PureSynth®
Research Chemicals GmbH

# PurOligo

*Your partner of choice for all your oligonucleotide synthesis reagents*

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*Design Your Oligonucleotide*

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# Pur*Oligo* Reagents – Powering Precision in Every Strand

Oligonucleotides play a vital role in molecular biology, genetic diagnostics, and therapeutic development - demanding uncompromising reagent quality at every stage of synthesis.

At Pure-Synth, we are committed to delivering reagents and solvents engineered for superior performance in both DNA and RNA oligonucleotide synthesis.


Our comprehensive portfolio includes:

- **PurOligo Deblocking Reagents**
- **PurOligo Activators**
- **PurOligo Capping Reagents**
- **PurOligo Oxidation Reagents**
- **PurOligo Cleavage & Deprotection Reagents**
- **PurOligo CE-ß-Eliminators**
- **PurOligo Sulphurizing Reagents**
- **PurOligo Low Moisture Solvents**

The efficiency and final yield of oligonucleotide synthesis are highly sensitive to moisture levels. That's why the Pure-Synth line has been developed with a clear focus: **ultra-low water content and exceptional purity.**

Each product is manufactured to the highest industry standards, undergoing specialised quality control processes to ensure consistency, reliability, and optimal performance in every batch.

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Whether for research laboratories or industrial-scale synthesis, our solutions are designed to meet the most demanding applications in oligonucleotide production - delivering the purity, precision, and scalability our customers expect.

## • Oligonucleotide synthesis

Deblocking Reagents
**Deblocking (Detritylation)**

Activation / Coupling Reagents
**Activation / Coupling**

Capping Reagents
**Capping**

Oxidation Reagents
**Oxidation**

Cleavage & Deprotection Reageants
**Cleavage & Deprotection**

CE-ß-Eliminating Reageants
**CE-ß-Eliminators**

Sulphurizing Reageants
**Sulphurizing**

Low Moisture Solvents
**Solvents for Washing**

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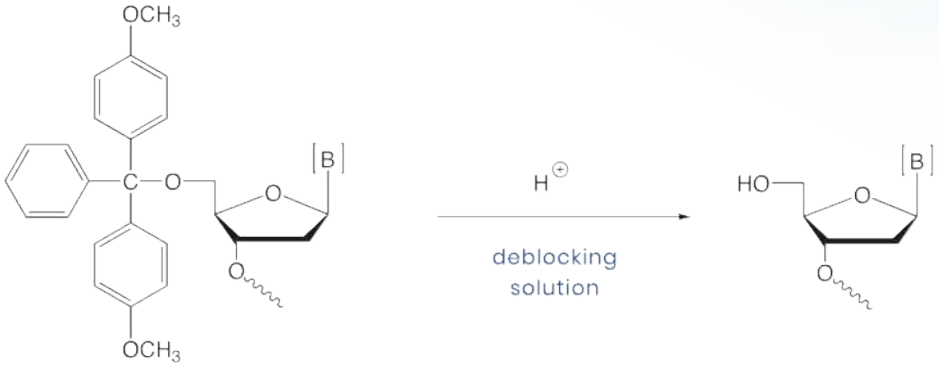
# • PurOligo Deblocking Reagents

Our Deblocking Solutions are specifically developed for high-throughput oligonucleotide synthesis workflows. Formulated to efficiently remove the 5'-DMTr (dimethoxytrityl) protecting group without compromising oligo integrity, these solutions ensure high coupling efficiency and synthesis accuracy.

These solutions typically consist of dichloroacetic acid (DCA) or trichloroacetic acid (TCA) dissolved in dichloromethane or toluene.




| Product No. | Description | Packing |
|---|---|---|
| PSR48532 | 3% Dichloroacetic Acid in Dichloromethane | 1 L, 2.5 L |
| PSR48533 | 3% Dichloroacetic Acid in Toluene, <30 ppm water | 1 L, 2.5 L |
| PSR48534 | 3% Trichloroacetic Acid in Dichloromethane | 1 L, 2.5 L |
| PSR48535 | 5% Dichloroacetic Acid in Toluene | 1 L, 2.5 L |
| PSR48536 | 10% Dichloroacetic Acid in Toluene | 1 L, 2.5 L |

**Did you know shorter deblocking times dramatically reduce depurination?**

Prolonged acid exposure may cause the loss of purine bases (A, G).

Limit contact time: typically, 30 to 60 sec for TCA, & up to 2 min for DCA.

