Chematek

POLAR PROTIC / POLAR APROTIC / APOLAR SYSTEMS

FULL-SPECTRUM REDUCTION CHEMISTRY

Metal hydride reductions across every solvent system



/ FULL SPECTRUM REDUCTION CHEMISTRY

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REDUCING AGENTS 01



Chematek supplies metal hydride reducing agents for use across the solvent polarity spectrum. Global strategic warehousing ensures reliable delivery with full documentation and regulatory compliance, including UK and EU REACH.

SYNHYDRID®

CAS: 22722-98-1

Format	Size	Packaging
Clear liquid 70% w/w and 60% w/w in toluene	200g / 1kg	Lab Samples
	15kg / 25kg / 50kg / 200kg	Steel Drums
	200kg / 450kg/ 1t / 2.5t	Small Portable Tanks

PIPERHYDRIDE®

CAS: 71128-61-5

Format	Size	Packaging
Clear liquid 50% w/w in toluene	200g / 1kg	Lab Samples
	15kg / 25kg / 50kg / 200kg	Steel Drums
	200kg / 450kg/ 1t / 2.5t	Small Portable Tanks

LITHIUM ALUMINIUM HYDRIDE $LiAlH_4$

CAS: 16853-85-3

Format	Size	Packaging
Solid Powder	10kg (10×1kg)	Alu-bags in drum
	33kg (33×1kg)	Cans in drum
Solid Pellets	10kg (10×1kg)	Alu-bags in drum
	33kg (33×1kg)	Cans in drum
Liquid 2.5M in THF	180kg	Cylinder

SODIUM BOROHYDRIDE $NaBH_4$

CAS: 16940-66-2

Format	Size	Packaging
Solid Powder	10 / 50kg (5×10kg or 10×1kg)	Alu-bags in drum
Solid Granular	50kg (5×10kg)	Alu-bags in drum
Liquid 12% in 40% NaOH	1t / 1.25t	IBC
	25kg / 200kg	Drums
Solid Caplets	Custom	Custom

LITHIUM BOROHYDRIDE $LiBH_4$

CAS: 16949-15-8

Format	Size	Packaging
Solid Powder	10kg (10×1kg)	Alu-bag in drum
	33kg (33×1kg)	Cans in drum
Liquid 4M in THF	180kg	Cylinder

POTASSIUM BOROHYDRIDE KBH_4

CAS: 13762-51-1

Format	Size	Packaging
Solid Crystals	50kg (5×10kg)	Alu-bags in drum
	20Kg (4x5Kg)	Alu-bags in drum
Solid Caplets	Custom	Custom

SODIUM CYANOBOROHYDRIDE $NaBH_3CN$

CAS: 25895-60-7

Format	Size	Packaging
Solid	Custom	Contact Chematek

SODIUM TRIACETOXYBOROHYDRIDE $NaBH(OAc)_3$

CAS: 56553-60-7

Format	Size	Packaging
Solid Crystals	40kg (2×20kg)	Alu-bags in drum

/ BACKGROUND

REDUCTION CHEMISTRY HAS ALWAYS BEEN AT OUR CORE

02



1978-1999

Chematek's commercial journey was built on deep reduction chemistry expertise in 1970s Northern Italy, then one of the world's foremost centres of pharmaceutical manufacturing, and a crucible for chemical innovation.

Introducing sodium borohydride to that industry, at that moment, placed us at the heart of a transformative era in reduction chemistry.

The expertise we built there became the foundation for everything that followed. Our portfolio deepened alongside our understanding.

2000-2019

In the early 2000s, we introduced Synhydrid® — a versatile reducing agent recognised for its improved safety profile and high reaction efficiency.

Piperhydride® followed, engineered in close collaboration with clients to meet demanding industrial reduction challenges that existing reagents simply couldn't solve.





2020-NOW

Today, collaboration remains central. Backed by thousands of case studies, a reaction database, and an in-house lab, we provide deep expertise in reagent selection and formulation.

We supply the full hydride spectrum alongside tailored guidance and specialist development support to meet exact process requirements.

Four decades on, the science has evolved. The commitment hasn't.

SOME COMPANIES ENTER A MARKET.
OTHERS HELP DEFINE IT.

/ BACKGROUND

A MULTI-LAYERED GLOBAL NETWORK

02



/ WHO WE WORK WITH — INDUSTRIES & SECTORS

SUPPORTING ORGANISATIONS WHERE SELECTIVITY, SAFETY AND SCALE MATTER

02

LIFE SCIENCES & SPECIALTY SYNTHESIS

Pharmaceuticals & Biotech

Small molecules, intermediates, API synthesis. Late-stage functional group control across polar protic, polar aprotic and apolar systems. See partner types below.

Flavour & Fragrances

Aroma molecules requiring chemoselective carbonyl and imine transformations.

Agrochemicals

Active ingredients and key intermediates. Scalable, safe reductions using $NaBH_4$ and Synhydrid®.

Fine & Specialty Chemicals

Performance additives, aroma chemicals, advanced intermediates. Full polar protic to apolar reagent coverage, including polar aprotic process environments.

INDUSTRIAL ENERGY & PROCESS APPLICATIONS

Hydrogen Energy & Storage

$NaBH_4$ as a high-capacity chemical hydrogen carrier for fuel cell systems, portable power, and hydrogen release technologies.

Water Treatment & Metal Recovery

Reductive precipitation and recovery of dissolved metals — including copper, nickel, silver and platinum-group metals (Pd, Pt, Rh, Ru) — from industrial effluent and process streams using $NaBH_4$.

Paper & Pulp

$NaBH_4$ (supplied as 12% solution in 40% NaOH) for on-site generation of sodium dithionite, the reductive bleaching agent used for mechanical wood pulp. Bulk formats suited to industrial-scale processing with reliable supply.

ADVANCED MATERIALS & ELECTRONICS

Semiconductors & Electronics

High-purity hydride reductions for electronic-grade intermediates, metal deposition, and advanced substrate preparation.

Advanced Materials & Nanotechnology

Controlled metal-salt-to-metal reductions for nanoparticle generation, catalyst preparation, and high-purity intermediate synthesis.

Polymer Chemistry

Synhydrid® as catalyst/initiator in ring-opening polymerisation and anionic polymerisation of caprolactam. Grignard reaction initiation.

