

# FLUID POWER DATA

## HYDRAULIC FLUID INFORMATION



### ISO VG30 THRU 68 HYDRAULIC OIL VS SYNTHETIC\*

	32	RANDO 46	68	*QUINTO LUBRIC 822-300
APPEARANCE	LIGHT PALE	LIGHT PALE	LIGHT PALE	LIGHT AMBER
GRAVITY, API°	30.7	29.3	28.6	
GRAVITY at 60°F	.87	.88	.88	.916
FLASH POINT °F	385	425	445	500
POUR POINT., °F	-25	-20	-20	-15
VISCOSITY	cST at 40°C	30.1	46.2	65.5
	cST at 100°C	5.3	6.9	8.7
	SUS at 100°F	155	237	339
	SUS at 210°F	44	49	55
VISCOSITY INDEX NEUT. # (oxal)	106	105	103	165

\*CONTACT  
QUAKER CHEMICAL FOR  
THEIR DEFINITION OF  
BIODEGRADABLE:  
(610) 832-4000

### OTHER HYDRAULIC FLUIDS

DESIGNATION/ MANUFACTURER	UNIVIS J-43 ESSO STANDARD OIL COMPANY	SKYDROL 500A MONSANTO CHEMICAL COMPANY	PYDRAUL F-9 MONSANTO CHEMICAL COMPANY	*QUINTO LUBRIC 822-300 QUAKER CHEMICAL	HOUGHTON-SAFE 620 E.F. HOUGHTON AND COMPANY	
BASE STOCK USE	PETROLEUM AIRCRAFT MIL-H-5606B	PHOSPHATE ESTER AIRCRAFT	PHOSPHATE ESTER INDUSTRIAL FIRE RESISTANT	SYNTHETIC INDUSTRIAL FIRE RESISTANT	WATER GLYCOL INDUSTRIAL FIRE RESISTANT	
SG/ 60/60°F	0.848	1.07	1.28	.916	1.055	
BULK MODULUS, psi	270,000	308,000	387,000	266,900	285,000	
THERMAL EXPANSION COEFFICIENT, 1/°F	0.0005	0.00045	0.00041	0.00041	0.00034	
VISCOSITY, cs °F						
	-65	2130	2300	-	-	
	-40	500	480	-	-	
	0	100	90	4000/30°F	1825/5°F	1079
	100	14.3	11.5	47	68/100°F	43
	210	5.1	3.9	5.5	11.5/212°F	16/155°F
400	1.9	-	-	-	-	
VISCOSITY-TEMPERATURE COEFFICIENT. (VTC)	0.645	0.695	0.883	-	-	
SPECIFIC HEAT BTU/LB-°F	0.5	0.38	0.32	0.49	0.8	
THERMAL CONDUCTIVITY BTU/(HR)(FT²)(°F/FT)	0.08	0.078	0.067	-	.025	
FLASH POINT, °F	225	360	430	500°F	NONE	
FIRE POINT, °F	275	425	675	550°F	NONE	
AUTOGENOUS IGNITION TEMPERATURE, °F	700	1100	1100	-	-	
POUR POINT, °F	-90	-85	-5	-15	-20	

### TEMPERATURE VS VISCOSITY

SSU

180°F = 53
170°F = 57
160°F = 61
150°F = 69
140°F = 77
130°F = 87
120°F = 100
110°F = 120
100°F = 150
90°F = 190
80°F = 240
70°F = 320
60°F = 420
50°F = 600
40°F = 850
30°F = 1200
20°F = 2000
10°F = 3000
0°F = 5000

### SPECIFIC GRAVITY @ 70°F

GASOLINE = .75
GLYCERINE = 1.26
MIL-H-5606 = .84
HYDRAULIC OIL = .87
LUB-OIL = .90
MERCURY = 13.6
WATER = 1.00
PHOSPHATE ESTER = 1.1
OIL-WATER GLYCOL = 1.05

### SUS @ 100°F

SAE 10 OIL	175
	300
	450
	700
	1500
	3000
	4000
GASOLINE	30
WATER	30
MIL 5605	77
ATF -A	175
ATF-F	325

### COMPRESSION OF OIL

$$V_A = \frac{P(V)}{250,000}$$

(1/2% PER 1,000 PSI)  
AFTER OIL FLOWS AND AERATES 3% PER 1,000 PSI A SAFE VOLUME

V<sub>A</sub> = AV COMPRESSED VOLUME, IN<sup>3</sup>  
P = PRESSURE, PSI  
V = TOTAL UNCOMPRESSED VOLUME

### EXPANSION OF OIL

$$L = AT (V) (.0005)$$

L = EXPANSION, IN<sup>3</sup>  
AT = CHANGE IN TEMP, °F  
V = TOTAL VOLUME, IN<sup>3</sup>