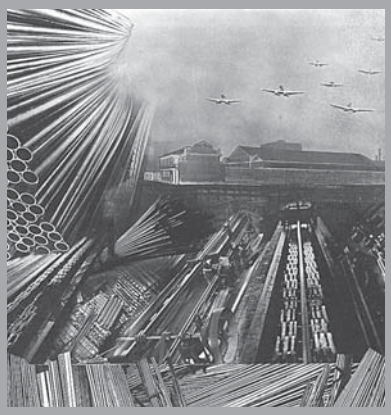
COLUMBUS
2020 STEEL TUBES LINE

COLUMBUS

The Soul of Cycling since 1919
#ColumbusTubing
#steelisreal



In 1919, as Europe emerged from the ashes of the Great War, a twenty-seven year old Angelo Luigi 'A.L.' Colombo signed the lease on a small factory and so began the production of steel tubes. With demand for bicycles running high, their makers were amongst his first customers – Edoardo Bianchi, Umberto Dei, Atala, Giovanni Maino. With his tubing well-proven in the bicycle industry, Angelo Luigi saw strength in creativity and diversity and was soon supplying material for the tubular frames of seaplanes and road vehicles, as well as for furniture and ski-poles. Italy was at the forefront of aviation in the 1920s, and Colombo enjoyed a strong relationship with Caproni, manufacturing the tubing that formed the backbone of their famous aircraft. In 1927 Colombo became part of aviation history, with De Pinedo and Balbo's transatlantic planes having airframes constructed from Colombo tubing – the same tubing that was, at that time, used to fabricate race-winning Moto Guzzi motorcycle chassis.

To give increased strength and reduced weight, Colombo began experimenting with 'butted' tubes – with variable wall thickness along their lenght.

Three years later, in 1930, Angelo Luigi created the brand name 'Columbus', which was initially only associated with tubular chromed-steel furniture. After an initial trial period, in which Columbus exhibited at the VI Triennale in Milan, Angelo Luigi obtained exclusivity of supply to EMBRU for the production of Marcel Breuer's iconic furniture designs. Shortly afterwards, Columbus furniture was in high demand – for offices, universities and schools as well as homes. The best rationalist architects of the time - Figini, Pollini, Terragni, Pagano, Pucci, Faccioli - crafted designs for Columbus, bringing innovation to the furniture industry and further reinforcing the reputation of Columbus as leaders in modernist design.

Later in the 1930s, the Columbus name, along with 'Aelle' and 'Tenax' was first applied to special sets of bicycle tubes – the Columbus tubes being drawn from Chrome Molybdenum steel and the fork blades being elliptical, laying down standard characteristics that remain commonplace to this day. Never satisfied, Colombo worked to the maxim "Curiosity is a prelude to knowledge" and continued to experiment in the fields of mechanics and metallurgy.

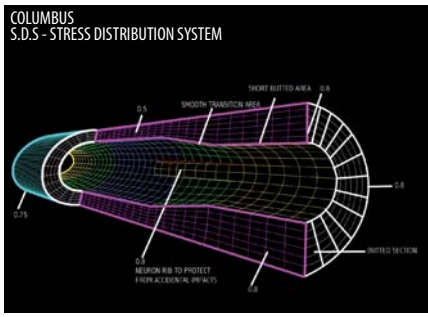
Colombo even designed and built their own butting machines to manufacture the tubes with tapering wall thickness – reinforcing the tubes at the joints where stresses are greatest.

Colombo supplied tubes for racing car skeletons and Colombo's son, Gilberto, designed chassis for the immortal Italian manufacturers Lancia, Maserati and Ferrari. Fangio ('El Maestro'), Ascari and 'Gigi' Villoresi were carried to victory on Colombo chassis. Some of the tube profiles created at this time will find their application onto bicycle frames in the following years.