CDMOS

End-to-end support from route scouting and reagent substitution to tech transfer and scale-up.

API MANUFACTURERS

Modernising legacy reductions, improving impurity profiles, and securing resilient supply.

TOLLERS & CUSTOM MFG

Process-ready hydrides delivered with reliable global fulfilment and full documentation.

PHARMA INNOVATORS

Early-stage R&D support, reagent screening, and development-scale sampling.

METAL RECOVERY & EFFLUENT TREATMENT

Bulk $NaBH_4$ in solid and stabilised alkaline liquid formats for reductive precipitation of heavy and precious metals from process streams.

HYDROGEN STORAGE & RELEASE

High-purity $NaBH_4$ as a chemical hydrogen carrier: controlled, catalysed hydrolysis releases hydrogen on demand for fuel-cell and portable-power systems.

EXPERT REDUCTIONS ACROSS THE POLARITY SPECTRUM

Leverage 40+ years of expertise with our Three-System Framework—an unbiased approach to matching the reducing agent to your functional group transformation, substrate solubility, solvent system and scale.

From borohydrides in aqueous and alcoholic media to aluminium hydrides in ethereal and hydrocarbon solvents, we advise, supply and develop across the full solvent polarity spectrum.

De-risking your process and protecting your budget from costly delays, ensuring a successful transition from development to commercial manufacturing.

POLAR PROTIC SYSTEMS

Water-compatible polar protic solvents (water, alcohols) where mild conditions and chemoselectivity are critical. Borohydrides perform reliably here.

Best for:

Aldehyde/ketone → alcohol reductions ($NaBH_4$, KBH_4); reductive amination ($NaBH_3CN$).

POLAR APROTIC SYSTEMS

Polar aprotic solvents (THF, 2-MeTHF, DCE, MeCN and toluene–THF blends) where reagents spanning the widest reactivity range operate — from strongly reducing $LiAlH_4$ and $LiBH_4$ to the mild, highly selective $NaBH(OAc)_3$ and $NaBH_3CN$ — and where reagent and solvent selection are most consequential.

Small solvent shifts here can produce large changes in reactivity, selectivity and quench behaviour — Chematek's applied experience across borohydride and aluminium hydride systems supports these decisions.

Best for:

Reductive aminations, ester and acid reductions, selective transformations requiring controlled conditions.

APOLAR SYSTEMS

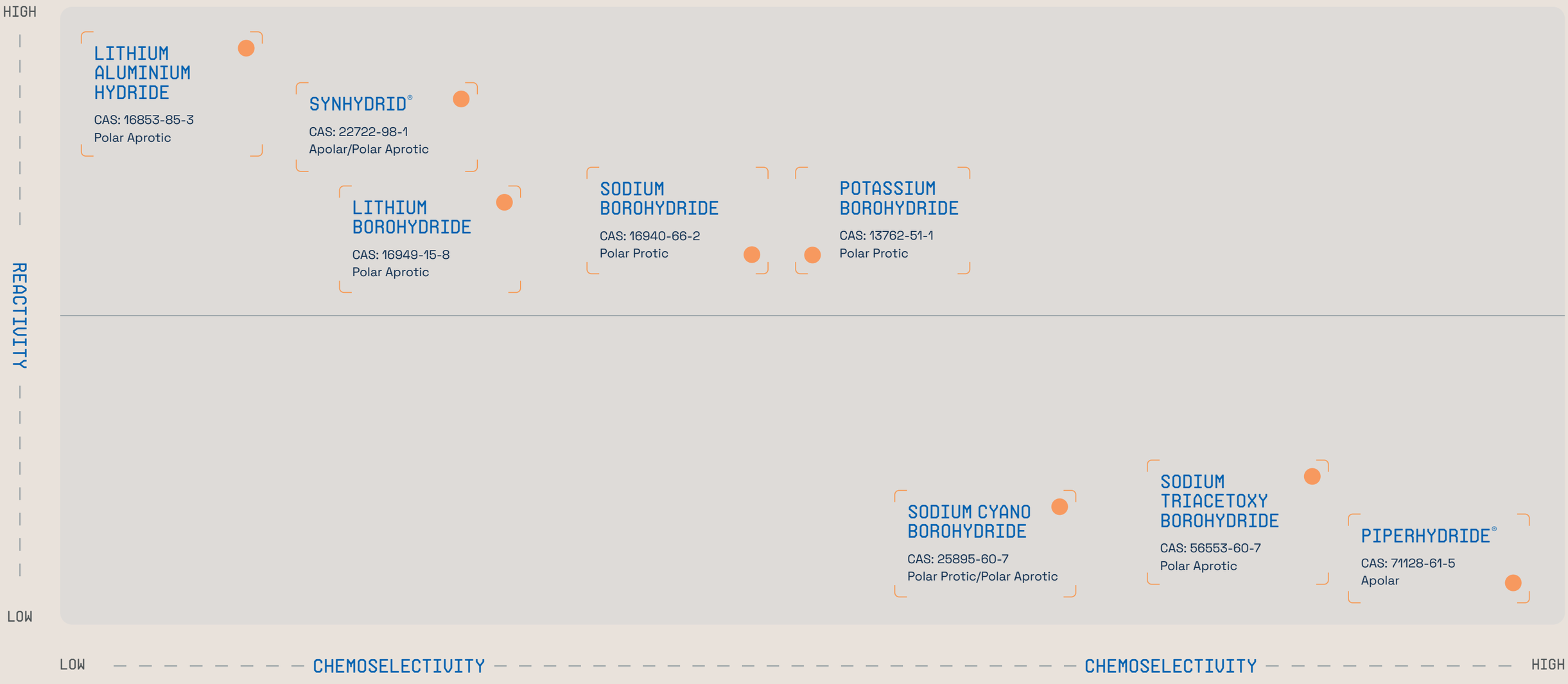
Moisture-controlled, low-polarity solvents (toluene, heptane, xylene) where engineered liquid hydrides deliver selective performance unavailable to borohydrides.

Best for:

Complete ester, acid and lactone reductions (Synhydrid®); controlled ester/nitrile/amide-to-aldehyde and lactone-to-lactol reductions (Piperhydride®); complex selectivity requirements.

