peptido active substances

BATCH 2639

Certificate of Analysis

v06.0 - 06/2012

PRODUCT LEVOTHYROXINE SODIUM

(active substance)

INTERNAL CODE L-T4 Na **MANUFACTURER** PEPTIDO GmbH

> Am Kraftwerk 6 66450 Bexbach / GERMANY

CAS -NUMBER(S) [25416-65-3]

BATCH SIZE <<kg>> 40.0kg PRODUCTION DATE

10-2012 RETEST << MM/YYYY >> 10-2014

 $C_{15}H_{10}I_4NNaO_4 * xH_2O 799,0 g/mol (anhydrous)$

R1-CEP1998-048-Rev 04

PARAMETER REQUIREMENT / ACCEPTANCE LIMIT RESULT

Characters* -

An almost white or slightly brownish-yellow, fine, slightly hygroscopic, crystalline powder.

Very slightly soluble in water, slightly soluble in ethanol (96 per cent).

It dissolves in dilute solutions of alkali hydroxides.

Identification -

Identification B (Ph. Eur. 2.3.1) white precipitation with K[Sb(OH)6] complies Optical rotation - Optical rotation (Ph. Eur. 2.2.7) between + 16.0 and + 20.0° 19.0° Water Vater (Ph. Eur. 2.5.32) 6.0 - 12.0% 9.8% Impurities - Appearance of solution (Ph. Eur. 2.2.2 / II) Inorganic iodide Residual solvents - Ethanol Residual solvents - Ethanol NMT 1000ppm A6 ppm Ethylamine NMT 200ppm A6 ppm Ethylamine NMT 200ppm Related substances - (Ph. Eur. 2.2.29) Impurity A (Liothyronine) Impurity F NMT 0.5% Impurity F NMT 0.5% Impurity G NMT 0.3% NMT 0.3% Unspecified impurities NMT 0.2% NMT 0.2% NMT 0.2% O.05% Total 0.05%	Identification A (Ph. Eur. 2.2.24)	IR vs RS complies	complies
Optical rotation - Optical rotation (Ph. Eur. 2.2.7) between + 16.0 and + 20.0° 19.0° Water Water (Ph. Eur. 2.5.32) 6.0 - 12.0% 9.8% Impurities - Appearance of solution at most BY 3 BY6 (Ph. Eur. 2.2.2 / II) Inorganic iodide NMT 0.08% complies Residual solvents - Ethanol NMT 1000ppm 46 ppm Ethylamine NMT 200ppm < LOQ (= 3ppm) Related substances - (Ph. Eur. 2.2.29) Impurity A (Liothyronine) NMT 1.0% 0.15% Impurity G NMT 0.3% < 0.05% unspecified impurities NMT 0.2% < 0.05% Total NMT 2.0% 0.15% Assay (Ph. Eur. 2.2.29) -	Identification B (Ph. Eur. 2.3.1)	white precipitation with K[Sb(OH)6]	
Water Water (Ph. Eur. 2.5.32) 6.0 - 12.0% 9.8% Impurities - Appearance of solution at most BY 3 BY6 (Ph. Eur. 2.2.2 / II) Inorganic iodide NMT 0.08% complies Residual solvents - Ethanol NMT 1000ppm 46 ppm Ethylamine NMT 200ppm < LOQ (= 3ppm)	Optical rotation -		•
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Appearance of solution at most BY 3 BY6 (Ph. Eur. 2.2.2 / II) Inorganic iodide NMT 0.08% complies Residual solvents - Ethanol NMT 1000ppm 46 ppm Ethylamine NMT 200ppm < LOQ (= 3ppm)	Water (Ph. Eur. 2.5.32)	6.0 - 12.0%	9.8%
(Ph. Eur. 2.2.2 / II) Inorganic iodide NMT 0.08% complies Residual solvents - Ethanol NMT 1000ppm 46 ppm Ethylamine NMT 200ppm <loq (="3ppm)</td"> Related substances - (Ph. Eur. 2.2.29) Impurity A (Liothyronine) NMT 1.0% 0.15% Impurity F NMT 0.5% <0.05%</loq>	Impurities -		
Inorganic iodide NMT 0.08% complies Residual solvents - Ethanol NMT 1000ppm 46 ppm Ethylamine NMT 200ppm <loq (="3ppm)</td"> Related substances - (Ph. Eur. 2.2.29) NMT 1.0% 0.15% Impurity A (Liothyronine) NMT 0.5% <0.05%</loq>	• •	at most BY 3	BY6
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Related substances - (Ph. Eur. 2.2.29) Impurity A (Liothyronine) NMT 1.0% 0.15% Impurity F NMT 0.5% <0.05%	Ethanol	• •	
(Ph. Eur. 2.2.29) NMT 1.0% 0.15% Impurity A (Liothyronine) NMT 0.5% <0.05%	Ethylamine	NMT 200ppm	<loq (="3ppm)</td"></loq>
Impurity A (Liothyronine) NMT 1.0% 0.15% Impurity F NMT 0.5% <0.05%			
Impurity F NMT 0.5% <0.05%	(Ph. Eur. 2.2.29)		
Impurity G NMT 0.3% <0.05%	Impurity A (Liothyronine)		0.15%
unspecified impurities NMT 0.2% <0.05%	Impurity F	NMT 0.5%	<0.05%
Total NMT 2.0% 0.15% Assay (Ph. Eur. 2.2.29) -	Impurity G	NMT 0.3%	<0.05%
Assay (Ph. Eur. 2.2.29) -	unspecified impurities	NMT 0.2%	<0.05%
	Total	NMT 2.0%	0.15%
<u>Levothyroxine sodium</u> 97.0 – 102.0% 100.8%	Assay (Ph. Eur. 2.2.29) -		
	Levothyroxine sodium	97.0 – 102.0%	100.8%

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* not routinely performed















SUGGESTED STORAGE AND RETEST -

07 Jan 2013

In an airtight container, protected from light, at a temperature of 2°C to 8°C. Retest 2 years after production date.

The herewith analyzed substance is in accordance with specification and can be released

The herewith analyzed substance is not in accordance with specification and must be rejected / reworked / reprocessed

Bexbach

i.V. M.Sailer; QC

Pepsido

06450 Bestrach Telekm (06026) 3009 checked & released by QA:

1. V. Bieller

S. Biehler