Using our optimized formulations reduces risk and improves yield consistency.

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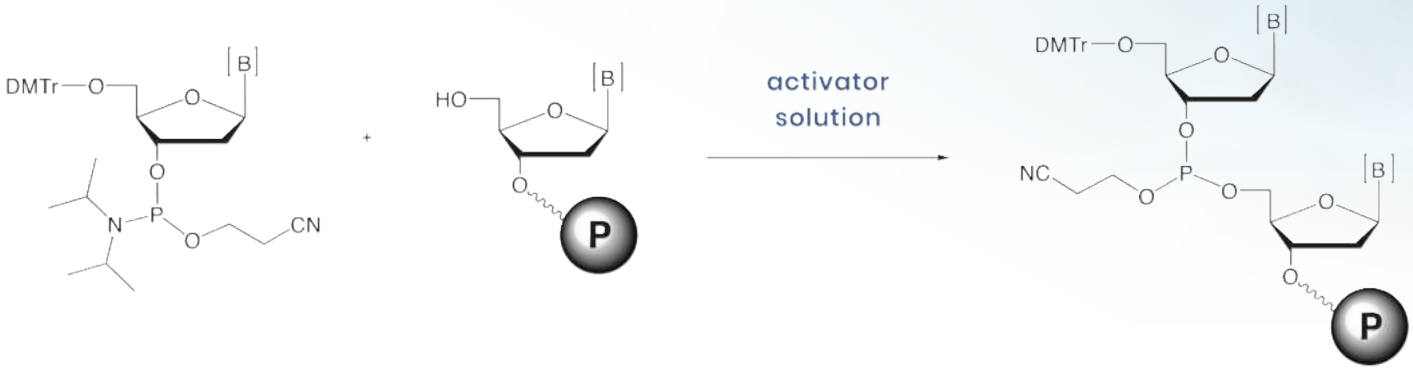
## • PurOligo Activators

Efficient coupling is the heart of oligonucleotide synthesis. Our high-purity activators ensure **fast reaction rates, minimal impurities, and maximum yields** — whether you are working at lab scale or GMP production.




**Our Avtivators Portfolio**

- ETT (5-Ethylthio-1H-tetrazole)
- BTT / BMT (5-Benzylmercapto-1H-tetrazole)
- DCI (4,5-Dicyanoimidazole)

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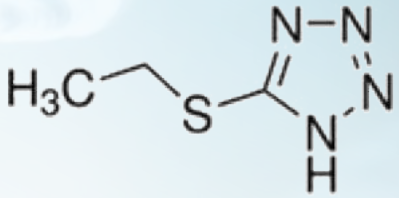
## a) ETT (5-Ethylthio-1H-tetrazole)

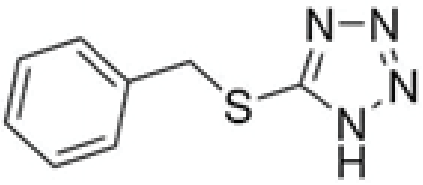
A highly efficient activator trusted in the chemical synthesis of both DNA and RNA. Known for its fast-coupling rates, high efficiency, and reduced n-1 impurities, ETT minimizes phosphoramidite consumption while maximizing yield.




| Product No. | Description | Packing |
|---|---|---|
| PSR48537 | ETT Crystal (5-Ethylthiotetrazole) | 100 g, 500 g |
| PSR48538 | 0.25 M 5-Ethylthiotetrazole Solution (ETT in Anhydrous Acetonitrile) | 1 L, 2.5 L |
| PSR48539 | 0.5 M 5-Ethylthiotetrazole Solution (ETT in Anhydrous Acetonitrile) | 1 L, 2.5 L |
| PSR48540 | 0.6 M 5-Ethylthiotetrazole Solution (ETT in Anhydrous Acetonitrile) | 1 L, 2.5 L |

## b) BTT / BMT (5-Benzylmercapto-1H-tetraole)

BTT is a powerful and clean activator that supports demanding oligonucleotide synthesis, including modified sequences. Its enhanced reactivity compared to other activators leads to improved coupling efficiency. Ideal for both research and therapeutic-grade manufacturing.




| Product No. | Description | Packing |
|---|---|---|
| PSR48541 | BMT Crystal, 5-Benzylmercaptotetrazole | 100 g, 500 g |
| PSR48542 | 0.25 M BMT Solution (BMT in Anhydrous Acetonitrile) | 1 L, 2.5 L |
| PSR48543 | 0.3 M BMT Solution (BMT in Anhydrous Acetonitrile | 1 L, 2.5 L |