POLAR PROTIC	POLAR PROTIC	POLAR PROTIC / POLAR APROTIC	POLAR APROTIC	POLAR APROTIC	POLAR APROTIC	APOLAR / POLAR APROTIC	APOLAR
$NaBH_4$ SODIUM BOROHYDRIDE	KBH_4 POTASSIUM BOROHYDRIDE	$NaBH_3CN$ SODIUM CYANOBOROHYDRIDE	$LiBH_4$ LITHIUM BOROHYDRIDE	$LiAlH_4$ LITHIUM ALUMINIUM HYDRIDE	$NaBH(OAc)_3$ SODIUM TRIACETOXYBOROHYDRIDE	SYNHYDRID® EXCLUSIVE TO CHEMATEK	PIPERHYDRIDE® EXCLUSIVE TO CHEMATEK
CAS: 16940-66-2	CAS: 13762-51-1	CAS: 25895-60-7	CAS: 16949-15-8	CAS: 16853-85-3	CAS: 56553-60-7	CAS: 22722-98-1	CAS: 71128-61-5
Primary Transformations Aldehydes/Ketones → Alcohols; Metal salts → Metals	**Primary Transformations** Aldehydes/Ketones → Alcohols	**Primary Transformations** Imines → Amines (reductive amination)	**Primary Transformations** Esters → Alcohols; Nitriles and primary amides → Amines	**Primary Transformations** Carboxylic Acids → Primary Alcohols, Esters → Primary Alcohols	**Primary Transformations** Imines → Amines (selective, mild acidic conditions)	**Primary Transformations** Esters → Alcohols (complete reduction); Lactones → Diols/ Lactols; Acids → Alcohols	**Primary Transformations** Esters → Aldehydes; Nitriles → Aldehydes (via imine intermediate, hydrolysed on work-up); Lactones → Lactols; Amides → Aldehydes
Solvent Compatibility Water, alcohols (methanol, ethanol); THF as limited/mixed medium only	**Solvent Compatibility** Aqueous and protic solvents; insoluble in THF; less soluble than $NaBH_4$ in most common solvents	**Solvent Compatibility** Methanol (primary — standard Borch conditions); water, ethanol, THF; insoluble in non-polar solvents	**Solvent Compatibility** Dry ethereal solvents (Et_2O, THF); reacts with protic solvents	**Solvent Compatibility** Dry ethereal solvents only (Et_2O, THF); reacts violently with protic solvents	**Solvent Compatibility** DCE (preferred); THF, MeCN; incompatible with water and alcohols	**Solvent Compatibility** Toluene (as supplied) and THF (widely used); also heptane, xylene, DCM and Et_2O	**Solvent Compatibility** Toluene (as supplied) and THF; moisture-controlled systems; room temperature to −25 °C
POLAR PROTIC	POLAR PROTIC	POLAR PROTIC / POLAR APROTIC	POLAR APROTIC	POLAR APROTIC	POLAR APROTIC	APOLAR / POLAR APROTIC	APOLAR

EXPERT REDUCTIONS ACROSS THE POLARITY SPECTRUM



Reactivity and chemoselectivity are substrate- and condition-dependent and should not be inferred from solvent zone alone. Verify with substrate-specific data.

YOUR PATHWAY TO THE RIGHT REDUCING AGENT

THE FULL JOURNEY

Defining a new process

1 PROCESS SELECTION

Committed to hydrides, navigating the polarity spectrum and evaluating reduction approaches

- Catalytic Hydrogenation
- Transfer Hydrogenation
- Dissolving metal Reductions
- Electrochemical Reductions
- Biocatalytic Reductions
- Hydride-Based Reductions

CHEMATEK ROLE

Category Expertise & Awareness

Expert guidance & reagent recommendation through development testing and scale-up

2A REAGENT SELECTION

Committed to hydrides.
Navigating the polarity spectrum.

- Which hydrides
- Reactivity vs Selectivity
- Functional group tolerance
- Solubility / handling
- Scale and practicality
- Technical Guidance required

CHEMATEK ROLE

Technical Partner

Expert guidance and reagent recommendation through to development testing and scale-up

SUBSTITUTION OF REAGENTS

Improving an established process

2B REAGENT SUBSTITUTION

Replacing legacy or hazardous reagents with a better alternative.

- LAH → Synhydrid®
- DIBAL-H → Piperhydride®

CHEMATEK ROLE

Solution Provider

Evaluate & qualify the alternative that works for you.

3 SUPPLIER SELECTION

One partner across the whole spectrum.

Polar Protic — Apolar

Polarity Range
A selection of metal hydride reducing agents across polar protic, polar aprotic and apolar systems.

Operational Reliability
Consistent quality, safety, documentation, & regulatory compliance.

Global Supply Infrastructure
Reliable capacity, global manufacturing, and inventory.

Qualification Support
Technical Packages, change control support, and audit readiness.

CHEMATEK ROLE

In Stock, Ready to Ship

Our comprehensive range of reducing agents is in stock and ready for rapid despatch

STRAIGHT TO PURCHASE

Already know what you need

POLAR PROTIC SYSTEMS 03

THE RELIABLE FOUNDATION OF MODERN REDUCTION CHEMISTRY

Mild. Selective. Proven at scale.
The most widely used chemistry for carbonyl reduction

Polar protic systems — water, methanol, ethanol and other water-compatible media — are where mild borohydrides perform with the reliability that has made them the standard for industrial carbonyl reduction.

Decades of process knowledge underpin borohydride chemistry in these media: $NaBH_4$ and KBH_4 reductions are among the most extensively characterised and predictable in industrial use.

That reliability is precisely why selectivity, supply continuity and regulatory compliance — not raw reactivity — are usually the decisive factors. The chemistry is settled; the buying decision is about how confidently the reagent will flow into your process, your documentation and your audit trail.

CORE REAGENTS

REAGENTS	CAS	PRIMARY TRANSFORMATIONS	SOLVENT COMPATIBILITY
SODIUM BOROHYDRIDE **$NaBH_4$**	16940-66-2	**Aldehydes/Ketones → Alcohols; Metal salts → Metals**	Water, alcohols (methanol, ethanol); THF as limited/mixed medium only
POTASSIUM BOROHYDRIDE **KBH_4**	13762-51-1	**Aldehydes/Ketones → Alcohols**	Aqueous and protic solvents; insoluble in THF; less soluble than $NaBH_4$ in most common solvents
SODIUM CYANOBOROHYDRIDE * **$NaBH_3CN$**	25895-60-7	**Imines → Amines (reductive amination)**	Methanol (primary, Borch conditions); water, ethanol, THF; insoluble in non-polar solvents

*$NaBH_3CN$ spans polar protic and polar aprotic systems. Acidic quench liberates HCN; at scale $NaBH(OAc)_3$ is generally preferred (see p. 34).

