



Orthoplastics Product Brochure

Advanced orthopaedic materials and components



Pioneering excellence in orthopaedic material solutions

Orthoplastics is proud to lead innovation in orthopaedic materials. With strict quality control and continuous development, our UHMWPE products deliver strength, durability and patient longevity for joint replacement implants worldwide.

Orthoplastics develops advanced medical-grade polymers, including cross-linked UHMWPE and vitamin E-stabilised materials, designed to improve implant wear resistance and oxidative stability.

Our capabilities extend beyond materials. With direct compression moulding and precision component machining, we create high-quality orthopaedic parts that meet stringent global standards.

By combining decades of expertise with modern manufacturing, we provide reliable solutions that enhance implant performance, reduce revision rates and improve patient mobility worldwide.



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Premium-grade ultra-high molecular weight polyethylene delivering strength, wear resistance and proven clinical performance worldwide.

06 Vitamin E

Antioxidant-enhanced UHMWPE offering improved oxidative stability and long-term implant durability for joint replacements.

08 Acetal

Versatile engineering polymer, providing strength, stiffness and stability for orthopaedic instrumentation and healthcare applications.

10 Radel®

High-performance thermoplastic with outstanding strength and resistance, ideal for surgical instruments and devices.

12 Crosslinking

Specialist processing technique that enhances UHMWPE wear resistance and longevity in demanding orthopaedic applications.

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Direct Compression Moulding produces consistent, high-quality components with minimal waste and excellent performance.

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Precision machining services creating complex orthopaedic components with unrivalled accuracy, repeatability and dependable quality.

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Global leader in medical-grade polymer solutions, delivering trusted expertise, innovation and consistent product excellence.



UHMWPE

Exceptional durability and wear resistance make UHMWPE the benchmark for implant materials worldwide.

UHMWPE: trusted performance in orthopaedic implants

For decades, ultra-high molecular weight polyethylene (UHMWPE) has been the preferred material for orthopaedic implants.

Recognised globally, Orthoplastics is the leading producer of medical-grade UHMWPE, trusted by orthopaedic manufacturers to deliver consistent performance.

Our UHMWPE is manufactured exclusively from Celanese GUR® 1020, 1050 and 1020-E polymer grades, chosen for purity and reliability.

Every batch is produced under strict quality systems with full traceability, ensuring compliance with demanding international standards.

Orthoplastics supplies UHMWPE worldwide, with products widely used across hip, knee, shoulder, elbow, ankle and finger implant applications.

We provide rods, sheets and blocks that can be machined or moulded to meet specific customer requirements with precision.

By preparing tailored sizes in advance, we streamline production, reduce machining time and deliver excellent value while maintaining uncompromising quality.

DID YOU KNOW?

UHMWPE has been used in orthopaedic implants since the 1960s and remains the gold standard material for joint replacement devices.

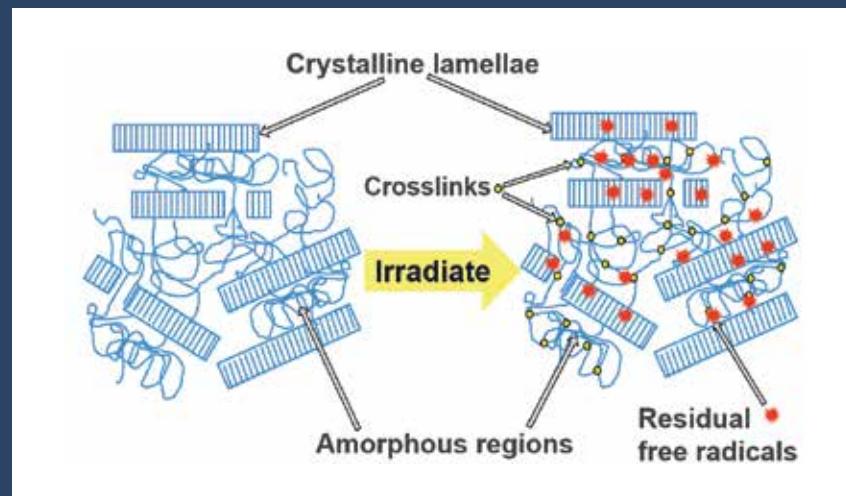


*Unrivalled quality
in UHMWPE
implant solutions.*



Vitamin E UHMWPE: enhanced longevity for implants

Vitamin E is incorporated into UHMWPE to improve oxidative stability.
By preventing degradation, manufacturers gain shelf life and consistent quality.



