

DeTrityl® Ultrapure

Dichloroacetic Acid for Oligonucleotide Synthesis

DeTrityl® Ultrapure Premium-grade dichloroacetic acid for high-yield oligonucleotide synthesis

The most common way to manufacture oligonucleotides of various types like antisense, small interfering RNA (siRNA), and aptamers is by means of the phosphoramidite route. This solid-state process links individual nucleotides together in a step-by-step process consisting of detritylation, coupling, capping, and oxidation/thiolation.

The linkage of the various nucleotides to each other is achieved via the C-3' and C-5' hydroxy function of the furanoses of the individual nucleosides. One of the most efficient protecting groups widely used to protect the C-5' hydroxy function is 4,4'-dimethoxytrityl (DMT). The subsequent removal of this group in the detritylation step is achieved by dichloroacetic acid (DCA).

Two manufacturing sites for a safe supply of large quantities

CABB has two independent large-scale manufacturing sites for DeTrityl® Ultrapure in Germany and Switzerland. This provides a significant benefit for customers from a GMP and risk mitigation perspective. DeTrityl® Ultrapure is manufactured with state-of-the-art technologies to ensure consistency, quality and reliability.

Your benefits with DeTrityl® Ultrapure

- High efficiency in DMT removal resulting in high yields in oligonucleotide synthesis
- High DCA assay of >99.2%
- Low level of chloral hydrate
- ISO 9001, ISO 14001 and ISO 50001 certification
- Supply security: two backward-integrated manufacturing sites for DeTrityl® Ultrapure – Germany and Switzerland
- CABB is the only European producer of premium-grade dichloroacetic acid in high volumes
- CABB's manufacturing sites approved by international oligo CDMOs

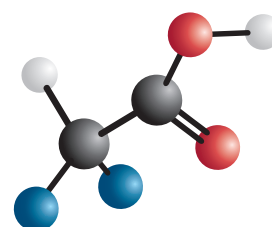
CABB designed DeTrityl® Ultrapure – a dichloroacetic acid grade of very high purity – with extremely low traces of impurities. This provides customers with the highest yields of the final oligonucleotide and an overall cost-effective manufacturing process.

Impurities like chloral hydrate would result in the formation of a family of process contaminants in which chloral hydrate ($\text{Cl}_3\text{CCHO} \times \text{H}_2\text{O}$) is incorporated between the 5'-oxygen and phosphorus atoms of an internucleotide linkage. The repetitive nature of the oligonucleotide synthesis would amplify the negative impact that DCA impurities may have, resulting in a large quantity of undesired faulty oligonucleotide structures. The higher the number of the nucleotides to be linked, the higher the negative impact caused by such unwanted side reactions and the higher the costs of production. This is why a high-purity product is essential.

Delivery specifications

Product: DeTrityl® Ultrapure
(dichloroacetic acid)
Formula: Cl_2CHCOOH
Molecular weight: 128.94 g/mol
CAS no.: 79-43-6
UN no.: 1764

EINECS no.: 201-207-0
Country of origin: Germany and Switzerland
Shelf life: 360 days
Packaging units: 40 kg, 75 kg,
250 kg steel drum with PE lining



Quality characteristic	Unit	Target value	Method	Certificate ¹
Appearance	-	Clear, colorless to slightly yellowish liquid	visual	
Dichloroacetic acid (DCA)	%(w/w)	min. 99.2	100 %-MCA-TCA-H ₂ O	yes
Monochloroacetic acid (MCA)	%(w/w)	max. 0.10	HPLC	yes
Trichloroacetic acid (TCA)	%(w/w)	max. 0.70	HPLC	yes
Water (H ₂ O)	%(w/w)	max. 0.04	KF titration	yes
Chloral hydrate	mg/kg	max. 20	Headspace GC	yes
Freezing point	°C	min. 12.5	ISO 1392	yes
Platinum-cobalt scale (APHA-Hazen scale)	-	max. 25	DIN ISO 6271	

¹ Quality characteristics marked with "yes" are referred to in the certificate of analysis.

CABB has more than 50 years of experience with dichloroacetic acid and began optimizing this product for oligonucleotide synthesis with research partners as early as 20 years ago.

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