THREE THINGS THAT DECIDE OUTCOMES IN POLAR PROTIC SYSTEMS

Specification consistency is the buying decision.

If you're facing challenges with an existing reagent, or are looking to increase selectivity or yield, we can help you evaluate the option that'll work best for you.

Quench behaviour is well characterised — but volume matters.

Hydrogen evolution from $NaBH_4$ and KBH_4 is well characterised; the engineering question is scale. Acidic quench of $NaBH_3CN$ can also liberate HCN and requires appropriate containment.

Regulatory compliance is a gating constraint.

Aqueous and alcoholic borohydride chemistry is so widely deployed that REACH, audit readiness and supplier qualification carry significant weight alongside reagent and process advice.

GLOBAL SUPPLY ASSURANCE

Chematek holds stock of key borohydride reagents in multiple global locations, ensuring reliable supply with full regulatory documentation.

All borohydride products are supplied with REACH-compliant documentation for European customers.

Multi-hub stock

Borohydrides held across Chematek's global distribution network

Compliant

Documentation for every borohydride

Custom fill quantities & product forms

Batch-tailored packaging and customised/ engineered product forms

/ THE POLARITY SPECTRUM

POLAR APROTIC SYSTEMS 03

WHERE REAGENT CHOICE CARRIES THE MOST WEIGHT

Widest Reactivity Range. Higher Stakes.
The Most Consequential Reagent Choices in Reduction Chemistry.

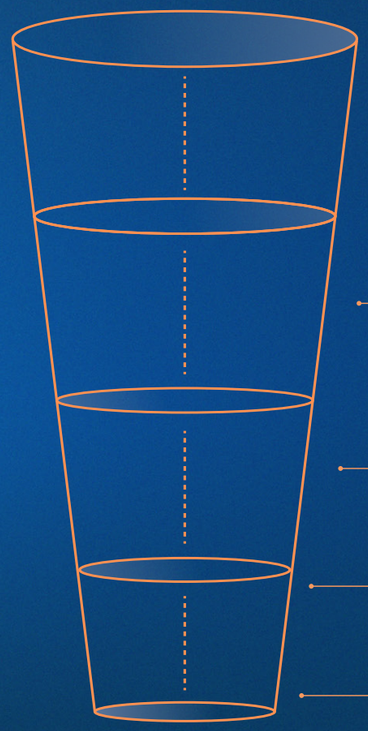
Polar aprotic systems — THF, 2-MeTHF, DCE, MeCN and mixed solvent blends — are where reagents spanning the widest reactivity range operate, from $LiAlH_4$ and $LiBH_4$ to the mild, highly selective $NaBH(OAc)_3$ and $NaBH_3CN$, and where selectivity decisions are most consequential.

Small shifts in solvent composition can change reaction rate, chemoselectivity, gas evolution and quench behaviour dramatically.

The wrong reagent leads to over-reduction, poor selectivity, by-products and difficult work-up. The right choice — informed by applied experience across substrate, solvent and scale — produces clean profiles, high yields and efficient processing.

Chematek's consultancy and laboratory support apply across all three systems, from borohydride processes to aluminium hydrides — including reactions in polar aprotic systems.

HOW CHEMATEK NAVIGATES INTERMEDIATE SYSTEMS



Reagent Screening
comparative assessment across both borohydride and hydride families in your target solvent system.

Selectivity Mapping
which functional groups are reduced and at what rate.

Addition-Mode Studies
normal vs inverse addition, temperature and stoichiometry — kinetic vs thermodynamic control of partial reductions.

Quench Protocol Development
managing exotherms, gas evolution, phase behaviour.

Scale-up Modelling
heat release, mixing, containment at manufacturing scale.

Documented Process Packages
for technology transfer.

CORE REAGENTS

REAGENTS	CAS	PRIMARY TRANSFORMATIONS	SOLVENT COMPATIBILITY
LITHIUM BOROHYDRIDE $LiBH_4$	16949-15-8	Esters → Alcohols; Nitriles and primary amides → Amines	Dry ethereal solvents (Et_2O, THF); reacts with protic solvents
LITHIUM ALUMINIUM HYDRIDE $LiAlH_4$	16853-85-3	Carboxylic acids → Primary alcohols Esters → Primary alcohols	Dry ethereal solvents only (Et_2O, THF); reacts violently with protic solvents
SODIUM TRIACETOXY-BOROHYDRIDE $NaBH(OAc)_3$	56553-60-7	Imines → Amines (selective, mild acidic conditions)	DCE (preferred); THF, MeCN; incompatible with water and alcohols
SODIUM CYANOBOROHYDRIDE* $NaBH_3CN$	25895-60-7	Imines → Amines (reductive amination)	Methanol (primary, Borch conditions); water, ethanol, THF; insoluble in non-polar solvents

* $NaBH_3CN$ spans polar protic and polar aprotic systems.

THREE THINGS THAT DECIDE OUTCOMES IN POLAR APROTIC SYSTEMS

Solvent governs everything
Solvent polarity dictates hydride solvation, aggregation and substrate interaction — directly setting reaction rate and chemoselectivity.

Quench design is half the work
Heat release, gas evolution and phase behaviour during quench and work-up depend on the solvent system as much as on the reagent.

Scale-up sensitivity
Heat removal, hydrogen evolution on quench and aluminate work-up all change character between gram and hectogram scale in THF — predicting that gap is where applied experience matters.

APOLAR SYSTEMS

ENGINEERED LIQUID HYDRIDES FOR MOISTURE-CONTROLLED SYNTHESIS

Cleaner Profiles. Safer Operations.
Liquid Hydride Chemistry Built for Industrial Scale.

Apolar systems — toluene, heptane, xylene and other moisture-controlled, low-polarity solvents — are where $LiAlH_4$ and the borohydrides are insoluble, and where hydrocarbon-soluble liquid aluminium hydrides such as Synhydrid® and Piperhydride® operate.

