



## Product Data Sheet



**Max Muscle Sports Nutrition (MMSN)** is proud to introduce **Pro BCAA**. **Pro BCAA** is a scientifically-based formula to provide the body with high potency branched-chain amino acids (BCAA Xtreme™) in the ideal 2:1:1 ratio of leucine, isoleucine, and valine. As a versatile formula, **Pro BCAA** is specifically designed to benefit both pre-, during, and post-workouts. For the pre- and during workout, this comprehensive formula is designed to support the energy fuels needed for high intensity and endurance workouts. For the post-workout, it functions to support rapid recovery, muscle anabolism and anti-catabolic effects.

The BCAAs (leucine, valine and isoleucine) are known to be highly concentrated in muscles (35%) and have been shown to serve as important fuel sources for skeletal muscles during periods of high-intensity exercise. The BCAAs, particularly leucine, have powerful anabolic effects on protein metabolism by increasing the rate of protein synthesis and decreasing the rate of protein breakdown in human muscle. Additionally, during recovery from endurance exercise, BCAAs have been shown to have an anabolic effect in human muscle by activating key enzymes in protein synthesis. The BCAAs improve protein and nitrogen balance in muscle, preserve muscle glycogen reserves, suppress protein catabolism, and overall have an anti-catabolic effect.†

The highly concentrated levels of leucine found in **Pro BCAA** promotes protein synthesis by mediating the signaling pathways controlling protein synthesis involving the phosphorylation of the target enzymes Akt/mTOR (rapamycin), a protein kinase and the sequential stimulation of p70 ribosomal S6 kinase (p70 S6K) through enhanced translation of specific mRNAs. The Akt/mTOR pathway in muscle is upregulated during the hypertrophy (increase in muscle size) phase. Additionally, the BCAAs stimulate the production of the amino acids alanine and glutamine.†

**Citrulline malate** promotes anaerobic energy production for high-intensity exercise along with aerobic energy production for lower to moderate intensity workouts. Citrulline malate promotes the removal of lactate and ammonia from muscle cells, reduces muscle fatigue and supports arginine synthesis and superior for nitric oxide (NO) production.

**Glutamine** is a "conditionally essential" amino acid and is the most abundant amino acid in the body and in muscles (60%). Glutamine serves as the metabolic fuel for intestinal enterocytes and a precursor for glucose in gluconeogenesis, preferentially used by cells of the immune system and for the anti-oxidant glutathione. The metabolic pool and plasma levels of glutamine are often depleted during exercise, overtraining and stress. Studies have confirmed that athletes may not produce enough glutamine to support muscle requirements during recovery. Glutamine supplementation helps reduce hyperammonemia (elevated ammonia in the blood) during intense and endurance exercise and promotes muscle glycogen synthesis after exercise. Glutamine is a "workhorse" amino acid to prevent protein catabolism (breakdown) and clearly anti-catabolic.

**Glycine** supports natural Growth Hormone and adds to the pleasant flavor of **Pro BCAA**.

Vitamins C, B6, B12 and Biotin are metabolic cofactors for enhanced biochemical utilization of the BCAAs.

**Pro BCAA** is designed to be used as a pre-workout, during workout, anti-catabolic, post-recovery formula. To be used during strength or endurance exercise to decrease the catabolic activity of muscles.

Please read all warnings and directions before taking this product. Consult a physician before starting any diet or exercise program.



**Size:** Net. Wt. 352 g (0.776 lb)

**Serving Size:** Two (2) scoops (Approx. 11.7 g)

**Servings Per Container:** Approx. Thirty (30)

**Flavors:** Pink Lemonade, Tangerine and Watermelon

### KEY FEATURES

- Proprietary Blend of High Potency Branched-Chain Amino Acids
- Anti-Catabolic, Endurance and Recovery Formula†
- Evidence-Based Endurance and Recovery Modulator†
- Supports Optimal Protein and Carbohydrate Utilization in Muscles†
- Promotes Muscle Akt/mTOR and p70(S6K) Activation†

### KEY MESSAGES

- Scientifically formulated using a proprietary blend of the branched-chain amino acids (BCAAs); leucine, valine and isoleucine along with glutamine, glycine and citrulline malate.
- High-potency formula providing 7 gm BCAAs per serving.†
- The BCAAs helps inhibit muscle catabolism (breakdown) of protein and promote protein synthesis (anabolism) and nitrogen retention.†
- The BCAAs prevents muscle glycogen degradation (breakdown) to support maximum endurance and increased time to exhaustion.†
- The BCAAs, particularly leucine, promotes protein synthesis involving the phosphorylation of the target enzymes Akt/mTOR and the sequential stimulation of p70 ribosomal S6 kinase (p70 S6K) through enhanced translation of specific mRNAs. The Akt/mTOR pathway in muscle is upregulated during the hypertrophy (increase in muscle size) phase.†
- May reduce delayed onset muscle soreness (DOMS), microtrauma and inflammation of the muscle fibers.†
- Contains glutamine for its anti-catabolic functions to prevent glutamine depletion, restoring plasma glutamine levels and the metabolic glutamine pool in muscles during intense exercise, muscle recovery, and immune support.†
- Contains citrulline malate with promotes aerobic energy production, functions to remove lactic acid and ammonia from muscles, reduces muscle fatigue and supports the synthesis of the amino acid arginine for superior nitric oxide (NO) production.†
- Contains glycine for additional Growth Hormone support.†
- Contains Vitamins C, B6, B12 and Biotin which are essential metabolic enzymatic cofactors for enhanced biochemical utilization of the BCAAs.†

