

23.0331



Clarity™

ADVANCED CHROMATOGRAPHY SOFTWARE

# DHA – DETAILED HYDROCARBON ANALYSIS

CLARITY EXTENSION

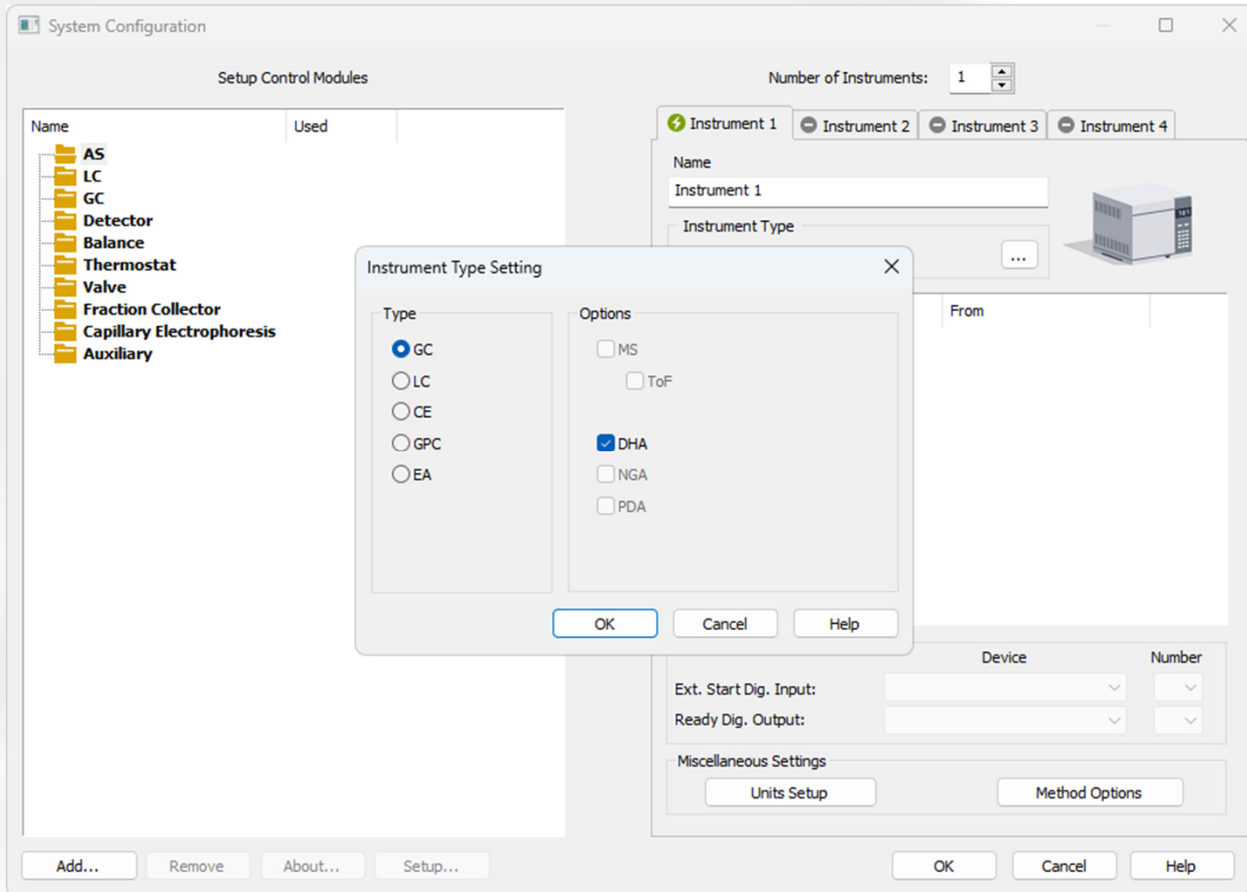
# DHA EXTENSION

## OVERVIEW

- Determination of individual components in spark ignition engine fuel
- Calculation of % Area/Weight/Volume
  - Particular compounds – DHA Results
  - Hydrocarbon groups – DHA Group Results (PONA, PIONA, ...)
- ASTM D-6730
  - Preinstalled standard test method
- Custom method development