Synhydrid® and Piperhydride® deliver the reactivity that complex API chemistry demands, in a format that bridges laboratory selectivity and plant-floor practicality.

The pyrophoric hazards of LAH and DIBAL-H have shaped a generation of cautious process design.

Chematek's proprietary liquid hydrides remove that constraint: precise dosing, controlled addition, lower fire risk and cleaner reaction profiles — without sacrificing the reactivity that made LAH and DIBAL-H worth the trouble in the first place.

OPERATIONAL BENEFITS VS. LAH / DIBAL-H	
ATTRIBUTE	OPERATIONAL BENEFIT
Liquid format	Precise dosing, no dust, safer transfer
Cleaner Profiles	Fewer side reactions and by-product
Simplified work-up	Easier quench management
Stable under correct conditions	24+ month shelf life (Synhydrid®)
Predictable	Consistent reaction behaviour

CORE REAGENTS

REAGENTS	CAS	PRIMARY TRANSFORMATIONS	SOLVENT COMPATIBILITY
SYNHYDRID® Sodium bis (2 metho-xyethoxy) aluminium hydride	22722-98-1	Esters → Alcohols (complete reduction) Lactones → Lactols Acids → Alcohols	Toluene (as supplied) and THF (widely used); also heptane, xylene, DCM and Et_2O
PIPERHYDRIDE® Sodium bis(2-methoxyethoxy) (4-methylpiperazin-1-yl) aluminium hydride	71128-61-5	Esters → Aldehydes Nitriles → Aldehydes (via imine intermediate, hydrolysed on work-up) Lactones → Lactols	Toluene (as supplied) and THF; moisture-controlled systems; room temperature to −25 °C
FURTHER MODIFIED SYNHYDRID®	Currently under development for specific Chemoselective reductions		

THREE THINGS THAT DECIDE OUTCOMES IN APOLAR SYSTEMS

The laboratory-to-plant gap.

Reactions that work on bench scale in LAH or DIBAL-H often don't survive scale-up — pyrophoricity, dust handling and unpredictable quench behaviour compound at volume.

Dosing precision supports selectivity.

Controlled liquid addition — mode of addition, stoichiometry and temperature — governs aldehyde-vs-alcohol selectivity in partial reductions.

Supply continuity is non-trivial.

A single proprietary reagent in a critical step is only an advantage if it ships reliably — single-site capacity, redundant lines and dedicated stock are part of the chemistry.

SECURE SUPPLY

Protect your manufacturing schedules with dedicated Synhydrid® and Piperhydride® stock at multiple global hubs, ensuring guaranteed supply continuity.

Secure your supply with the world's largest single-site production facility — multiple co-located lines deliver resilience against stoppages, regulatory changes and demand spikes.

World's largest single-site Synhydrid® production facility
2,000 MT/year (confirmed expansion to 3,000 MT)

200 MT minimum Synhydrid® stock
Available for delivery at all times

Stock held in Europe, USA, China and India
Returnable container shuttle service available

APPLIED KNOWLEDGE, NOT THEORY

04

Ensure project success with our functional group mastery, forged through decades of real-world reduction across all polarities. We apply industrial insights into how your specific groups respond—moving beyond theory to deliver proven results.

Aldehydes / Ketones → Alcohols	Esters / Amides / Nitriles → Aldehydes
Imines → Amines	Acid Chlorides → Alcohols
Disulfides / Peroxides → Thiols / Alcohols	Lactones → Diols or Lactols
α,β-Unsaturated carbonyls — selective 1,2 vs 1,4 control	Metal Salts → Metals (catalyst or nanoparticle generation)

DEDICATED LABORATORY CAPABILITY

De-risk your scale-up with pilot-ready hectogram data from our process lab, supporting you from route design through manufacturing.

Specialist expertise in Synhydrid®, Grignard, and sensitive/exothermic reactions ensures safe, reproducible outcomes for your most complex processes.

- Route scouting and reaction pathway evaluation.
- Process optimisation from gram to hectogram scale.
- Jacketed reactors up to 5 L for controlled scale-up studies.
- Controlled quenching and containment systems for exothermic or gas-evolving reactions.
- Advanced analytical capability including UPLC-ESI, GC-EI, and GC-FID.
- Comprehensive reaction monitoring and impurity profiling to support pilot plant trials and process scale-up.

R&D LEADERSHIP

Scale faster from development to production with insights from our chemists and hundreds of successful projects.

Our lab-backed platform integrates a full hydride portfolio to optimize your product, process, and performance with proven safety and selectivity data.



/ EXPERTISE & PARTNERSHIP

MORE THAN A SUPPLIER.
A REDUCTION CHEMISTRY PARTNER.

Our PhD and specialist team provides end-to-end support—from process review and selection through R&D, scale-up, and commercial supply—as your reduction chemistry partner for the life of your project.

04

PRODUCT SUPPLY



Reliable global supply of our full reducing range: consistent specs, full compliance, and batch-tailored packaging.

- Multi-hub global logistics — fast delivery from warehouse locations worldwide
- Stock on hand at all times for key reagents
- Custom fill quantities to match exact process requirements
- Returnable container shuttle service (Synhydrid®)
- Supply in local currency

TECHNICAL CONSULTANCY



Expert reagent, design, and process advice, grounded in industrial experience across polar protic, polar aprotic and apolar systems.

- Reduction step review and reagent benchmarking across full portfolio
- Reagent–solvent system selection and optimisation
- Selectivity analysis and impurity risk assessment
- Safety and handling consultancy for hazardous reduction steps
- Regulatory and REACH compliance guidance

PROCESS DEVELOPMENT



Lab-led development from scouting to scale-up; our reduction lab yields actionable process data, not just characterisation.

- Reagent screening: comparative assessment in target solvent systems
- Selectivity mapping across substrate and solvent variables
- Quench protocol development: managing exotherms, gas evolution, phase behaviour
- Scale-up modelling and process safety assessment
- Impurity profiling and route to control strategies
- Technology transfer documentation packages (SOPs, analytical methods, safety data)

REAGENT MODERNISATION



Structured service for manufacturers replacing hazardous legacy reagents with modern, safer alternatives—without compromising performance.