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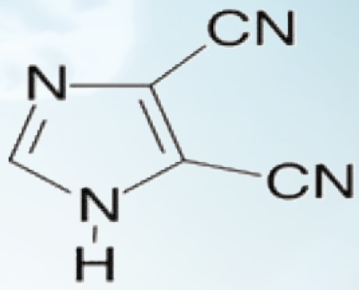
## c) DCI (4,5-Dicyanoimidazole)

DCI is a reliable activator widely used in automated DNA and RNA synthesis. It offers excellent solubility and stability, supporting reproducible performance across multiple synthesis cycles. By ensuring consistent coupling and reduced side reactions, DCI helps achieve high yields with robust process control.




| Product No. | Description | Packing |
|---|---|---|
| PSR48544 | 0.25 M DCI Solution (4,5-Dicyanoimidazole in Anhydrous Acetonitrile) | 1 L, 2.5 L |
| PSR48545 | 0.5 M DCI Solution (4,5-Dicyanoimidazole in Anhydrous Acetonitrile) | 1 L, 2.5 L |

## Did you know?

A 1% drop in coupling efficiency per cycle can reduce final oligo yield by over 30%!

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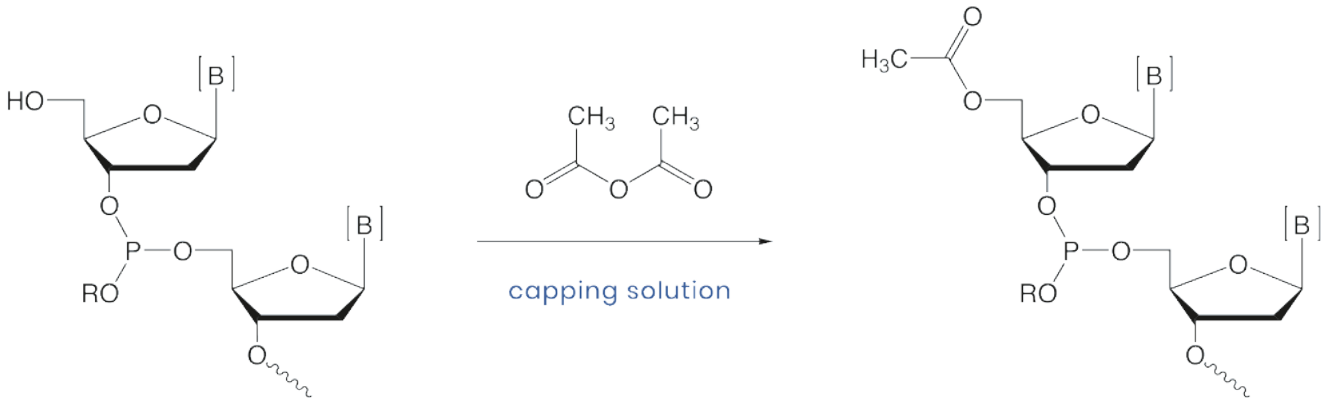
# • PurOligo Capping Reagents

Capping is a critical step to ensure only full-length oligonucleotides are carried forward in synthesis. Our reliable capping reagents prevent chain errors by blocking unreacted 5’-hydroxyl groups, ensuring purity and consistency in your final product.

Our balanced Capping A and Capping B formulations work together to block unreacted 5’-hydroxyl groups, ensuring:

- Reduction of truncated sequences
- Improvement in downstream purification
- Enhancing reproducibility batch after batch



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## Capping A

| Product No. | Description | Packing |
|---|---|---|
| PSR48546 | Capping A (Tetrahydrofuran / 2,6-Lutidine / Acetic Anhydride, V / V / V = 80 : 10 : 10) | 1 L, 2.5 L |
| PSR48547 | Capping A, 10 % Acetic Anhydride in THF (Tetrahydrofuran / Acetic Anhydride, V / V = 90 : 10) | 1 L, 2.5 L |
| PSR48548 | Capping A, 20 % NMI in ACN, (Acetonitrile / N-methylimidazole, V / V = 80 : 20) | 1 L, 2.5 L |
| PSR48549 | Capping A, Ultramild (Tetrahydrofuran / Pyridine / Phenoxyacetic Anhydride, (V / V / V = 85 : 10 : 5) | 1 L, 2.5 L |
| PSR48550 | Capping A, 25 % Acetic Anhydride in ACN (Acetonitrile / Acetic Anhydride, V / V = 75 : 25) | 1 L, 2.5 L |
| PSR48551 | Capping A, 20 % Acetic Anhydride in ACN (Acetonitrile / Acetic Anhydride, V / V = 80 : 20) | 1 L, 2.5 L |