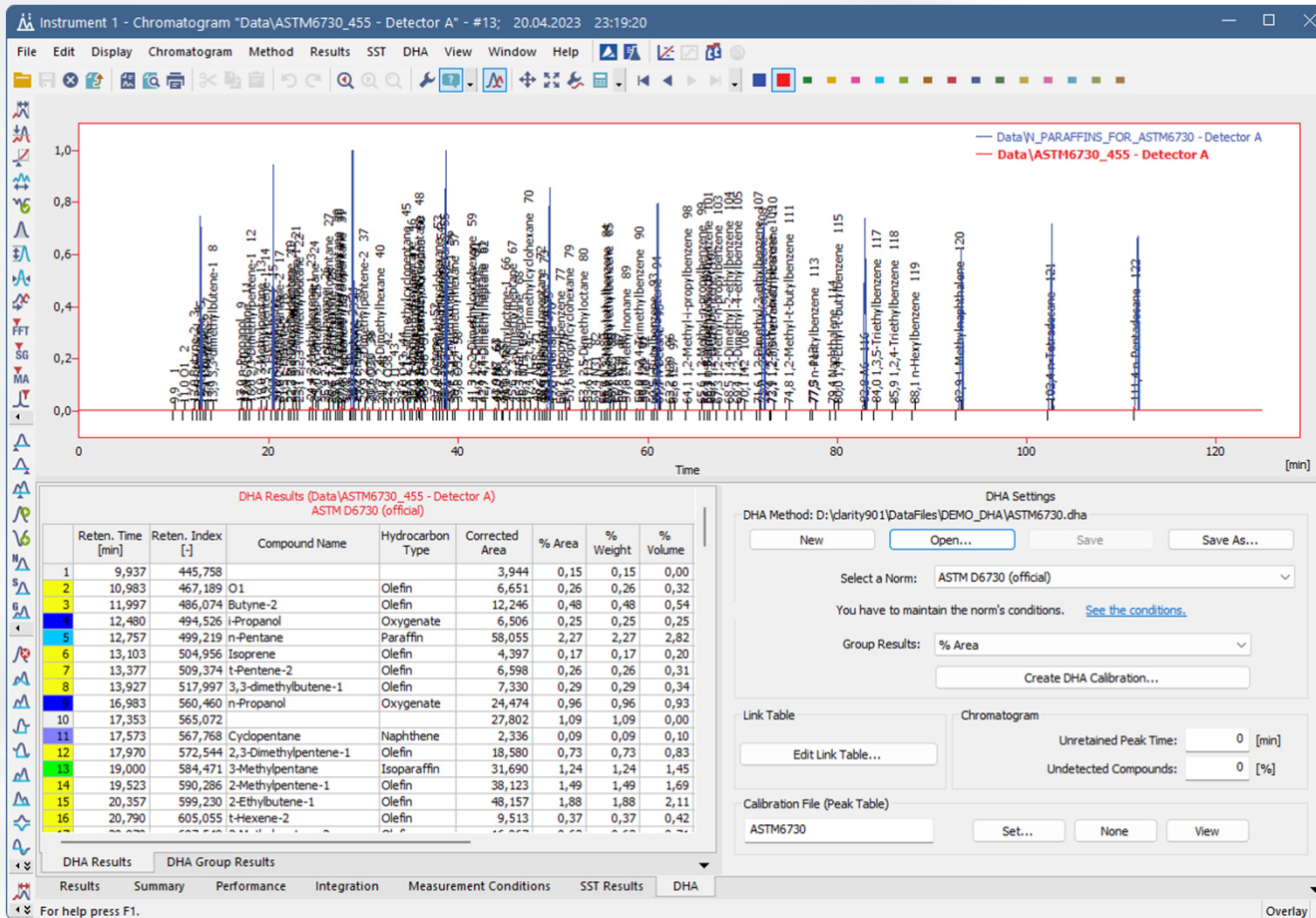
 <https://www.dataapex.com/product/extensions-DHA>

# SYSTEM CONFIGURATION



- DHA Instrument is configured in the System Configuration window
- DHA can be enabled on station where p/n A33 is purchased

# CHROMATOGRAM WINDOW



- DHA tab for specific DHA result calculations

# SETTINGS ON THE DHA TAB

DHA Settings

DHA Method: D:\clarity901\DataFiles\DEMO\_DHA\ASTM6730.dha

New Open... Save Save As...

Select a Norm: ASTM D6730 (official) ▾

You have to maintain the norm's conditions. [See the conditions.](#)

Group Results: % Area ▾

Create DHA Calibration...

Link Table Chromatogram

Edit Link Table...

Unretained Peak Time: 0 [min]

Undetected Compounds: 0 [%]

Calibration File (Peak Table)

ASTM6730 Set... None View

- DHA Settings are located on the DHA tab
- Create DHA Calibration
- Display DHA Result from chromatogram
- Edit Link Table: custom compound names

# DHA RESULTS

DHA Results (Data\ASTM6730\_455 - Detector A)  
ASTM D6730 (official)