- Substitution assessment: identify drop-in or step-change replacements
- Comparative lab work: validate new reagent against existing route
- Scale-up safety evaluation and plant readiness review
- Modified Synhydrid® variants developed for specific routes on request
- Piperhydride® as DIBAL-H / LAH replacement in non-polar systems

STRUCTURED FOR TRUST

Drive innovation through transparent, expert partnerships. From initial evaluation to full process transfer, we manage your projects with absolute discretion and precision—ensuring secure collaboration that delivers real impact across your entire reduction chemistry portfolio.

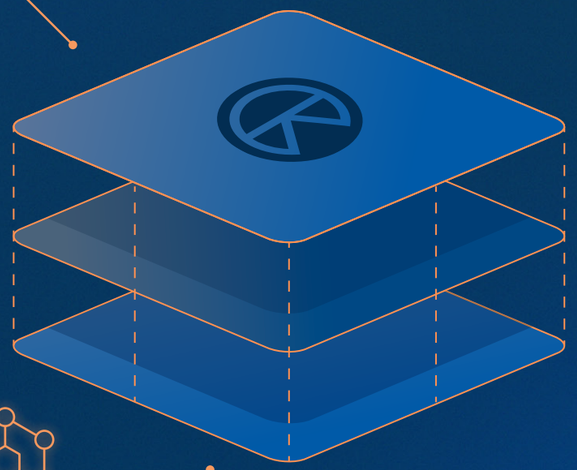
HOW WE PROTECT YOUR KNOWLEDGE

At Chematek, confidentiality is not a formality — it is built into how we operate. Our confidentiality framework combines structural, procedural and cultural safeguards:

STRUCTURAL SAFEGUARDS

Formal NDAs and non-compete agreements are standard at project inception to protect proprietary technology and IP.

Dedicated project leadership: one named project lead with clear accountability.



PROCEDURAL SAFEGUARDS

Secure digital workspaces and controlled laboratory access.

Compliance procedures aligned to GMP-style standards.

DATA/IP SAFEGUARDS

Ring-fenced technical teams working on a strict need-to-know basis.

Data handling and documentation protocols designed to protect partner IP throughout development and commercial transfer

COLLABORATION MODELS

Streamline your R&D and manufacturing with flexible, seamless integration. We eliminate complexity by tailoring our support to match your project's exact maturity level.

01

STRATEGIC PARTNERSHIPS

Extend your chemistry capability through a long-term partnership that provides ongoing technical resources across your portfolio—the ideal model for CDMOs and large manufacturers managing multiple reduction steps.

02

JOINT DEVELOPMENT PROGRAMMES

Enhance your team's capability through long-term technical partnerships—the ideal model for CDMOs and manufacturers managing multi-step reduction portfolios.

03

TECHNOLOGY LICENSING & IMPLEMENTATION

Adopt proven technologies with confidence via licensing or revenue-sharing for mature solutions, including Modified Synhydrid® variants and proprietary process packages.

04

FEE-FOR-SERVICE

Targeted evaluation, reagent screening, or troubleshooting.

Fixed scope, defined deliverables. Ideal for early-stage feasibility or specific technical questions.

WHAT YOU GAIN THROUGH COLLABORATION

Access to Chematek's full-spectrum hydride portfolio across polar protic, polar aprotic and apolar systems.

Flexible commercial frameworks matched to project scope and confidentiality requirements.

Guidance from specialist reduction chemists and analytical experts.

A transparent, data-driven, and secure collaboration environment — whether for a single reduction step or a long-term innovation programme.

Structured data packages including SOPs, impurity maps and analytical reports.

/ EXPERTISE & PARTNERSHIP

A UNIQUE POSITION AT THE INTERSECTION OF EXPERTISE AND GLOBAL CAPABILITY

Chematek uniquely combines deep reduction expertise with a purpose-built lab, a full-polarity hydride portfolio, and global distribution hubs. For 40+ years, we have helped CDMOs, API, and fine chemical producers modernize reduction—replacing hazardous reagents, improving selectivity, and securing supply. This is our core purpose, not a sideline.

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TECHNICAL

FULL-SPECTRUM CAPABILITY

Access unbiased advice and supply across the full solvent polarity spectrum — from borohydrides in aqueous and alcoholic media to aluminium hydrides in ethereal and hydrocarbon solvents.

We ensure you get the ideal reduction solution for any process environment without being limited to a single technology.

R&D LEADERSHIP

Accelerate your pilot plant transfer with scalable process data and impurity profiling from our advanced lab.

Utilize 5L reactors and specialist analytics (UPLC/GC) to secure your hydride transformations.

INFRASTRUCTURE

GLOBAL FULFILMENT

Secure supply continuity and shorter lead times through 9 global hubs.

Our multi-hub platform guarantees dependable, compliant, and fully traceable delivery of hydrides and reagents wherever you operate.

EXPERIENCE

APPLIED EXPERIENCE

De-risk your plant operations with actionable insights on scale-up, safety envelopes, and heat-release data.

We bridge the gap between bench chemistry and industrial production to ensure your process translates successfully to the plant.

FOUR+ DECADES OF HISTORY

Partner with a specialist whose core competency in reduction chemistry dates back to the 1970s.

Our 40-year track record with high-calibre clients provides the stability and expertise needed to handle your most critical projects.

EXCLUSIVE PRODUCTS

Gain exclusive global access to Synhydrid® and Piperhydride®, backed by the world's largest production facility.