## Capping B

| Product No. | Description | Packing |
|---|---|---|
| PSR48552 | Capping B, 16 % NMI in THF (Tetrahydrofuran / N-methylimidazole, V / V = 84 : 16) | 1 L, 2.5 L |
| PSR48553 | Capping B (THF / N-methylimidazole / Pyridine, V / V / V = 80 : 10 : 10) | 1 L, 2.5 L |
| PSR48554 | Capping B1 (40 % Acetic Anhydride in Acetonitrile) | 1 L, 2.5 L |
| PSR48555 | Capping B2 (60 % Lutidine in Acetonitrile) | 1 L, 2.5 L |
| PSR48556 | Capping B (Acetonitrile / 2,6-Lutidine / N-methylimidazole, V / V / V = 50 : 30 : 20) | 1 L, 2.5 L |
| PSR48557 | Capping B (Acetonitrile / Pyridine / N-methylimidazole, V / V / V = 50 : 30 : 20) | 1 L, 2.5 L |
| PSR48558 | Solvent Mix Pyridine in ACN (V / V = 60 : 40) | 1 L, 2.5 L |

## Did you know?

Skipping effective capping can lead to **difficult-to-remove impurities,** increasing purification costs and lowering overall yields.

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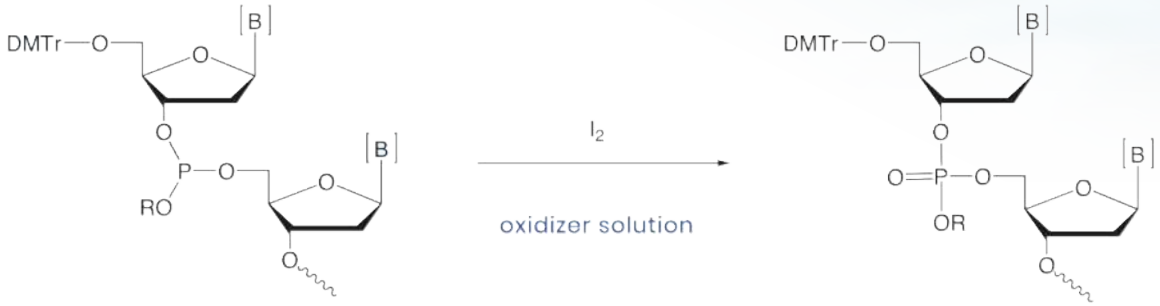
# • PurOligo Oxidation Reagents

Oxidizers convert unstable phosphite linkages into stable phosphate backbones using iodine as a mild oxidant, ensuring oligo integrity. They are available in 0.02 M and 0.05 M iodine concentrations with different mixtures of THF, pyridine, and water. Custom blends are also offered. Our Oxidizer [0.05 M iodine in pyridine/water (90:10 v/v)] is ideal for high-quality, large-scale oligonucleotide synthesis with consistent performance.




| Product No. | Description | Packing |
|---|---|---|
| PSR48559 | 0.05 M Iodine in Pyridine / Water (V / V = 90 : 10) | 1 L, 2.5 L |
| PSR48560 | 0.02 M Iodine in THF / Pyridine / Water (V / V / V = 66 : 22 : 12) | 1 L, 2.5 L |
| PSR48561 | 0.02 M Iodine in THF / Pyridine / Water (V / V / V = 90.6 : 0.4 : 9) | 1 L, 2.5 L |
| PSR48562 | 0.02 M Iodine in THF / Pyridine / Water (V / V / V = 89.6 : 0.4 : 10) | 1 L, 2.5 L |
| PSR48563 | 0.02 M Iodine in THF / Pyridine / Water (V / V / V = 70 : 20 : 10) | 1 L, 2.5 L |

## Did you know?

The shift from **phosphite (unstable)** to **phosphate (stable)** during oxidation is what makes synthetic oligos mimic the **natural DNA backbone** - without it, the strand would fall apart in minutes.