'Columbus', a new company dedicated to the development and production of specialist tubes for bicycle frames, is formed in 1977. Antonio Colombo, youngest son of Angelo Luigi, leaves his position as President of A.L. Colombo to devote himself entirely to the new-born Columbus. Extensive experience gained from cycle, aircraft and automobile testing was the driving force of the business: Columbus, reinforced by the fact that the Italian artisans who use Columbus tubes are admired and known all over the world, were determined to conquer international markets. Since that time continuous uninterrupted research, highlighting the parts of the frame subjected to the highest stress, has helped to improve stiffness and strength and increase resistance to deformation and breakage. Among the notable innovations are the taper-gauge elliptical fork blades, the conical helix tube butting, 'Air' – the first fully-aerodynamic tube set, and 'Max' – offering the advantages of differing oversize tube profiles to bicycle designers and riders.

Parallel to an increasingly diverse production line, manufacturing 900 different types of tubes all of controlled origin and guaranteed quality, comes a growing competitive sector. For record attempts on the track, Columbus have developed super-light tube sets for the greatest champions: Coppi, Anquetil, Baldini, Rivière, Bracke, Ritter, Merckx, Moser, Oersted. The doctrine of intelligent experimentation and technological progress continues to be themain focus of the new Columbus, independent from A.L. Colombo since 1978. From research conducted in collaboration with the most prestigious research institutions, and through sophisticated tests carried out on the road and in the laboratory, Columbus continues to develop new materials and designs; new tube sets used by the top riders: from Gimondi to Merckx, Hinault to Argentin, Lemond and Roche, till nowadays new-generation hi-performance oveersized steel tube-sets and carbon fibre monocoque forks, frames and components.

Carbon frame internal-routing study



3D render simulation of a steel-tube reinforced structure

XCr

Stainless, Seamless, Performance

- The jewel of the crown, top-range tubeset
- The only biphasic stainless seamless tube family available in the cycling industry
- Tripled & Double butted tube reinforces
- High corrosion resistance in long-term periods in every use and weather condition
- Seamless-technology, improved stiffness and mechanical properties
- Reduced thickness, up to 0.4mm for an extremely reduced weight
- Exceptional resistance to Stress Corrosion Cracking
- No need to be painted or clear-coated after polishing
- Ultra smooth surface (Ra<0,4)
- Excellent weldability
- Made in Italy

SPIRIT

Top-Performance Road-Race

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- Reduced thickness, up to 0.38mm
- Exceptional mechanical characteristics
- High tensile strenght, superior resilence and incredible fatigue resistance
- Excellent tube-surface finishing and highly controlled alloy-composition, regular and close to nominal, for an excellent weld bead
- Visual Quality Control inspection and marking of each tube
- Incomparable strength/weight ratio
- Made in Italy

MAX

The Revolutionary Tubeset

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- The very first and only original patented non-round tubeset of the cycling history
- Tubes shapes oriented according to localized specific stress-direction
- Elliptical and oriented oversized sections for an increased momentum of inertia
- Maximized stiffness, reduced thickness, weight and power-dispersion
- Made in Italy

ZONA

All-Purpose Hi-Resistance tubes family

- Triple / Double butted 25CroMo4 alloy seamless tubeset
- Moderate weight and high strenght
- Multiple possible shapes, triangle & stays
- Increased wall-thicknesses and butted lenghts in strategic tube areas
- Perfect solution for offroad and training purpose
- Great to mix with lighter Columbus sets for an improved resistance
- Good resistance to heating during welding process
- Great reliability and fatigue life
- Made in Italy

SPIRIT HSS

High Strength Shaped

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- Exceptional mechanical properties
- Special HSS shaping, designed to optimize tube strength according to the orientation of its local solicitations
- High tensile strength, superior resilience and incredible fatigue resistance
- Visual Quality Control inspection and hand marking of each tube
- Unpaired strength/weight ratio
- Made in Italy

LIFE

Oversize, Lightness, Resistance

- Triple butted OMNICROM alloy
- Cold-Drawn Seamless Tube
- Wide range and great freedom in frame-design & tubeset-composition
- Excellent resistance/weight ratio, wide range of shapes & bends
- Over-sized tubes available for the DT (Ø42mm) and the ST (Ø35mm)
- Exceptional mechanical characteristics
- High breaking load, superior tenacity and incredible fatigue endurance
- Wide range of specifications: road-race, gravel, urban and mtb
- Made in Italy

