Species Tag:	32005	Name:	O2-snglt-dlta
Version:	2		Oxygen molecule,
Date:	Feb. 2010		metastable $a\ ^1\Delta_g$ state
Contributor:	H. S. P. Müller		
Lines Listed:	52	Q(300.0)=	149.5718
Freq. (GHz) <	4495	Q(225.0)=	112.7410
Max. J:	54	Q(150.0)=	75.9346
LOGSTR0=	-10.0	Q(75.00)=	39.1666
LOGSTR1=	-20.0	Q(37.50)=	20.8328
Isotope Corr.:	0.0	Q(18.75)=	11.7544
Egy. (cm^{-1}) >	7882.4	Q(9.375)=	7.3900
μ_a =		A=	
μ_b =	magnetic	B=	42504.52
μ_c =		C=	

This is a combined CDMS/JPL catalog entry. The $a\ ^1\Delta_g$ electronic state is the second lowest electronic state, almost 8000 cm $^{-1}$ above ground. It is metastable, fairly long-lived. Transitions in a discharge environment can be fairly strong.
The data have been summarized in
(1) B. J. Drouin, S. Yu, C. E. Miller, H. S. P. Müller, F. Lewen, S. Brünken, and H. Habara, 2010, J. Quant. Spectrosc. Radiat. Transfer (in press). This work provides new data between 0.84 and 1.95 THz. Additional data were taken from
(2) K. W. Hillig, C. C. W. Chiu, W. G. Read, and E. A. Cohen, 1985, J. Mol. Spectrosc. **109**, 205

For multiply measured transitions differing in uncertainties by less than a factor of 2 weighted averaged have been derived. Predictions should be viewed with caution above 3 THz. The partition function was calculated as if the lowest rotational level were at an energy of zero. The state is basically unpopulated at thermal equilibrium. Intensities were calculated based on g values obtained by magnetic resonance by
(3) T. A. Miller, 1971, J. Chem. Phys. **54**, 330