Your assurance of quality®

210 W. Taft Ave. • Orange, California 92865 • 714.456.0700 • 714.456.0727 fax

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## Supplement Facts

Serving Size: Two (2) scoops (Approx. 11.7 g)  
 Servings Per Container: Approx. Thirty (30)

	Amount Per Serving	% DV*
Vitamin C (ascorbic acid)	60 mg	100%
Vitamin B6 (pyridoxine HCl)	10 mg	500%
Vitamin B12 (cyanocobalamin)	6 mcg	100%
Biotin	300 mcg	100%

<b>Pro BCAA &amp; Amino Acid Proprietary Blend</b>	11.4 g	**
Leucine, Isoleucine, Valine, Glutamine, Glycine, Citrulline Malate		

\*Percent Daily Values are based on a 2,000 calorie diet.

\*\*Daily Value not established.

**Directions:** As a dietary supplement mix two (2) scoops (approximately 11.7 g) with 16 ounces of pure cold water. Stir briskly or shake in a closed container until mixed. Best if consumed immediately before, during or after a workout. Add sweetener, increase water or juice content for taste preference.

**Other Ingredients (Pink Lemonade):** Potassium citrate, acesulfame potassium, sucralose sweetener, natural and artificial flavors (FD & C Red No. 40).

**Other Ingredients (Tangerine):** Potassium citrate, acesulfame potassium, sucralose sweetener, natural and artificial flavors (FD & C Yellow No. 6).

**Other Ingredients (Watermelon):** Potassium citrate, acesulfame potassium, sucralose sweetener, natural and artificial flavor (FD & C Red No. 40).

**ALLERGY INFORMATION:** Manufactured in a facility that processes milk, soy and egg proteins, peanuts, other tree nuts and wheat.

**WARNING STATEMENT:** Consult a physician before starting any diet and exercise program and before using this product. Discontinue use and call a physician or licensed qualified health care professional immediately if you experience unexpected side effects. If pregnant, nursing or taking prescription medications, consult a licensed healthcare practitioner prior to use.

**KEEP OUT OF REACH OF CHILDREN.**

**STORE IN A COOL, DRY PLACE AWAY FROM MOISTURE AND SUNLIGHT. ALWAYS KEEP TIGHTLY SEALED.**

### Key References

1. Sharp CP, Pearson DR. Amino acid supplementation and recovery from high-intensity resistance training. J Strength Cond Res. 2010;24:1125-30.
2. Tatpati LL, Irving BA, Tom A, et al. The effect of branched chain amino acids on skeletal muscle mitochondrial function in young and elderly adults. J Clin Endocrinol Metab. 2010;95:894-902.
3. Mero A, Leikas A, Knuutinen J, et al. Effect of strength training session on plasma amino acid concentration following oral ingestion of leucine, BCAAs or glutamine in men. Eur J Appl Physiol. 2009;105:215-23.
4. Karlsson HKR, Nilsson PA, Nilsson J, et al. Branched-chain amino acid increase p70S6k phosphorylation in human skeletal muscle after resistance exercise. Am J Physiol Endocrinol Metab. 2004;287:E1-7.
5. Blomstrand E, Eliasson J, Karlsson HK, Kohnke R. Branched-chain amino acids activate key enzymes in protein synthesis after physical exercise. J Nutr. 2006;136(1 Suppl):269S-73S.
6. Chotechuang N, Azzout-Marniche D, Bos, C, et al. mTOR, AMPK, and GCN2 coordinate the adaptation of hepatic energy metabolic pathways in response to protein intake in the rat. Am J Physiol Endocrinol Metab. 2009;297(6):E1313-23.
7. Tokunaga C, Yoshino K, Yonezawa K. mTOR integrates amino acid- and energy-sensing pathways. Biochem Biophys Res Commun. 2004;313:442-6.
8. Perez-Guisado J, Jakeman PM. Citrulline malate enhances athletic anaerobic performance and relieves muscle soreness. J Strength Cond Res. 2010;24:1215-22.
9. Bendahan D, Mattei JP, Confort-Gouny S, et al. Citrulline/malate promotes aerobic energy production in human exercising muscle. Br J Sports Med. 2002;36:282-9.

### TARGET MARKET

**Primary:** Serious bodybuilders and athletes wanting a high-potency BCAA formula for pre-, during, and post-workout for superior endurance and recovery.

### RECOMMENDED STACK

- Max Creatine
- Carbo Max
- Iso-Extreme
- Gluta-Matrix
- Max EFA

To report a serious adverse event, contact:

**Max Muscle Sports Nutrition**  
 210 W. Taft Ave., Orange CA 92865  
 www.maxmuscle.com



† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.