



ANTI-WEAR & EXTREME PRESSURE ADDITIVES

TPS®			Other extreme pressure additives				
TPS 20	TPS 32	TPS 44	VPS 11	VPS 15	VPS 17	ESTEROL 10S	ESTEROL 18S

Chemical descriptive		Dialkyl trisulfide	Dialkyl pentasulfide	Dialkyl trisulfide	Sulfurized vegetable fatty esters	Sulfurized vegetable fatty esters	Sulfurized vegetable fatty esters	Sulfurized vegetable fatty esters	Sulfurized vegetable fatty esters
CAS number		68425-15-0	68425-15-0	68937-96-2	68153-70-8	68153-70-8	68390-93-2	68390-93-2	68390-93-2
EINECS registration		270-335-7	270-335-7	273-103-3	conform	conform	269-913-1	269-913-1	269-913-1
	Method								
Sulfur content (weight %)	ASTM D 4294	21.5	30.5	44	11	15	17	10	18.5
Active Sulfur @ 150°C (weight %)	ASTM D-1662	4	23	18	6	8	13	3	7
Kinematic viscosity @ 40°C (mm ² /s)	ASTM D-445	53	164	5	250	350	30	25	50
Flash Point (°C)	Closed Cup ASTM-D 93	139	139	93	151	148	130	nd	nd
	Open Cup ASTM D 92	175	163	114	180	180	nd	196°C	196°C
Color	Gardner ASTM-D 1544	2	6	4	15	15	12	n/a	n/a
	ASTM-D 1500	0.3	1	0.5	5	5	4.5	8	8
Pour Point (°C)	ASTM- D97-96a	≤ -20°C	≤ -20°C	≤ +10°C	≤ -10°C	≤ -10°C	≤ -10°C	9	9
Copper Corrosion	ASTM-D 130	1a-1b	4a-4c	1a-1b	1a-1b	1a-1b	4a-4c	2a	4a-4c
Four Ball test* (Welding Load, kg)	ASTM-D 2783	315	500	400	250	400	315	250	315
Metalworking fluids	Machining	Ferrous	•	•		•	•	•	•
		Non-Ferrous	•			•	•	•	
	Forming	Ferrous	•	•		•	•	•	•
		Non-Ferrous	•			•	•	•	•
	(semi-) synthetic fluids		•	•		•	•	•	•
	Gear Oils		•		•				
Greases		•	•	•	•	•	•	•	

n/a : not applicable

nd : not determined

(*) 5% by weight in a paraffinic base oil

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