

Schircks Laboratories
 Postfach
 CH-8494 Bauma
 Switzerland
 Telephone +41 (0) 55 / 212 23 24
 E-Mail labschircks@gmail.com
 Website www.schircks.ch

Schircks Laboratories

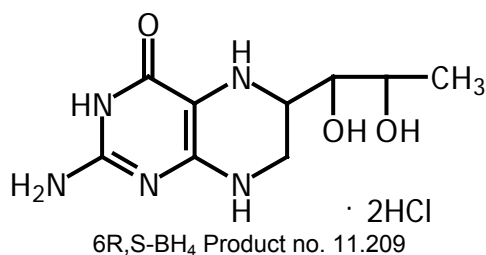
DATA SHEET

TETRAHYDROBIOPTERIN

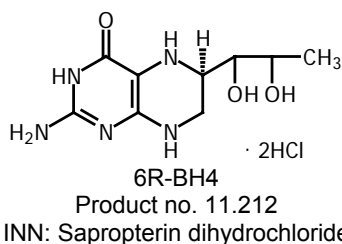
Synonym: 2-amino-6-[(1R,2S)-1,2-dihydroxypropyl]-5,6,7,8-tetrahydro-4(1H)-pteridinone

Please note that none of the products shown below are sterile.
 They are sold in ampoules for laboratory use only.

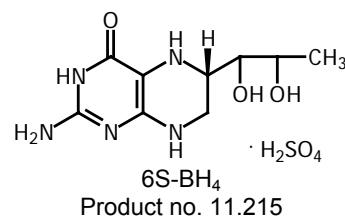
CAS No. 17528-72-2



CAS No. 69056-38-8



CAS No. 109784-74-9



Product Name	Prod. No.	Abbreviation	Molecular Formula	M.W.
(6R,S)-5,6,7,8-Tetrahydro-L-biopterin dihydrochloride	11.209	6R,S-BH ₄ ·2HCl	C ₉ H ₁₅ N ₅ O ₃ · 2HCl	314.2
(6R)-5,6,7,8-Tetrahydro-L-biopterin dihydrochloride	11.212	6R-BH ₄ ·2HCl	C ₉ H ₁₅ N ₅ O ₃ · 2HCl	314.2
(6S)-5,6,7,8-Tetrahydro-L-biopterin sulfate	11.215	6S-BH ₄ ·H ₂ SO ₄	C ₉ H ₁₅ N ₅ O ₃ · H ₂ SO ₄	339.3

Chemical reduction of biopterin yields two diastereoisomers, 6R- and 6S-BH₄. 6R-BH₄ is the natural form of tetrahydrobiopterin. The 6R,S-BH₄ that we manufacture contains about 70% of 6R-BH₄ and 30% of 6S-BH₄.

Description	White to light yellow powder
Biochemical functions	Tetrahydrobiopterin is a natural occurring cofactor of the aromatic amino acid hydroxylases and is involved in the synthesis of tyrosine and the neurotransmitters dopamine and serotonin. It is also essential for nitric oxide synthase catalysed oxidation of L-arginine to L-citrullin and nitric oxide. Tetrahydrobiopterin is involved in many other biochemical functions, many of which have been just recently discovered.
Solubility	6R- and 6R,S-BH ₄ ·2HCl are freely soluble in water. The solubility of 6S-BH ₄ ·H ₂ SO ₄ is 2.3 g per 100 g of water (22°C). A 1 mM solution of 6R-BH ₄ in water gives a pH of 3.0 and a 1 M solution of 6R-BH ₄ in water gives a pH of 0.45.
Analytical methods	HPLC conditions: column: Whatman Partisil 10 SCX eluant: 30 mM NaH ₂ PO ₄ , pH 3 flow rate: 1.5 ml/min wavelength: 254 nm solution: 160 mg BH ₄ / 100 g H ₂ O with degassed ascorbic acid solution (0.16%)

Schircks Laboratories
 Postfach
 CH-8494 Bauma
 Switzerland
 Telephone +41 (0) 55 / 212 23 24
 E-Mail labschircks@gmail.com
 Website www.schircks.ch

Schircks Laboratories

Analytical methods (contd.)	UV	ϵ_{267}	$16 \times 10^3 \text{ M}^{-1} \text{ cm}^{-1}$ in 0.1N HCl						
	TLC:	BH ₄ solutions are not stable in the presence of air to perform TLC.							
Purity	Product no. 11.212 is > 99.5% pure, contains less than 0.1% of 6S-BH ₄ and has no sodium chloride.								
Stability	<p>Tetrahydrobiopterin is very hygroscopic. It reacts with oxygen especially in neutral and alkaline solutions. Due to oxidation tetrahydrobiopterin solutions become yellow but at -20°C or colder, solutions are relatively stable.</p> <p>0.1 mM solutions of tetrahydrobiopterin in water are much less stable than 1 mM solutions, i.e. after 1 hour open at room temperature, 0.1 mM solutions degrade by about 25% whereas 1 mM solutions degrade only by 2%. After 3 hours, 0.1 mM solutions degrade by more than 60% and 1 mM solutions degrade only by 10%.</p> <p>Dry powder has different stability depending on conditions, as described in the table below.</p> <table border="0" style="margin-left: 40px;"> <tr> <td></td> <td style="text-align: center;">RT</td> <td style="text-align: center;">-20°C</td> </tr> <tr> <td>In ampoules</td> <td style="text-align: center;">several months</td> <td style="text-align: center;">several years</td> </tr> </table>				RT	-20°C	In ampoules	several months	several years
	RT	-20°C							
In ampoules	several months	several years							
Storage	<p>Storage conditions are not controlled during shipment and we cannot guarantee that the customer will receive the shipment within 6 weeks. There is no cause for concern when ampoules are delayed in the post as they are stable for several months at room temperature. Customers who have purchased 6R-BH₄ in the past can estimate the time required for shipment.</p> <p>On arrival we recommend that the powder is stored at -20°C or colder. After an ampoule has been opened, the remainder should be put in a vial and then it can be stored in a freezer. Solutions of tetrahydrobiopterin should be prepared in oxygen free water with the lowest possible pH value and frozen as soon as possible. In order to increase the stability of BH₄ solutions, ascorbic acid, DTT or other antioxidants, may be added.</p>								
Safety information	Tetrahydrobiopterin is known to be safe for the intended use. Avoid prolonged inhalation of the fine dust of tetrahydrobiopterin which is very acidic. Otherwise there are no special precautions required in handling this product.								
References	<p>Biosynthesis and function of tetrahydrobiopterin. David S. Duch and Gary K. Smith, <i>J. Nutr. Biochem.</i>, 2, (1991), 411-423.</p> <p>Tetrahydrobiopterin deficiency: From phenotype to genotype. Nenad Blau, Beat Thöny, Claus W. Heizmann and Jean-Louis Dhondt, <i>Pteridines</i>, 4, (1993), 1-10.</p> <p>New Tetrahydrobiopterin-Dependent Systems. Seymour Kaufmann, <i>Annu. Rev. Nutr.</i>, 133, (1993), 261-286.</p> <p>Analysis of reduced forms of biopterin in biological tissues and fluids. Fukushima, T. and J. C. Nixon, <i>Anal Biochem.</i>, 102(1), (1980), 176-88.</p>								

Further data sheets can be found on our website www.schircks.ch

The information in this publication is based on our current knowledge and experience. It does not relieve users or processors from carrying out their own precautions and tests.