#### ADVANCED SEALING SOLUTIONS



SPECIALISTS IN

# DIFFERENTIALLY ACTIVATED SEALANT TECHNOLOGIES



**SEALMAKER CRS™** 

MICROSEAL™

ENVIROPLUG™

ULTRA CRS™

**ENVIROSEAL™** 

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## **ENGINEERED LEAK REPAIR SOLUTIONS**

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SEALMAKER Casing Repair System (CRS) <sup>™</sup> is a patented triple composite cementing technology specifically designed to repair injection well and production well casing leaks. SEALMAKER CRS<sup>™</sup> sealants (Vortex A<sup>™</sup>, Vortex B<sup>™</sup> and SEALMAKER<sup>™</sup> have the unique ability to remain liquid indefinitely until exposed to leak point differential. SEALMAKER CRS<sup>™</sup> then recognizes the leak condition and immediately goes to work. Utilizing a filtration-dependent process, crystallization of the composite results, completely and permanently repairing the leak. Sealant left in the pipe or annulus will remain liquid indefinitely and inhibits corrosion. In many cases, SEALMAKER CRS<sup>™</sup> eliminates the need for a work-over rig.

### **MICROSEAL™**

**MicroSEAL**<sup>™</sup> and **EnviroSEAL**<sup>™</sup> are specialty polymerizing hydraulic sealants designed specifically to repair control line leaks, hydraulic control system leaks, SCSSSV leaks, DHSV leaks, well head seals, tubing and pipe thread leaks, valve leaks, subsea leaks, and umbilical and subsea connection leaks. **MicroSEAL**<sup>™</sup> is custom blended for compatibility with any type medium oil, glycol, or water-based system. **MicroSEAL**<sup>™</sup> forms a strong flexible seal with phenomenal strength characteristics that allow it to withstands working pressures in excess of 20,000psig.

## ULTRA CRS™

Building upon SEALMAKER International's patented technologies, the ULTRA CRS<sup>™</sup> repair system advances the SEALMAKER Casing Repair System to an unprecedented level. By incorporating the UltraSEAL<sup>™</sup> technology into this system, casing and tubing leaks are now no match for this proven system. Crystalline cement with added flexibility to conform to dynamic well conditions give this system the advantage over all other types of repairs. Now larger leak rates can be sealed and to higher pressures than ever before. Near instantaneous lock-ups are now achieved saving valuable time and money for the operator. Longevity is proven in the field and this system boasts an overall 96% success rate on over 50 applications since it's introduction. With improved resistance to mechanical degradation and complete inertness, the ULTRA CRS<sup>™</sup> system is unparalleled in results.

## **ENVIROPLUG™**

**EnviroPLUG™** is **SEALMAKER International's** high-density annular additive designed specifically to seal down-hole annular packer, hanger, PBR seal-assembly leaks. **EnviroPLUG™** chemistry is also proven effective in treating annulus leaks that exhibit low pump–in ability. The chemistry of the sealant ensures that that it does not affect the ability to retrieve the down-hole equipment in the future. **EnviroPLUG™** is easily applied at the well-head and is proven to deliver successful results. The composite structure has a high specific gravity that allows it to self displace to a leak site and ultimately seal the leak. The composite remains in a liquid state indefinitely, thus allowing complete transmittal of pressure from the surface to the packer irregardless of depth.





SCSSSV LEAK

#### SEALMAKER International Ltd. (SMI) specializes

in engineered leak repair solutions. Our unique and innovative pressure activated liquid sealants are used to repair a multitude of troublesome leak problems that are associated with the production of oil and gas both onshore and offshore.

Our products are specifically designed for each application using the most advanced sealant technology available today. SMI's MicroSEAL™, EnviroPLUG™, SEALMAKER CRS™, and ULTRA CRS™ product lines are based on proprietary and patented composite and polymerization technologies. These sealants and cements have been used on over 1800 leak applications since the initial product introduction in 1992. Over that time SMI's Systems have achieved an unprecedented success rate of over 90% in repairing downhole casing leaks in repairing downhole and subsea leaks. In addition to casing and tubing leaks, SEALMAKER™ Technologies may be used for numerous applications including hydraulic control line leaks, SSSV leaks, wellhead leaks, packer leaks, restoration of lost circulation, perforations, etc.

