

Integrator is an HP 3390A

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LIST: LIST
PEAK CAPACITY: 1159

ZERO    = 0, -1.4
ATT 2†  = 11
CHT SP  = 1.0
PK WD   = 0.04
THRSH   = 1
AR REJ  = 40000

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Plot parameters (Affect peak display only, do not affect integration, ie. calculation of peak areas)

ZERO adjusts the position of the baseline on the printout (-6 to 100 range, default = 0)

ATT2| alters the height of the peak displayed. Full scale signal is divided by  $2^{(ATT)}$  (-8 to 20 range, default =0)

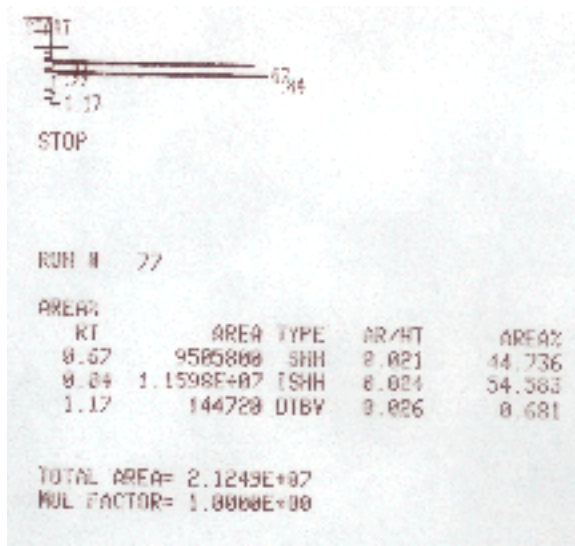
CHT SPD controls chart paper advance speed in cm/min (0-30 range, default =1.0)

Integration Parameters (affect integration, ie calculation of peak areas)

PK WD controls selectivity in distinguishing peaks from noise (0.01 to 2.56 range, default =0.04)

THRSH controls noise rejection for peak integration (-6 to 11 range, default=0)

AR REJ allows peak rejection by final area (0 to  $3 \times 10^9$  range, default=0)

GC output (GC is an HP 5890)

AREA%

RT=peak retention time in minutes

AREA=integrator counts

TYPE=describes how peak onset and end times and areas are determined

AR/HT=approximate peak width at half full height (in minutes)

AREA%=percentage of total area for peak, sum of all reported areas is 100%

Column conditions GC's are HP 5890 (Hewlett-Packard)

GC on left

HP-1MS column: 30m x 0.250mm ID x 1.00 um coating of 100% dimethylpolysiloxane

Injector temperature = 275 deg C

Detector temperature = 280 deg C

Column temperature = 110 deg C

Sample volume injected = 0.1 uL (0.1 microliter)

GC on right

AT-5 column: 30m x 0.250mm ID x 0.25 um coating of 5% diphenyl, 95% dimethylpolysiloxane

Injector temperature = 275 deg C

Detector temperature = 280 deg C

Column temperature = 110 deg C

Sample volume injected = 0.1 uL (0.1 microliter)

Notes:

ID means internal diameter of the column

um is microns, so the u is actually a greek mu,

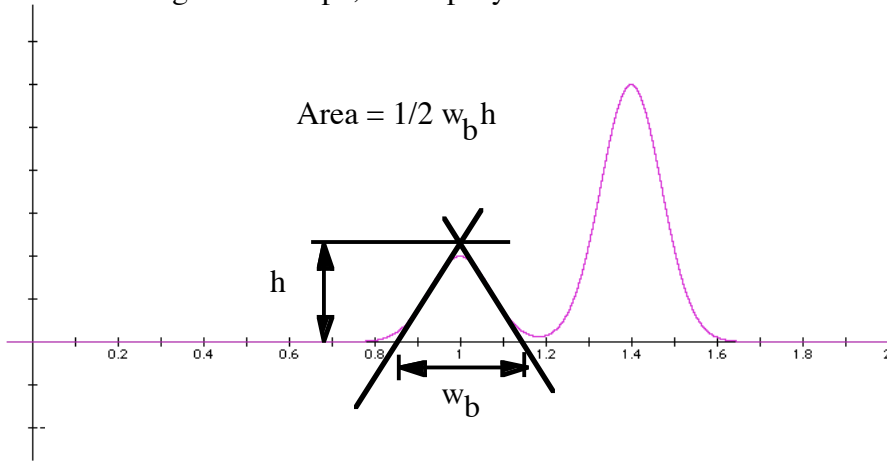
1 um =  $10^{-6}$  meters or  $10^{-3}$  mm (very thin coating)

HP-1MS and AT-5 are manufacturers designations for the type of coatings used in the column and differ between manufacturers for what may be the same coatings. Catalogs from suppliers must be consulted to determine what these mean.

# Measurement of GC Peaks

## Triangulation for estimation of peak area

The gaussian curve can be approximated as triangular in shape, to simplify area measurement.



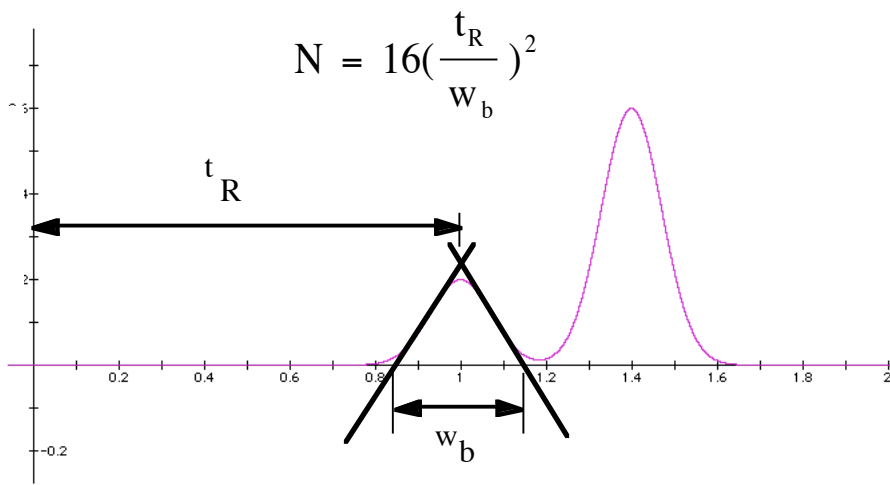
NOTE: the height is measured to the top of the tangents, which is above the actual curve peak

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For a mixture: Peak % = Area of peak/Total area of all peaks x 100%

## Calculation of Theoretical Plates

N = number of theoretical plates, (a measure of efficiency)



NOTE:  $w_b$  is measured at the intersection of the tangents with the baseline.

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