L-Threonine 98.5 % Feed Grade is produced by fermentation from raw materials of agricultural origin (such as beet molasses or starch hydrolysates).
This product is intended only for animals and should not be used in human products or human consumption.

1. Physical description

White to pale yellow crystalline powder.

2. Chemical description

Chemical structure	CH_3-CH-CH-COO^- | | OH NH_3^+
Chemical formula	$C_4H_9NO_3$
Molecular weight	119.12
Isomer	L (Laevo-rotatory)

3. Commercial guarantee

Threonine, %	98	Minimum	AOAC 999.13
Moisture, %	0.5	Maximum	105°C for 4 hours
Purity,%	98.5	Minimum	L-Threonine on dry matter

4. Regulatory position

L-Threonine, technically pure (L-Threonine 98.5 % Feed Grade) is in the scope of Regulation (EC) 1831/2003 of 22/09/2003 on additives for use in animal nutrition (OJ EU n° L 268 of 18/10/2003), category: "nutritional additives", additive group: "amino acids, their salts and analogues" and is approved for use in all animal species.

5. Nutritional values*

Dry matter, %	99.5	Minimum	105°C for 4 hours
Threonine, %	98.0	Minimum	AOAC 999.13
Digestibility coefficient, %	100		INRA - AFZ 2002
Crude Protein, %	72.0	Minimum	(N Dumas x 6.25) by convention
ME poultry, kcal.kg^{-1} (MJ.kg^{-1})	3570 (14.94)	With DE = GE & N retention = 0.40	Sauvant et al., 2004; p.38.
DE pig, kcal.kg^{-1} (MJ.kg^{-1})	4140 (17.32)	From GE values (DE = GE)	Calorimetric bomb
ME pig, kcal.kg^{-1} (MJ.kg^{-1})	3790 (15.86)	ME : DE = 0.915	Sauvant et al., 2004.
NE pig, kcal.kg^{-1} (MJ.kg^{-1})	2950 (12.34)	NE : ME = 0.777	Sauvant et al., 2004.

* Values for information purpose only and do not constitute any commercial guarantee
Source: Sauvant D., Perez J.-M., Tran G., 2004. Tables of composition and nutritional value of feed materials. Wageningen Academic Publishers, INRA Editions and AFZ, Paris.

6. Packaging and storage

Packaging
25 kg bags on shrink wrapped pallets, "Big bags" or bulk.
Storage
Store in dry conditions, in a sealed or closed container and protected from light and heat. Avoid any source of combustion.
Stability
➢ Original 25 kg bags unopened: the product is stable for at least 3 years if stored under recommended conditions.
➢ Original "Big bags" unopened: the product is stable for at least 1 year if stored under recommended conditions.

The batch number and the production date are printed on the bags. For bulks, this piece of information is printed on the conformity certificate.

Application date : 30/09/2011

7. Additional information

Values for information purpose only. Do not constitute any commercial guarantee.

General specifications

pH	5 to 6.5	solution at 5%
Bulk density, kg/l	0.62 to 0.66	
Melting point / Decomposition temperature	255 °C	
Solubility in water	9.76 g/100 g water	at 20°C
Particles size	Less than 0.50 mm	100%

Chemical characteristics

Residue on ignition, %	0.50	Maximum
Potassium, %	0.05	Maximum
Ammonium, %	0.10	Maximum
Chloride, %	0.20	Maximum
Sodium, %	0.05	Maximum
Specific rotation °	- 26 to – 29	at 20°C, C6 %, H_2O

Other information

Heavy metals		Complying with EU Directive 2002/32/EC
Arsenic	2 mg/kg	Maximum
Lead	5 mg/kg	Maximum
Mercury	0.1 mg/kg	Maximum
Cadmium	0.5 mg/kg	Maximum
Fluor	30 mg/kg	Maximum
Pesticides		Complying with EU Directive 2002/32/EC
Dioxins, dioxins-like PCBs		Complying with EU Directive 2002/32/EC

Examples of practical utilisation of L-Threonine in compound feeds

Range of supplementation commonly used. Do not represent maximum or minimum inclusion levels.

		In kg per ton of feed
Pigs	Piglet	0.5 to 2.0
	Growing-Finishing pig	0.2 to 1.5
	Sow	0.1 to 1.5
Poultry	Turkey	0.1 to 1.0
	Broiler	0.1 to 1.0
	Laying hen	0.1 to 1.0
Others	Fish	0.5 to 3.0
	Calf milk replacer	0.5 to 3.0
	Pet food	0.1 to 1.0
	Rabbit	0.1 to 1.0

AJINOMOTO EUROLYSINE S.A.S - 153 rue de Courcelles - 75817 PARIS CEDEX 17 - FRANCE

Phone : 33 1 44 40 12 12 - Fax : 33 1 44 40 12 13 - Approval Number**: α FR 80 021 090**

Application date : 30/09/2011