*Vitamin E protects
implants, ensuring
strength, stability
and confidence*

Vitamin E is a family of tocopherols, with alpha-tocopherol recognised as the most effective antioxidant.

During the irradiation and crosslinking process, free radicals can remain within UHMWPE. As a free-radical scavenger, alpha-tocopherol helps neutralise these residual free radicals, reducing oxidation and protecting material performance over time.

Orthoplastics uses this advantage to enhance oxidative stability, helping manufacturers maintain consistency and extend implant performance throughout production and in clinical use.



Stability through innovation

Orthoplastics achieves uniform Vitamin E distribution across all UHMWPE plastics, maintaining exceptional cleanliness, consistency and visual quality.

All production follows ASTM F2965, guaranteeing full compliance with international quality standards and regulatory expectations.

Our Vitamin E UHMWPE retains mechanical strength giving manufacturers complete confidence in material integrity, reliability and long-term performance.

DID YOU KNOW?



Vitamin E-stabilised UHMWPE was developed to extend implant life by reducing oxidation, delivering stronger, longer-lasting performance in orthopaedic applications worldwide.

Vitamin E

Vitamin E enhances UHMWPE with antioxidant protection, enabling manufacturers to achieve uniform quality, extended durability and regulatory confidence worldwide.

Acetal (Hostaform® MT®2U06)

Delivers certified biocompatibility, strength and consistency, supporting safe, reliable performance in demanding medical applications worldwide.



Acetal: strength and reliability for medical devices

Orthoplastics presents Hostaform® MT®2U06 Acetal, a high-performance medical polymer. Offering strength, stability and biocompatibility, it provides reliable options for orthopaedic instruments, surgical trials and external healthcare devices.

The resin is biocompatible to ISO 10993 and USP Class VI standards, ensuring compliance and reliability in medical applications.

FDA Device Master File listing streamlines approvals, giving manufacturers added confidence. The material provides excellent impact

strength and compatibility with EtO or steam sterilisation, making it ideal for surgical use.

Orthoplastics supports innovation with ISO 13485 systems, in-house testing and machining expertise, helping customers reduce development time and achieve success.

DID YOU KNOW?

Hostaform® MT®2U06 Acetal is available in multiple biocompatible colours, making it easier to colour-code instruments and simplify medical device identification.



Certified biocompatibility and strength make Hostaform® MT®2U06 ideal for medical devices.

Radel® R-5500: durability for demanding environments

Orthoplastics presents Radel® R-5500, a proven PPSU polymer that's lightweight, strong and highly durable. It is ideally suited for reusable sterilisation trays, implant trials and surgical instruments in demanding medical environments.

Recognised for reliability, Radel® R-5500 is the PPSU material of choice for medical manufacturers worldwide.

Lightweight yet robust, it offers an alternative to metal, giving confidence in the design and production of advanced healthcare components.

The polymer combines toughness, chemical resistance and sterilisation durability, ensuring performance across repeated cycles of steam and ethylene oxide sterilisation.

Its versatility makes it suitable for trays, implant trials and surgical instruments, supporting safe and reusable solutions in clinical practice.

Orthoplastics adds value with ISO 13485 certified systems, precision machining expertise and a UKAS accredited in-house testing laboratory.

Initially supplied in selected colours, Radel® R-5500 will expand to a full palette in 2026, enabling clear identification and safety in healthcare environments.

DID YOU KNOW?



Radel® R-5500 PPSU retains its toughness after more than 1,000 steam sterilisation cycles, making it ideal for demanding reusable medical applications.



Durable PPSU polymer engineered for strength, safety and long-term sterilisation performance.

Radel®

Radel® R-5500 delivers proven toughness, chemical resistance and sterilisation durability, giving manufacturers a trusted material for reusable medical applications worldwide.