#### **HOW THEY WORK**

**DECAL** <sup>™</sup> and **EnviroSEAL** <sup>™</sup> sealants are engineered to remain liquid until exposed essure differential and flow encountered at a leak site. The extreme shearing forces untered within the leak disrupt the stability of the sealant as it accelerates through the path. The sealant then transforms from a liquid to a solid within the leak site and s into a strong, dense, flexible seal that completely fills the leak channel. The seal is and flexible allowing it to expand and contract with the well conditions, while aining it's strength characteristics. By controlling the flow rate and pressure through a **SMI** precisely controls the point at which seal formation occurs. Once sealing begins, egulates the pressures to ultimately strengthen the seal up to the maximum working ure of the system. The **MicroSEAL**<sup>™</sup> and **EnviroSEAL**<sup>™</sup> resins build strong, ious, inert seals that can withstand pressures to at least 20,000 psig. The sealants

are compatible with any fluid medium and will not block, plug, or interfere with a hydraulic system.

SEALMAKER CRS<sup>™</sup> and ULTRA CRS<sup>™</sup> Casing Repair Systems are designed to repair a multitude of casing leaks. These composites are pre-blended and staged to react based upon pressure differential and controlled flow (filtration) within a leak site. They ultimately yield a crystalline composite cement that sets externally to the casing, while remaining liquid inside the pipe. The processes are independent of time constraint that allows it to be utilized in many situations where access is limited or leak location is not precisely known. Fully cured, CRS<sup>™</sup> is considered a permanent repair and had demonstrated its consistent longevity in the field over the last decade and a half. The new ULTRA design builds on the base formulations with the added benefits of faster lock-up saving valuable time, larger leak rate capability, and can achieve Ultra-High pressure differentials.

The reaction process of the **CRS<sup>™</sup> Systems** begins upon exposure of the chemicals to differential pressure and shear. The shearing forces initiate the solidification of the chemicals at or beyond the point of shear creating a bridging effect. Differential is then increased to initiate filtration through the restriction that has been induced. Controlling the filtration rate allows the sealant to form a crystalline cement beyond the point of filtration at the leak site. As strength builds within the composite, additional pressure is applied until the repair is fully cured and the maximum system operating pressure is achieved. Residual chemical inside the casing-tubing annulus can simply be left in the system where it will remain liquid indefinitely and will act a corrosion inhibiting packer fluid.



BRIDGING

#### CRYSTALLIZATION

FILTRATION



WWW.SEALMAKER.NET



#### SEALMAKER CRS™

MICROSEAL™

ENVIROPLUG™

ULTRA CRS<sup>™</sup> ENVIROSEAL<sup>™</sup>

## **ADVANTAGES:**

- OVER 1800 LEAK REPAIR PROJECTS TO DATE
- **90% SUCCESS RATE**
- **REDUCED DOWNTIME AND RESTORE PRODUCTION**
- **AVOID EXPENSIVE WORK-OVER COSTS**
- PERFORMS EFFECTIVELY UNDER EXTREME CONDITIONS
- CUSTOMIZED FOR OPTIMAL PERFORMANCE
- NON-DAMAGING TO SYSTEM COMPONENTS
- **REMAINS LIQUID INDEFINITELY**
- INHIBITS CORROSION
- WILL NOT BLOCK, PLUG, OR INTERFERE WITH SYSTEMS
- COMPATIBLE WITH ALL SYSTEM TYPES; OIL, GLYCOL, AND WATER
- **INERT**
- CHEMICALLY STABLE AND ENVIRONMENTALLY FRIENDLY
- **USEPA APPROVED**

## **APPLICATIONS:**

#### SEALMAKER CASING REPAIR SYSTEMS

**CASING INTEGRITY RESTORATION DOWNHOLE CASING LEAKS MICROANNULAR LEAKS PIPELINE LEAKS THREAD LEAKS TUBING LEAKS** 

#### HYDRAULIC SYSTEM LEAKS

**CONTROL LINE LEAKS SCSSSV LEAKS DHSV LEAKS** 

#### SUBSEA LEAKS

SUBSEA CONNECTORS **UMBILICAL LEAKS** MANIFOLD LEAKS **PIEPLINE LEAKS** 

#### **XMT LEAKS**

WELL HEAD SEALS **PACK-OFF LEAKS FLANGE LEAKS** VALVE LEAKS

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