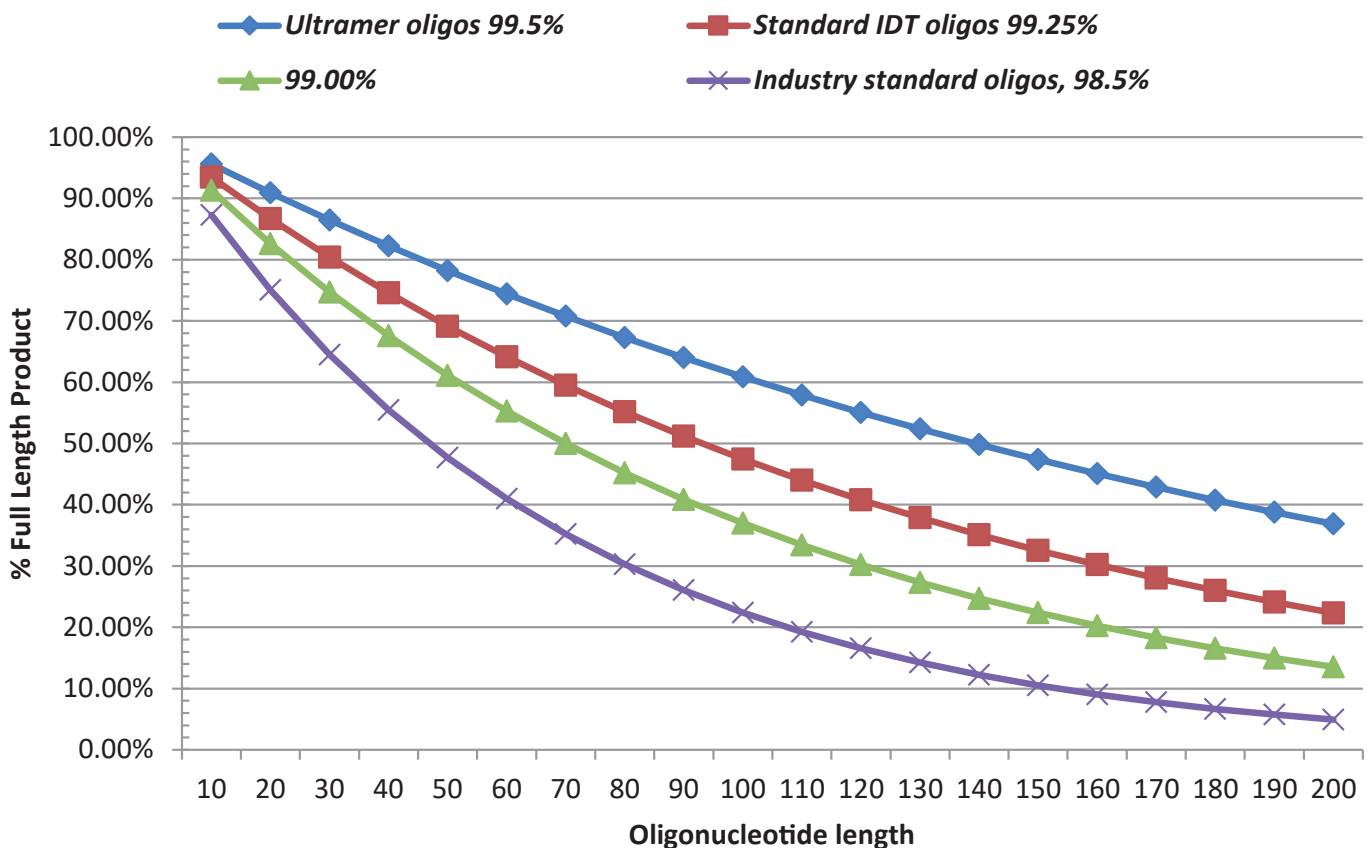


## Introducing IDT Standard Desalted Oligos

Through improvements to the traditional tert-butyldimethylsilyl (tBDMS) chemistry and advances in instrumentation, IDT has achieved both the highest coupling efficiency in synthesis followed by the best QC processes in the oligo synthesis industry. This result in IDT's standard desalted oligos to perform extremely well in routine PCR, qPCR, and DNA sequencing applications without additional purification steps. For researchers, this means immediate savings and peace of mind in carrying out their critical research.

### Why are IDT Oligos BETTER?

Higher coupling efficiency at 99.25% for regular synthesis, and 99.5% for Ultramer!