Crosslinking

Orthoplastics crosslinking technology delivers superior wear resistance, offering manufacturers reliable materials that improve performance, consistency and long-term implant outcomes globally.

Crosslinking UHMWPE for advanced implant performance

Orthoplastics has developed the capability to manufacture crosslinked UHMWPE through advanced irradiation techniques. This breakthrough significantly reduces wear in orthopaedic implants, providing manufacturers with higher-grade materials that deliver superior reliability and performance across a wide range of medical applications worldwide.

By controlling dose levels and oxidation, Orthoplastics ensures crosslinked UHMWPE combines exceptional wear resistance with consistent, reproducible material quality.

Controlled irradiation process

Crosslinking technology delivers superior wear resistance, offering manufacturers reliable materials that improve performance, consistency and long-term implant outcomes globally.

Crosslinking is achieved by exposing UHMWPE to ionising radiation, using X-ray electron beam or gamma sources. Precise management of dose levels balances crosslink density with the mechanical strength required for durable, safe and reliable medical implants.

DID YOU KNOW?

Crosslinked UHMWPE delivers greater wear resistance than standard grades, significantly improving longevity and reducing orthopaedic implant revision rates.

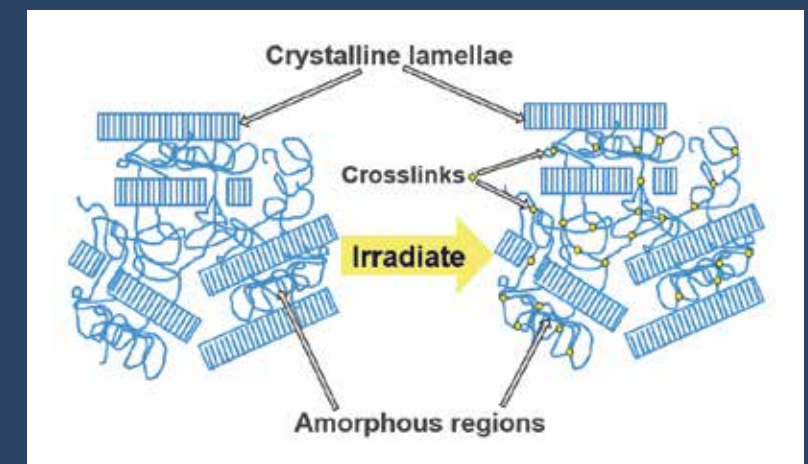


Uniformity through proven expertise

Orthoplastics has developed and validated our crosslinking process to achieve tighter dose distribution and product uniformity.

Working with selected e-beam, gamma and x-ray vendors, we can produce bespoke crosslinked UHMWPE variants, enabling OEMs to optimise material properties for different implant designs and applications worldwide.

Advanced crosslinking reduces implant wear, supporting improved material performance and long-term confidence for manufacturers.



Crosslinking creates enhanced UHMWPE, reducing wear and providing superior stability for implant manufacturers worldwide.



Direct Compression Moulding: precision for orthopaedic components

Orthoplastics applies Direct Compression Moulding (DCM) to sinter UHMWPE polymers into near net shape components with a premium high-gloss finish. This advanced method produces superior quality UHMWPE products that exceed conventional performance standards and enhance design opportunities for medical manufacturers.

DCM allows UHMWPE to be combined with titanium, steel or ceramic via over-moulding. This innovative process gives manufacturers new design flexibility, producing advanced composite components engineered to withstand the toughest demands of orthopaedic implant development and device production.

Driving innovation in orthopaedic component manufacture

Through significant investment in advanced manufacturing technologies, Orthoplastics has advanced DCM services to support innovative mono-block solutions for 3D-printed and porous metal applications.

DID YOU KNOW?

Direct Compression Moulding produces smoother, higher-gloss UHMWPE surfaces than machined components, enhancing performance and reducing finishing requirements for orthopaedic device manufacturers.



DCM technology delivers precision, consistency and innovation, producing components with exceptional finish and repeatable performance.

DCM

Direct Compression Moulding sets new standards for UHMWPE component quality, finish and consistency worldwide.



