

$^{16}\text{O}^{18}\text{O}^{16}\text{O}$ Dipole Transition Moment Operator Constants, Integrated Intensities of the $2\nu_2 + 5\nu_3$ and the $5\nu_1 + \nu_3$ Bands

Natural isotopic abundance: 0.00204.

Reference	[2013Sta]
Method	Continuous wave – cavity ring down spectroscopy.
Equations	Equations 47 and 52 in chapter “Introduction”.
Statistical errors	One standard deviation in units of the least significant full size digit.
Remarks	The integrated intensities are given in units of cm/molecule at 296 K. Their values correspond to the sum of their individual line intensities, calculated with a cut-off equal to 1×10^{-28} cm/molecule at 296 K. Dipole transition moment operator constant is given in Debye. Calculated constants are purposely given with a supplementary digit, in index form, in order to reproduce the line intensities to experimental accuracy. Spectroscopic parameters are given in chapter “ $^{16}\text{O}^{18}\text{O}^{16}\text{O}$ Vibrational Energy and Rotational and Centrifugal Distortion Constants of the (025), (501), and (dark4) Interacting States. Band Centers of the $2\nu_2 + 5\nu_3$, and $5\nu_1 + \nu_3$ Bands”. The isotopic composition of the elements used for the calculation of the natural isotopic abundance is taken from [2007Coh].
Abbreviations	SE: Statistical error. {A,B} = AB + BA

Band	Integrated intensity	Transformed dipole transition moment operator	Parameters	SE
$2\nu_2 + 5\nu_3$	4.69×10^{-24}			
A-type band		$\varphi_Z \times 10^4$	0.5402 ₉	54
		$\{\varphi_Z, \mathbf{J}^2\} \times 10^7$	-0.427 ₆	75
		$\{\varphi_Z, J_Z^2\} \times 10^8$	0.323 ₇	86
$5\nu_1 + \nu_3$	3.79×10^{-24}			
A-type band		$\varphi_Z \times 10^4$	0.4921 ₀	84

Symbols and abbreviations

Short form	Full form
$v_1 v_2 v_3$	Upper vibrational level in normal mode notation
$J_x J_y J_z$	Molecule-fixed components of J
SE	Statistical error

References

- [2007Coh] Cohen, E.R., Cvitaš, T., Frey, J.G., Holmström, B., Kuchitsu, K., Marquardt, R., Mills, I., Pavese, F., Quack, M., Stohner, J., Strauss, H.L., Takami, M., Thor, A.J.: Quantities, Units and Symbols in Physical Chemistry. The IUPAC Green Book, 3rd Ed., Cambridge: RSC Publishing, 2007.
- [2013Sta] Starikova, E., Barbe, A., Mondelain, D., Kassi, S., Campargue, A., De Backer, M.R., and Tyuterev, V.G.: The CW-CRDS spectra of the $^{16}\text{O}^{18}\text{O}$ isotopologues of ozone between 5930 and 6340 cm^{-1} . Part 2: $^{16}\text{O}^{18}\text{O}^{16}\text{O}$. J. Quant. Spectrosc. Radiat. Transfer. **119** (2013) 104–113.