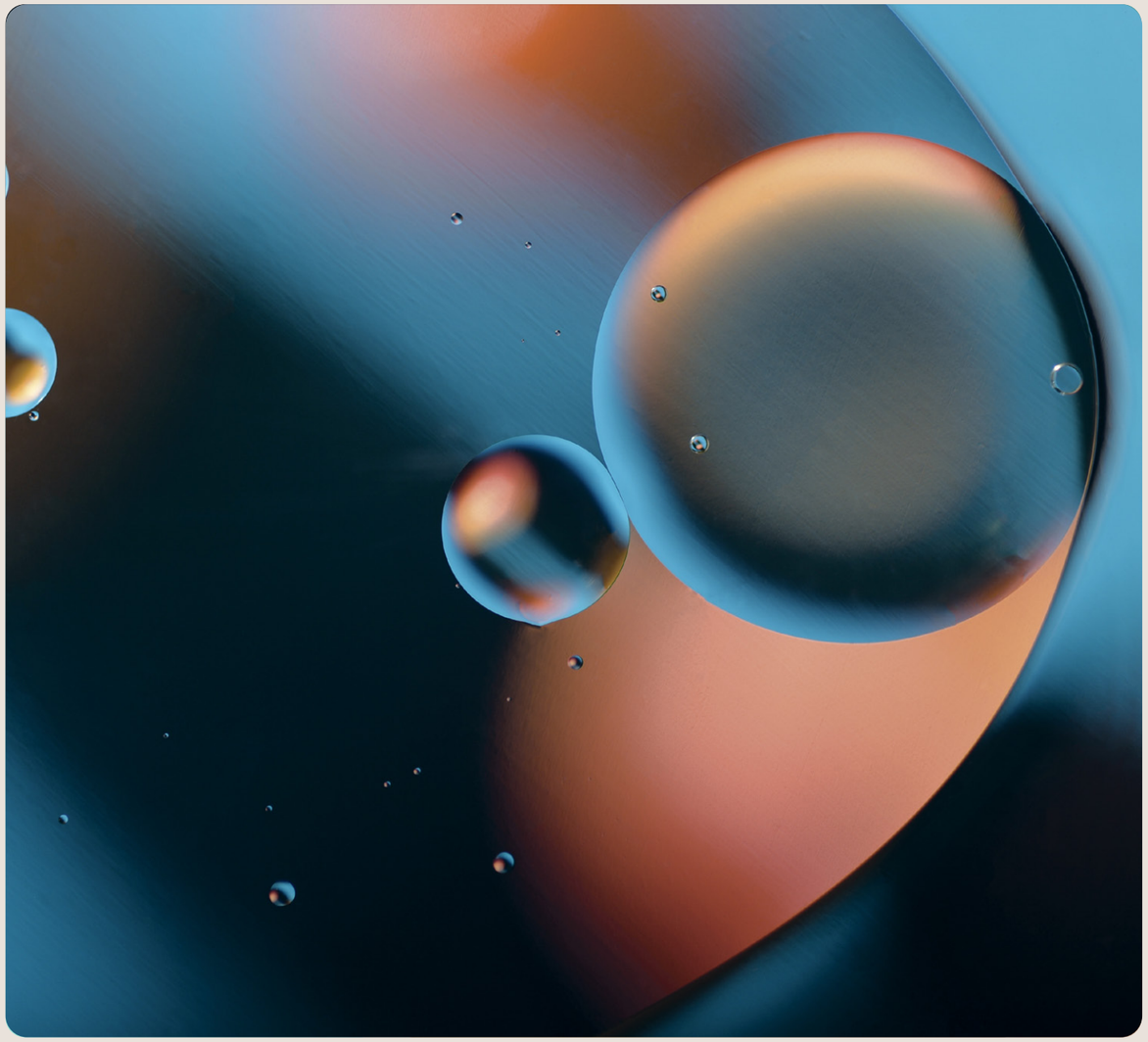
Secure high-performance reagents and technical depth that competitors cannot replicate, ensuring a unique foundation for your supply chain.

METAL HYDRIDE REDUCING AGENT PORTFOLIO

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Every product in Chematek's portfolio is backed by full technical documentation, an audited supply chain, and direct access to our technical team.

Products are held in stock at multiple global locations for rapid despatch with compliant documentation.



APOLAR / POLAR APROTIC

SYNHYDRID®

Eliminate pyrophoric hazards and maximize selectivity with Synhydrid® (sodium bis(2-methoxyethoxy) aluminium hydride in toluene). This world-leading liquid hydride replaces LAH and DIBAL-H, matching their reactivity with the safety and practicality your non-polar synthesis requires.

$NaAlH_2(OCH_2CH_2OCH_3)_2$ | CAS: 22722-98-1

Physical Form:	Clear liquid in toluene	**Molecular Weight:** 202.16
Shelf Life:	Minimum 24 months under correct storage conditions	**Temperature Stability:** - 50°C to +170°C
Concentration:	70% w/w solution in toluene (standard); 60% w/w solution also available; Modified variants available	
Functional Group Transformations:	Esters → Alcohols (complete reduction)	Grignard reaction initiator
	Acids → Alcohols	Amides → Amines
	Acid Chlorides → Aldehydes or Alcohols	Imines → Amines
	Ketones → Alcohols	Lactones → Diols or Lactols
	Anhydrides → Alcohols	Nitriles → Aldehydes (via imine intermediate, hydrolysed on work-up)
	Initiator in anionic polymerisation of Caprolactam	
Formats and packaging:	200g / 1kg	**Laboratory samples (for R&D projects)**
	15kg / 25kg / 50kg / 200kg	**Steel Drums**
	200kg / 450kg/ 1t / 2.5t	**Small Portable Tanks**
Supply Security:	World's largest Synhydrid® production facility: 2,000 MT/year (confirmed expansion to 3,000 MT)	
	Multiple co-located production lines — no stoppages for maintenance or regulatory changes	
	200 MT minimum stock available for delivery at all times	
	Stock held in Europe, USA, China, India	
Compliance & Documentation:	**Reach:** Fully registered for EU supply	
	Documentation: In-house team — accurate and on time; CoA, SDS, TDS all available	
	Supplier Audit: Global network of in-person audited suppliers	

APOLAR

PIPERHYDRIDE®

Sodium bis(2-methoxyethoxy)(4-methylpiperazin-1-yl) aluminium hydride solution. A proprietary Synhydrid®-derived liquid hydride, developed for stricter safety, legal, and environmental standards in pharma and fine chemicals.

CAS: 71128-61-5

Physical Form:	Clear liquid 50% w/w in toluene	
Key Use Case:	Direct replacement for DIBAL-H in established synthesis routes	
Functional Group Transformations:	Amides → Aldehydes (controlled, selective)	Esters → Aldehydes or Alcohols
	Lactones → Lactols	Nitriles → Aldehydes (via imine intermediate, hydrolysed on work-up)
	Operates in non-polar, moisture-sensitive systems where traditional solid hydrides are difficult to manage	
Packaging:	200g / 1kg	**Lab Samples**
	15kg / 25kg / 50kg / 200kg	**Steel Drums**
	200kg / 450kg/ 1t / 2.5t	**Small Portable Tanks**
Key Advantages:	Improved safety profile vs LAH and DIBAL-H: liquid, controlled dosing, lower fire risk	
	Developed by Chematek R&D team; available for scale-up to commercial quantities	
	Comparable reactivity to LAH and DIBAL-H in targeted transformations	
	Technical support from PhD chemists throughout adoption process	

APPLICATION

Modernize your process without a full route redesign using Piperhydride®, a safe and cost-effective DIBAL-H replacement. Achieve selective reduction of amides, nitriles, and esters under mild, scalable, apolar conditions.