If the coupling efficiency of an oligo manufacturer is only 98.5% (which is the standard of other oligo manufacturer), when your synthesis length is > 35-mer, you will get < 55% of full length products. As result, purification is required to deliver cleaner oligos. In IDT, the same synthesis at standard desalted grade will yield ~ 75% of purity. This is how the coupling efficiency makes the difference.

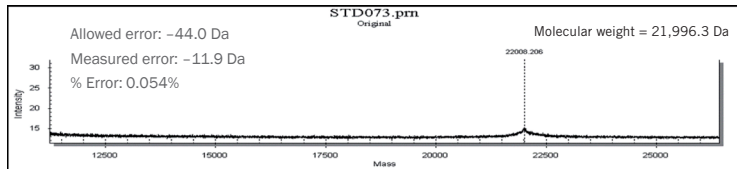


## 100% QC Using ESI-MS!

IDT is the **only** company that QC using superior ESI-MS technology for all oligos. The oligo QC is both mass and sequence verified using ESI, not MALDI-TOF!

Below are the differences of QC data between ESI and MALDI-TOF:

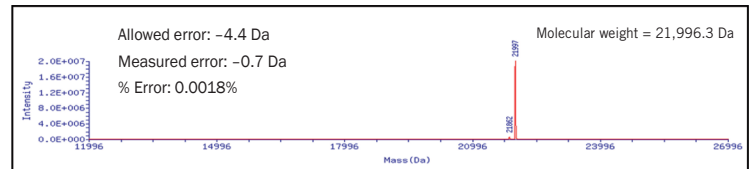
MALDI-TOF mass spec can miss single base changes during quality control of oligonucleotides >40 nt



MW<sub>dc</sub> = 289.184  
MW<sub>dt</sub> = 304.196  
MW<sub>da</sub> = 313.209  
MW<sub>dG</sub> = 329.208

MALDI-TOF can miss an A to T base change (~9 Da difference) in oligos > 40 nt

But ESI mass spec can reliably assess oligonucleotides up to 200 nt



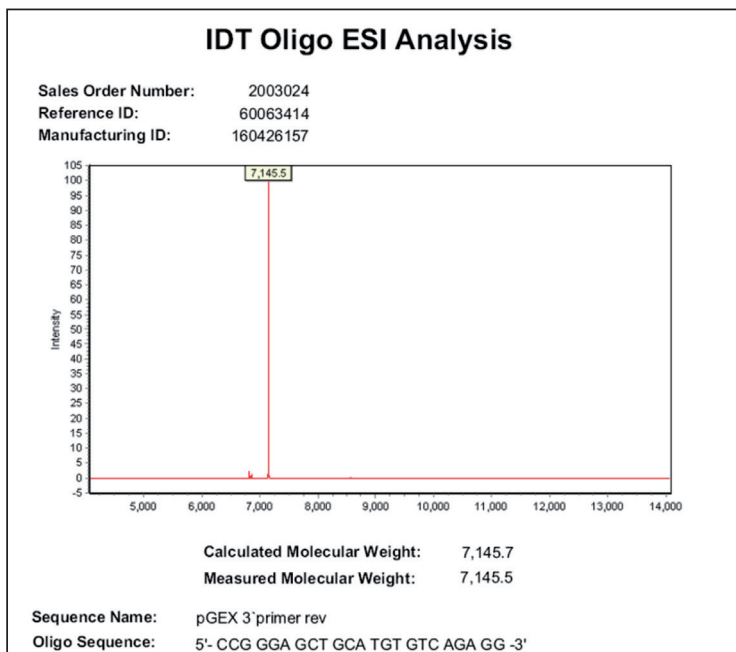
MW<sub>dc</sub> = 289.184  
MW<sub>dt</sub> = 304.196  
MW<sub>da</sub> = 313.209  
MW<sub>dG</sub> = 329.208

- ESI-MS will detect an A to T base change (~9 Da difference) in oligos up to 200 nt
- IDT uses ESI-MS for all oligos, ensuring that our mass spec QC is of the highest quality

Did you receive the QC report of your oligos? What is the method used by the oligo manufacturer in their QC? Some don't even have MALDI-TOF data.