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# • PurOligo Cleavage & Deprotection Reagents

The final step of automated oligonucleotide synthesis involves cleaving the oligonucleotide from its solid support and removing all protecting groups from the nucleobases and phosphates. PureSynth offers three tailored cleavage solutions to meet different synthesis needs:

**Our Portfolio**

- **Standard:** Uses one volume of concentrated ammonium hydroxide (≥28%) under sealed conditions.
- **Fast:** Uses one volume of AMA under sealed conditions at 65 °C for just 10 minutes. This method reduces processing time without compromising product quality.
- **Mild:** Employs the required volume of Deprotection, Ultramild solution under sealed conditions at room temperature for 8 hours. Perfect for sensitive oligonucleotides.


| Product No. | Description | Packing |
|---|---|---|
| PSR48605 | Ammonium Hydroxide, concentrated (30-33%) | Customised |
| PSR48606 | AMA (conc. Ammonia / 40 % Aqueous Methylamine, V / V = 50 : 50) | 450ML, 2.5L |
| PSR48607 | Deprotection, Ultramild (Ammonium Hydroxide / Ethanol, V / V = 75 : 25) | Customised |

## Did you know?

High-quality cleavage and deprotection directly influence downstream applications—improving qPCR efficiency by 10–15% in some cases.

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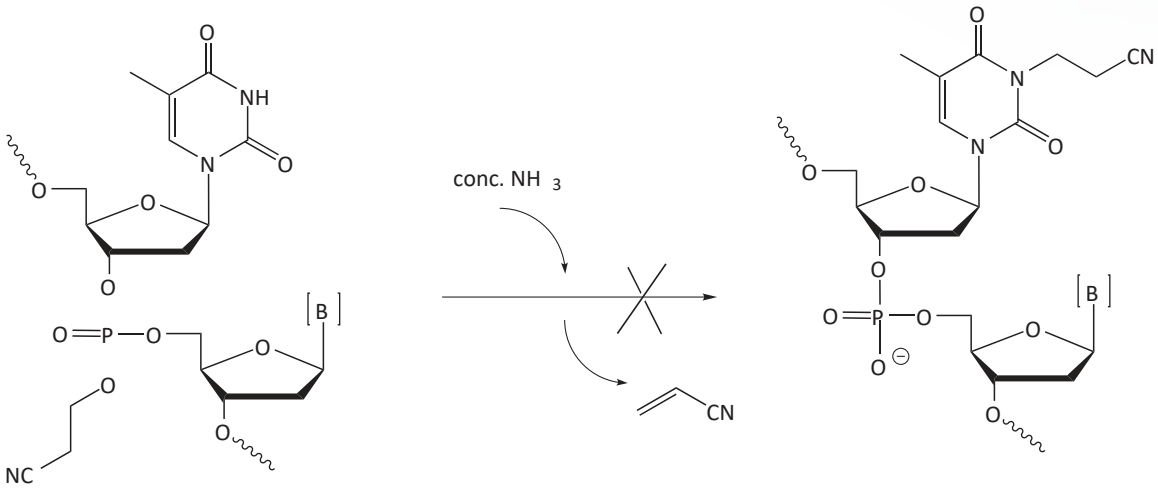
# • PurOligo CE-ß-Eliminators

During the simultaneous removal of protecting groups and cleavage of the oligonucleotide from the solid support, a common side reaction is the alkylation of the N3-position of thymidine by acrylonitrile. This byproduct is released during the ß-elimination of the cyanoethyl groups from the phosphate backbone, potentially affecting oligonucleotide integrity.

This unwanted reaction can be effectively prevented by performing the ß-elimination using our flagship product diethylamine in acetonitrile, which scavenges acrylonitrile and protects the thymidine residues.




| Product No. | Description | Packing |
|---|---|---|
| PSR48608 | 20 % Diethylamine in Acetonitrile | 1 L, 2.5 L |

## Did you know?

Acrylonitrile released during deprotection can damage up to 1 in 10 thymidines—but switching to PurOligo diethylamine in acetonitrile prevents this completely.