POLAR PROTIC

SODIUM BOROHYDRIDE

Sodium borohydride is a mild, reliable reducing agent for aldehyde and ketone reductions to alcohols and for reducing metal salts to metals, used in polar protic conditions. Compatible with water and alcohols; THF use limited to mixed-medium conditions.

$NaBH_4$ | CAS: 16940-66-2

Functional Group Transformations:	Aldehydes → Primary Alcohols	Ketones → Secondary Alcohols
	Metal salts → Metals (catalyst and nanoparticle generation)	Borane (BH_3) generation (with $BF_3{\cdot}OEt_2$ or I_2)
Formats and packaging:	**Solid Powder:** 50kg(5x10kg)	**10kg Alu-bag in Drum**
	Solid Granular: 50kg (5×10kg)	**Alu-bags in drum**
	Liquid 12% in 40% NaOH: 1t / 1.25t	**IBC**
	Liquid 12% in 40% NaOH: 25kg / 200kg	**Drums**
	Solid Caplets	**Custom Size & Packaging**
Compliance:	**Reach:** Fully registered for EU supply	

POLAR PROTIC

POTASSIUM BOROHYDRIDE

Potassium borohydride is a borohydride used in polar protic solvents for aldehyde/ketone reductions to alcohols. Compatible with aqueous and protic systems; insoluble in THF; less soluble than $NaBH_4$ in most common solvents.

KBH_4 | CAS: 13762-51-1

Functional Group Transformations:	Aldehydes / Ketones → Alcohols	
Formats and packaging:	**Solid Crystals:** 50kg (5×10kg); 20kg (4×5kg)	**Alu-bags in drum**
	Solid Caplets	**Custom Size & Packaging**

POLAR APROTIC

LITHIUM BOROHYDRIDE

Powerful borohydride reducing agent with higher reactivity than sodium or potassium borohydride. $LiBH_4$ reduces a broader range of functional groups — including esters, amides and nitriles — and offers improved solubility in ether solvents for efficient homogeneous reductions.

$LiBH_4$ | CAS: 16949-15-8

Functional Group Transformations:	Aldehydes and Ketones → Alcohols	Esters → Alcohols (room temperature or mild heating)
	Amides → Amines	Nitriles → Amines
	Carboxylic Acids → Alcohols	
Formats and packaging:	**Solid Powder:** 10kg(10x1kg), 33kg(33x1kg)	**1kg Alu-bag in Drum, 1kg can in Drum**
	Liquid 4M in THF: 180kg	**Cylinder**

POLAR APROTIC

LITHIUM ALUMINIUM HYDRIDE

Lithium aluminium hydride is a strong polar aprotic hydride for reducing carboxylic acids and esters to primary alcohols. Used in dry ethereal solvents only (Et_2O, THF); reacts violently with protic solvents. Its high reactivity demands rigorous moisture control and validated quench protocols.

$LiAlH_4$ | CAS: 16853-85-3

Functional Group Transformations:	Carboxylic acids → Primary alcohols	Aldehydes/Ketones → Alcohols
	Esters → Primary alcohols	
Solvent compatibility:	Dry ethereal solvents only (Et_2O, THF); reacts violently with protic solvents.	
Formats and packaging:	**Solid Powder:** 10kg(10x1kg), 33kg(33x1kg)	**1kg Alu-bag in Drum, 1kg can in Drum**
	Solid Pellets: 10kg (10×1kg); 33kg (33x1kg)	**1kg Alu-bag in Drum, 1kg can in Drum**
	Liquid 2.5M in THF: 180kg	**Cylinder**

POLAR PROTIC / POLAR APROTIC

SODIUM CYANOBOROHYDRIDE

Mild, selective reducing agent widely used in organic synthesis, especially reductive amination of imines and Schiff bases. Its controlled reactivity enables selective iminium ion reduction in the presence of aldehydes and ketones — ideal for pharma and fine chemical synthesis.

$NaBH_3CN$ | CAS: 25895-60-7

Functional Group Transformations:	Imines → Amines (highly selective)	Schiff bases → Secondary Amines
	Reductive amination: Aldehyde/Amine combinations → Secondary Amines	Does not reduce aldehydes or ketones under mildly acidic conditions
Solvent compatibility:	Methanol (primary, standard Borch conditions); water, ethanol, THF; insoluble in non-polar solvents.	
Formats and packaging:	**Solid:** Custom packaging	Contact Chematek for quantities & configuration

POLAR APROTIC

SODIUM TRIACETOXY -BOROHYDRIDE

Selective reducing agent for reductive amination under mildly acidic or neutral conditions. More chemoselective than $NaBH_4$, it converts imines to amines while minimising carbonyl reduction. Increasingly preferred over $NaBH_3CN$ in pharmaceutical synthesis for its manageable safety profile.

$NaBH(OAc)_3$ | CAS: 56553-60-7

Functional Group Transformations:	Imines → Amines (selective, mild acidic conditions)	Reductive amination: Aldehyde + Amine combinations → Secondary/Tertiary Amines
	Minimal competing reduction of isolated aldehydes/ketones under standard conditions	
Solvent compatibility:	DCE (preferred); THF, MeCN; incompatible with water and alcohols.	
Formats and packaging:	**Solid Crystals:** 40kg (2×20kg)	**Alu-bags in drum**

Chematek

Contact Us

enquiries@chematek.com

Request a Sample

Synhydrid®, Piperhydride®, and key borohydride reagents are available as laboratory samples for qualified R&D projects.

To request a sample, contact your account manager or our technical team with a brief description of your application.

Technical Data Sheets

Full Technical Data Sheets (TDS), Safety Data Sheets (SDS), and Certificates of Analysis (CoA) are available for all products.

Contact us or visit chematek.com to download.

Proud to be a Sedex Member

Chematek is committed to responsible business accountability and transparency at every level across all markets including Anti-Corruption, Whistle-blowing, and Gender & Inclusion frameworks