Widmark Formula

From **Widmark** 1932 established relationship for the calculation of the theoretical maximum blood alcohol concentration **C** in mg/g [mg/100 ml = mg/g x 100 / 1.055] from the consumed amount of pure alcohol **A** in g and the body mass **p** in kg [1 lbs= 0.454 kg] according to the formula

C [mg/g] = **A** / (**p** [kg] x **r**) rsp. **C** [mg/100 ml] = 2.3237 x **A** / (**p** [lbs] x **r**)

where **r** is meaning the so-called reduction factor. Alcohol is only soluble in water but not in the bones and fat tissue. Therefore, these body mass fractions are not available for alcohol distribution. For men, the average value of **r** is 0.7. Women have generally more fatty tissues, here an **r** value of 0.6 is assumed. Newer approaches, e.g. according Watson, consider an individualised reduction factor **r** computed from body mass, body height, age and gender. These formulas are in modified form the basis of all calculation programs.

For realistic estimations of the BAC the resorption deficiency and the elimination rate, beginning from the start of drinking, is to be considered additionly. See BAC-estimator.