Component Machining

Trusted for over two decades, Orthoplastics combines expertise, technology and service excellence in machining implantable plastics and orthopaedic components.

Component Machining: expertise you can trust

For over 20 years, Orthoplastics has transformed orthopaedic concepts into reality, guiding manufacturers through production complexities with unrivalled expertise in implantable plastics and component machining.

Our experience ensures compliance, accreditation and efficiency, helping medical device companies accelerate time to market while saving valuable resources through expertly conducted, precise machining services and tailored support.

DID YOU KNOW?

Orthoplastics' machining facility is purpose built for implantable plastics, ensuring controlled environments and unrivalled quality in component manufacturing.



Orthoplastics is the global leader in implantable-grade plastics and machining, offering world-class knowledge, advanced facilities and solutions that deliver confidence at every stage of orthopaedic product development.

Unmatched CNC machining capabilities

Orthoplastics' dedicated, environmentally controlled CNC machining facility is equipped with advanced technologies, offering one-off prototyping, validation runs and complete outsourcing services tailored to meet diverse customer and OEM needs.

Orthoplastics delivers precision machining services that reduce costs, accelerate development and ensure dependable outcomes for orthopaedic manufacturers worldwide.

Orthoplastics supports manufacturers, overcoming barriers that prevent innovative orthopaedic ideas reaching production.

Our in-house laboratory and CNC centres streamline compliance, reducing risks and simplifying product development.

Orthoplastics guides start-ups and established OEMs, ensuring orthopaedic concepts are delivered with precision, efficiency and speed.



Why choose Orthoplastics?

Orthoplastics combines unrivalled knowledge, advanced technology and global expertise to deliver the highest quality medical-grade plastics for orthopaedic applications.

Orthoplastics' knowledge of orthopaedic materials has been developed for more than 30 years. Our vision to lead the market has been achieved through dedication to quality, service and excellence.

By investing in medical plastics and advanced manufacturing techniques, we consistently surpass the standards demanded by orthopaedic device manufacturers worldwide.

Our portfolio of UHMWPE, Crosslinked UHMWPE, Vitamin E UHMWPE, Hostaform® MT®2U06 Acetal and Radel® R-5500, combined with services

including bulk processing, component machining, Direct Compression Moulding, new product introduction and laboratory services, creates a comprehensive supply chain solution.

Device manufacturers worldwide identify UHMWPE as the material of choice for innovative joint replacement bearing surfaces and advanced orthopaedic medical devices.

Through integrated processes and premium-grade polymers, Orthoplastics delivers UHMWPE that has become the material of choice for leading orthopaedic manufacturers globally.

Our advanced industry knowledge allows us to refine and manufacture innovative product solutions that strengthen the future of the orthopaedic industry.

Orthoplastics delivers world-leading materials, processes and expertise, providing customers with trusted solutions that set the standard in orthopaedic plastics.

Quality you can trust

At Orthoplastics, quality defines every stage of production, from customer service through design and manufacturing, ensuring premium-grade medical plastics that consistently meet global industry expectations.

Certified to ISO 9001, ISO 13485 and ISO 14001, with laboratory certification to ISO/IEC 17025, Orthoplastics guarantees excellence. Traceability, testing and monitoring ensure every UHMWPE product delivers reliability while consistently exceeding customer expectations.



Consistency you can rely on

Orthoplastics operates industry-leading facilities 40 kilometres north of Manchester, providing a world-class base for premium orthopaedic plastics manufacturing.

Our 50,000 square foot headquarters combines advanced manufacturing, research, finishing and logistics under one roof for maximum efficiency.

A 30,000 square foot unit houses machining, finishing, R&D, warehousing and shipping departments, ensuring seamless integration of production functions.

A purpose-built 20,000 square foot press facility accommodates Orthoplastics' UHMWPE press, delivering components with exceptional quality, precision and consistency.

With a 100,000 square foot manufacturing footprint, Orthoplastics delivers the quality, precision and consistency trusted by the world's leading orthopaedic device manufacturers.

Orthoplastics delivers trusted solutions for the world's leading orthopaedic device manufacturers.





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