46	0.25

2/3

Fig. 1 (Cont.)

	Comp. Ex. 7	Comp. Ex. 8	Comp. Ex. 9	Comp. Ex. 10	Comp. Ex. 11
API Group I Base Oil	95	94	95	96	95
Detergent 1	1				
Detergent 2					
Detergent 3	3				
Detergent 4		2	2		
Detergent 5					4
Detergent 6		3	2	3	
ZDDP 1					
ZDDP 2	0.4	0.4	0.4	0.4	0.4
ZDDP 3	0.2	0.2	0.2	0.2	0.2
Other Additives	0.4	0.3	0.3	0.3	0.3
Zinc to Calcium Ratio	0.209	0.221	0.245	0.739	0.172
ASTM D2896 Total Base Number	7.4	7.2	6.6	2.9	9.1
Komatsu Hot Tube Test, 285°C	4.5	6.5	2	4.5	5.5
Komatsu Hot Tube Test, 300°C		1		2	3
High Shear Demulsibility Test					
Free Water, mL	0	4.2	4.5	4.4	0
Emulsion, mL	6	0	0	0	4.6
Oil Layer, mL	92	91.8	95.5	91.6	90.4
Water in Oil, wt%	2.74	0.26	0.40	0.20	0.79

3/3

Fig. 1 (Cont.)

	Comp. Ex. 12	Ex. 1	Ex. 2	Ex. 3	Ex. 4
API Group I Base Oil	95	96	95	96	96
Detergent 1	1.5	1	1	1.5	1
Detergent 2					
Detergent 3					0.5
Detergent 4		2.5	3	2	2
Detergent 5					
Detergent 6	3				
ZDDP 1					
ZDDP 2	0.4	0.4	0.4	0.4	0.4
ZDDP 3	0.2	0.2	0.2	0.2	0.2
Other Additives	0.3	0.4	0.4	0.4	0.4
Zinc to Calcium Ratio	0.243	0.172	0.151	0.168	0.181
ASTM D2896 Total Base Number	6.3	8.8	10	9	8.4
Komatsu Hot Tube Test, 285°C	4	6	6	6	6
Komatsu Hot Tube Test, 300°C	1	3.5	3.5	3	3.5
High Shear Demulsibility Test					
Free Water, mL	4.2	4	4.4	4	4.4
Emulsion, mL	0.2	0.4	0.2	0.4	0.2
Oil Layer, mL	95.6	95.6	95.4	95.6	93.4
Water in Oil, wt%	0.40	0.71	0.66	0.37	0.47