SL

Super Leggera - The 'Soul of Cycling'

- Double butted OMNICROM alloy
- The most famous Columbus round set
- Hi-performance, imperial dimensions
- Exclusive laminated tapered fork blades swaged on shaped-mandrels for an improved structure and lightness
- Wide range with multiple diameters and thicknesses and reinforces
- Meets both lugged and Tig-welded frame needs
- Evergreen specifications updated to new technologies and alloys
- Double butted seamless tubes, cold worked and stress relieved
- Made in Italy

CROMOR

Resistance, Reliability, Duration

- Double & Single butted Cromor alloy
- Competitive and easy to weld & braze
- The legendary Columbus tubeset
- The *ABC* of framebuilding art
- Reinforced in the welding/junctions areas up to 0.8/0.9/1.2mm
- Tubes with reduced thickness up to 0.5/0.6mm
- Top reliability even in the most demanding and stressing conditions
- Long-lasting properties and performance even after heavy-duty use
- Improved performances with multiple cold-drawn & stress-relief processes
- Full-set made in Italy. '*Tre-Tubi*' composition available ex-Asia for OE productions

COLUMBUS STEEL

XCr

XCr is an innovative, high grade stainless steel tubing set.
Exclusive and unique characteristic for the whole bike industry of the new Columbus XCr set, is that the stainless steel tubes are seamless, made starting from a solid billet, machine-perforated and cold drawn countless times, to obtain the final required thickness. In this way the very high mechanical characteristics are uniform and constant in the whole round section of the tube.
Thanks to the special chemical composition of this new alloy, the grain structure is not altered by welding during the frame construction.
The maximum characteristics are granted also in the joint areas.
Mechanical characteristics: UTS: 1350-1250MPa Ys:1000-900MPa, Ap5: >10%
Suggested filler material for TIG welding: APX4S
Suggested material for brazing: T99 (ag 56% Cu 22% - Zn 17%)

25CrMo4

25CrMo4 seamless steel: the chemical composition of this steel, specifying a higher percentage of Chromium, gives to the material good resistance properties to overheating. The formation of carbides prevents the grain enlargement: the steel maintains its mechanical properties during brazing and welding, even in the malleable raw state it features excellent mechanical characteristics. High versatility, esy to match with other alloys, easy to manipulate.
Mechanical characteristics: UTS=800MPa, Ys=760MPa, Ap5 =12%
Suggested filler material for TIG welding: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Suggested material for brazing: Castoline Silver Alloy 38230

Omnicrom

OMNICROM is the culmination of a long journey, began more than 30 years ago, started with the collaboration of Columbus with the Institute de Soudure de Paris.It all starts with the latest low-carbon Chromium-Molybdenum Steel alloys used today in the aerospace industry matched with the benefits of Vanadium and a highly controlled alloy composition.
OMNICROM alloy is refined and refuse, without any inclusion, with a highly controlled crystalline structure that ensures unprecedented welding experience, with a smooth and predictable behaviour.
Moreover, the centenarian experience of Columbus in the cold-drawing plastic transformation, is able to furtherly improve OMNICROM's impressive mechanical properties, with increased yield strength and resilience, for an enhanced and long lasting riding experience.
Mechanical characteristics: UTS=1300MPa, Ys≥920 MPa, Ap5>15%.
Suggested material for TIG welding: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Suggested material for brazing: Castoline Silver Alloy 38230

Cromor

Columbus Cromor is a 25CrMo4 steel, seamed and cold drawn, butted to variable thicknesses using shaped mandrills. Cromor steel is produced starting from a calibrated tube which has already received two drawing processes, before being reinforced in all the possible variable thickness offered by the range.
Mechanical characteristics: UTS=750MPa, Ys=700MPa, Ap5 ≥ 12%
Suggested material for TIG welding: OK TIGROD 13.12 (AWS 5.28 ER 80S-G)
Suggested material for brazing: Castoline Silver Alloy 38230

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