	Reten. Time [min]	Reten. Index [-]	Compound Name	Hydrocarbon Type	Corrected Area	% Area	% Weight	% Volume
1	9,937	445,758			3,944	0,15	0,15	0,00
2	10,983	467,189	O1	Olefin	6,651	0,26	0,26	0,32
3	11,997	486,074	Butyne-2	Olefin	12,246	0,48	0,48	0,54
4	12,480	494,526	i-Propanol	Oxygenate	6,506	0,25	0,25	0,25
5	12,757	499,219	n-Pentane	Paraffin	58,055	2,27	2,27	2,82
6	13,103	504,956	Isoprene	Olefin	4,397	0,17	0,17	0,20
7	13,377	509,374	t-Pentene-2	Olefin	6,598	0,26	0,26	0,31
8	13,927	517,997	3,3-dimethylbutene-1	Olefin	7,330	0,29	0,29	0,34
9	16,983	560,460	n-Propanol	Oxygenate	24,474	0,96	0,96	0,93
10	17,353	565,072			27,802	1,09	1,09	0,00
11	17,573	567,768	Cyclopentane	Naphthene	2,336	0,09	0,09	0,10
12	17,970	572,544	2,3-Dimethylpentene-1	Olefin	18,580	0,73	0,73	0,83
13	19,000	584,471	3-Methylpentane	Isoparaffin	31,690	1,24	1,24	1,45
14	19,523	590,286	2-Methylpentene-1	Olefin	38,123	1,49	1,49	1,69
15	20,357	599,230	2-Ethylbutene-1	Olefin	48,157	1,88	1,88	2,11
16	20,790	605,055	t-Hexene-2	Olefin	9,513	0,37	0,37	0,42
17	20,970	607,549	2-Methylpentene-2	Olefin	16,067	0,63	0,63	0,71
18	21,487	614,593	c-Hexene-2	Olefin	19,989	0,78	0,78	0,88
19	22,203	624,087	2,2-Dimethylpentane	Isoparaffin	11,710	0,46	0,46	0,53
20	22,330	625,734	Methylcyclopentane	Naphthene	21,016	0,82	0,82	0,85
21	22,730	630,871	2,3,3-trimethylbutene-1	Olefin	23,339	0,91	0,91	1,00
22	23,050	634,917	2,2,3-Trimethylbutane	Isoparaffin	25,282	0,99	0,99	1,11

DHA Results      DHA Group Results

- Shows the calculated results
- DHA Method and DHA Calibration from Chromatogram must match with DHA Settings

# DHA GROUP RESULTS

DHA Group Results (Data\ASTM6730\_455 - Detector A)  
ASTM D6730 (official) % Area

Carbon No.	Paraffins	Isoparaffins	Aromatics	Naphthenes	Olefins	Oxygenates	Total
1	0,00	0,00	0,00	0,00	0,00	0,00	0,00
2	0,00	0,00	0,00	0,00	0,00	0,00	0,00
3	0,00	0,00	0,00	0,00	0,00	1,21	1,21
4	0,00	0,00	0,00	0,00	0,48	0,00	0,48
5	2,27	0,00	0,00	0,09	0,43	0,00	2,79
6	0,00	1,70	0,00	2,25	5,44	0,00	9,39
7	1,27	2,96	0,00	2,11	9,30	0,00	15,64
8	0,00	5,30	0,49	4,47	1,69	0,00	11,95
9	0,20	7,38	2,55	3,96	5,34	0,00	19,42
10	0,48	1,86	6,89	0,00	0,00	0,00	9,24
11	0,00	0,00	3,29	0,00	0,00	0,00	3,29
12	0,00	0,00	1,89	0,00	0,00	0,00	1,89
13	0,00	0,00	0,00	0,00	0,00	0,00	0,00
14	0,00	0,00	0,00	0,00	0,00	0,00	0,00
15	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Total	4,21	19,20	15,10	12,88	22,68	1,21	75,29

DHA Results    DHA Group Results

- Display Group Results (PIONA, PONA)
- Units according to DHA Settings – Corrected Area, % Area, % Weight or % Volume
- Selected units are displayed in the table header

# DHA CALIBRATION

Create DHA Calibration ✕

Enter all known retention times of n-Paraffins. The missing retention times will be interpolated or extrapolated.

	Paraffin	Ret. Time [min]
C1	Methane	
C2	Ethane	
C3	Propane	
C4	n-Butane	
C5	n-Pentane	12,803
C6	n-Hexane	20,430
C7	n-Heptane	28,863
C8	n-Octane	38,673
C9	n-Nonane	49,657
C10	n-Decane	61,087
C11	n-Undecane	72,323
C12	n-Dodecane	83,057
C13	n-Tridecane	93,147
C14	n-Tetradecane	102,747
C15	n-Pentadecane	111,750

- Open from DHA Settings – Create DHA Calibration
- The standard chromatogram must contain from 6 to 11 calibrated peaks from the n-Paraffins standard sample
- Manually enter the measured C1...C4 retention times

# CUSTOM DHA METHOD

DHA Settings

DHA Method: D:\clarity901\DataFiles\DEMO\_DHA\Custom.dha

New Open... Save Save As...

Select a Norm: Custom (edit DHA.csv) ▼

You have to maintain the norm's conditions. [See the conditions.](#)

Group Results: Corrected Area ▼

Create DHA Calibration...

Link Table Chromatogram

Edit Link Table...

Unretained Peak Time: 0 [min]

Undetected Compounds: 0 [%]

Calibration File (Peak Table)

Custom| Set... None View

DHA

- Possibility to adjust DHA Method and Calibration according to your needs
- Develop method based on a specific laboratory instrumentation

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**THANK YOU FOR YOUR ATTENTION**