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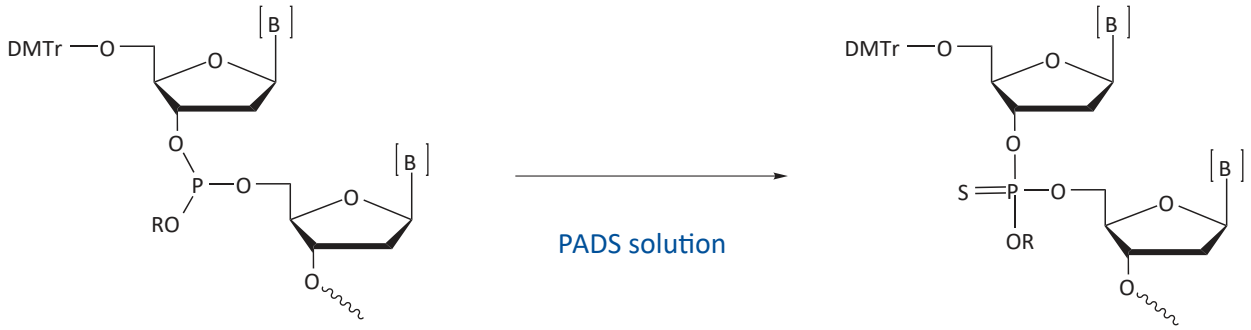
# • PurOligo Sulphurizing Reagents

The phosphite triester formed during the coupling step can be efficiently converted into the corresponding phosphorothioate triester by treatment with a 0.2 M solution of phenylacetyl disulfide (PADS) in acetonitrile and 3-picoline (1:1 v/v). Typically, 1.5 column volumes of the PADS solution are sufficient, and complete sulfurization occurs within 3 minutes. After the reaction, any excess reagent is recovered by washing the reaction vessel with PurOligo low moisture solvents.

As an alternative, 5-Amino-3H-1,2,4-dithiazole-3-thione (ADTT, also known as Xanthane Hydride) can be used as a sulfur-transfer reagent, which is particularly suitable for solid-phase oligonucleotide synthesis.




| Product No. | Description | Packing |
|---|---|---|
| PSR48609 | Phenylacetyl Disulfide (PADS) | 5G, 25G, 500G |
| PSR48610 | ADTT (5-Amino-3H-1,2,4-dithiazole-3-thione, Xanthane Hydride) | 100G, 500G |

## Did you know?

Sulfur-transfer reagents complete sulfurization in just minutes, forming phosphorothioate linkages that enhance nuclease resistance by more than 10-fold.

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# • PurOligo Low Moisture Solvents

In oligonucleotide synthesis, even trace amounts of water can disrupt the entire process, leading to incomplete reactions, premature cleavage, or low yields. PurOligo Low Moisture Solvents are engineered to overcome these challenges by offering ultra-low moisture levels (<10 ppm), enabling robust and reliable performance in every synthesis cycle.
Designed for both activation chemistry and washing steps, these solvents safeguard sensitive intermediates and ensure a clean environment for chain elongation. Their unmatched quality and consistency make them the preferred choice for high-throughput synthesis as well as large-scale production.

## Key Features & Benefits:

- Ultra-Dry Assurance
- Technical reliability
- High-Purity
- Consistent Lot- to-Lot Quality
- Documentation Available

| Product No. | Description | Packing |
|---|---|---|
| PSR48564 | Acetonitrile, Moisture < 10 ppm | 1 L, 2.5 L, 4 L |
| PSR48576 | Acetonitrile, Moisture < 20 ppm | 1 L, 2.5 L, 4 L |
| PSR48577 | Dichloromethane, Moisture < 20 ppm | 1 L, 2.5 L |
| PSR48578 | Pyridine, Moisture < 20 ppm | 1 L, 2.5 L |
| PSR48579 | Tetrahydrofuran, Moisture < 20 ppm | 1 L, 2.5 L |
| PSR48580 | Triethylamine, Moisture < 20 ppm | 250 ml, 1 L, 2.5 L |
| PSR48581 | Trifluoroacetic acid, Moisture < 20 ppm | 500 ml, 1 L, 2.5 L |

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# • Application Highlights

*Where PurOligo Makes a Difference*

**Genetic Diagnostics**

High-quality reagents ensure sensitive and reproducible results in PCR, qPCR, and sequencing assays.

**Therapeutic Oligonucleotides**

Reliable chemistry supports the development of antisense oligos, siRNA, and mRNA-based therapies.

**Academic Research**

Enables scientists to explore new genetic pathways with confidence in data accuracy.

**Industrial-Scale Synthesis**

Scalable formulations guarantee consistent performance, from micrograms to kilograms.

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To learn more about Puresynth's Research Chemicals GmbH Portfolio, visit www.pure-synth.com



**Get in touch with our team today to learn more**

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