Are they reliable or sensitive enough to detect the changes of the oligo sequence? IDT's ESI-MS QC technology can resolve differences of a single (A-T) substitution for oligos >40 bases

## Using ESI-MS for quality control ensures that only the highest quality oligos are shipped to you



- QC data is available in your online accounts
- Additional QC services are provided for products ordered with a purity



## Comparison of IDT Standard Desalted vs Cartridge/Column purified oligos

### What is Cartridge/Column purification?

Goes by many names, TOP, HAP, RPC, RP1, OligoPak etc

Same oligo synthesis chemistry but the protective trityl (DMT) group is left on 5' end

Serves as hydrophobic handle to aid purification on the cartridge

Full length products have the DMT, capped truncated products don't

DMT-oligo (full length) is bound to column and truncated products flushed to waste

DMT is removed with acid just like the starting step in synthesis

Full length oligo is eluted with solvent and water

## Comparison of competitors' Cartridge Purification vs IDT Desalted

Sequence	Full Length Product (by %CE)			N-1mer (by %CE)		
	Competitor A Cartridge	Competitor B Cartridge	IDT Desalted	Competitor A Cartridge	Competitor B Cartridge	IDT Desalted
A	72.6	76.1	75.8	7.1	10.8	5.6
B	52.5	69.2	65.8	14.2	7.4	7.7
C	64.9	79.1	75.5	12.3	12	1.9
D	61.2	69	67.8	11.1	8.7	2
E	68.4	88.4	90.4	5.6	6.4	2.6
F	64	88	84.2	8.3	8	4.4
<b>Average</b>	<b>63.9</b>	<b>78.3</b>	<b>76.6</b>	<b>9.8</b>	<b>8.9</b>	<b>4.0</b>

## Conclusions for Cartridge-Purified Oligos

Purity at most from cartridge purified oligos makes no significant difference with IDT desalted oligos

Enriched material contains higher proportion of N-1 products (due to acidolysis)

No QC done by competitors to assess purity of cartridge purified oligos

IDT has systematic QC of purified products using CE and HPLC



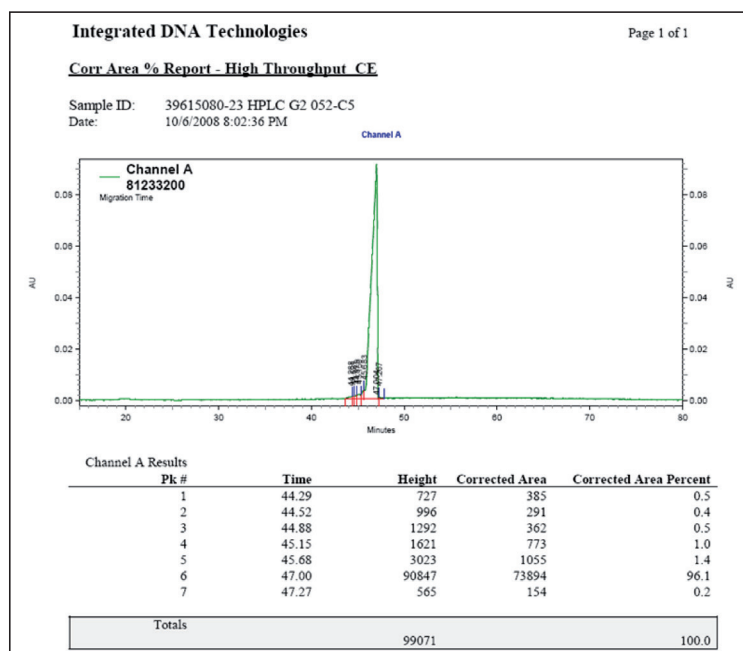
## Additional QC for Purified Oligos using Capillary Electrophoresis (CE)

If you are ordering a purified oligos, what is the proof of the purity for the additional cost that you had spent compared to unpurified oligos? IDT gives purity assessment for each purified oligos that is < 60 mers.

CE analysis enable you to ascertain the percentage of full-length oligo in your purified oligos.

## CE analysis traces are provided for oligos that are delivered with a purity guarantee

- Available for purified oligos up to 60 nt
- Each order includes a trace from our CE analysis that shows the percentage of full-length product



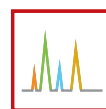
## Your Trusted Partner in Life Sciences



DNA Sequencing Services



Next-Generation Sequencing



Fragment Analysis Services



Molecular Biology Services



Proteomics Services



Peptide Synthesis



Antibody Production



Biochemicals, Buffers and Reagents



Metabolomics Services