

Recycling Sealants

For many years, Ultraseal has been dedicated to the improvement of the impregnation process through innovative developments in equipment, process and chemistry, which all constitute significant cost benefits to its customers.

Nowhere is this better illustrated than by the introduction of recycling sealant some 20 years ago and now in its third generation. This innovation has resulted in huge savings for Ultraseal customers around the globe; who now collectively recycle **over 1.25 million litres of sealant each year** - sealant that otherwise would have been lost in the waste water, which is uneconomical and has an environmental impact as well as considerable associated costs to the user through inventory, shipping, water consumption and effluent. The user benefits are:

Quality

Enhanced performance brings quality benefits.

Cost

Overall cost of chemicals reduced due to recycling technology.

Inventory

Sealant stocks reduced with recycling rates as high as 90%.

Shipping

High recycling rates reduce consumption of sealant, thereby reducing associated transport costs (and CO₂ emissions).

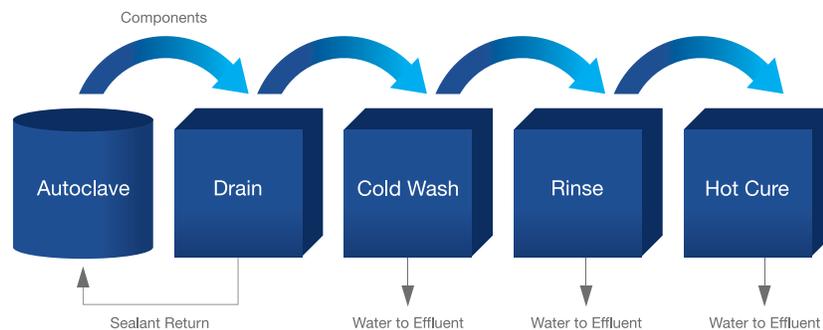
Water Consumption

Recycling eliminates overflow or discharge from the cold wash, dramatically reducing water consumption.

Effluent

Conventional sealants emulsify on contact with water, as a result the cold wash and rinse tank need to be periodically replenished and the water requires expensive treatment to make it environmentally acceptable. Recycling sealants eliminate cold wash effluent and associated treatment costs.

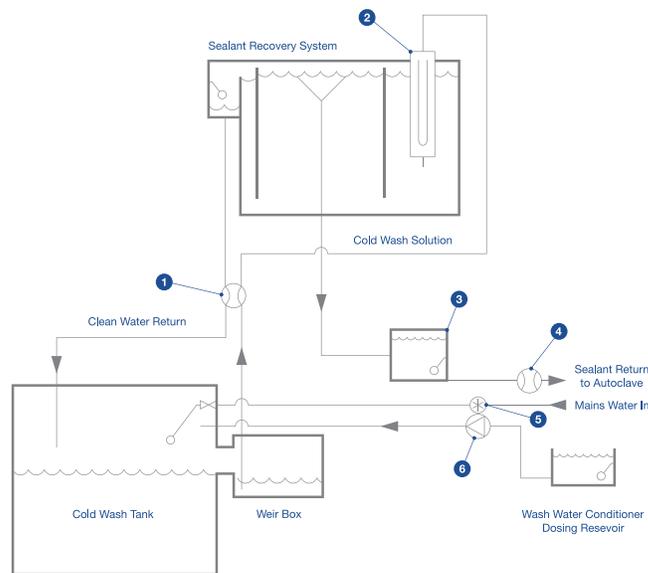
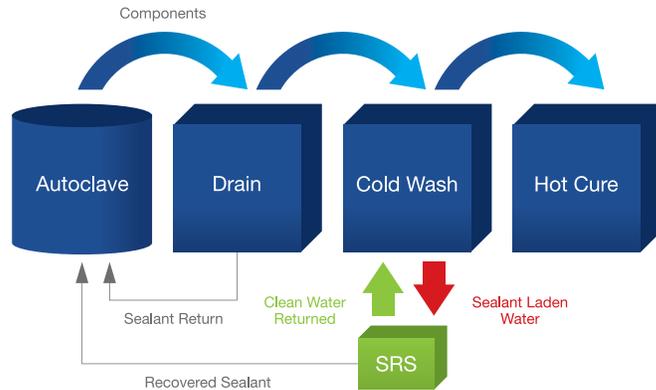
A Conventional Non-Recycling Impregnation System



While conventional sealing technologies have made some advances in terms of quality and consistency, over 95% of the total volume of sealant consumed is wasted and goes as effluent in the wash tank during the cold wash process. Only a fraction of the sealant is actually required to seal the porosity. This brings a greater financial burden to companies who are facing ever increasing environmental legislation and costs associated with waste water.

The growing need for manufacturers to reduce costs and address environmental issues, led Ultraseal to develop the world's first recycling sealant, MX2, in 1987. Ultraseal's recycling sealants are revolutionary, and offer additional qualities to conventional sealant with the added commercial and ecological benefits of being recyclable. Now, excess sealant, instead of simply being consumed in the cold wash tank and lost as effluent, can be recovered and reused in the autoclave, improving the sustainability of the impregnation processes.

Sealant Recycling System



- | | |
|-------------------------|------------------------|
| 1 Diaphragm Pump | 4 Diaphragm Pump |
| 2 Filter | 5 Water Meter |
| 3 Sealant Discharge Pot | 6 Chemical Dosing Pump |

Ultraseal MX2 - The Original Recycling Sealant

Ultraseal MX2 has gained significant global approval with major automotive manufacturers and their suppliers, and remains a high performance recycling sealant offering significant environmental benefits when compared to conventional non-recycling sealants.

MX2 is the preferred choice of sealant for a wide range of companies in differing sectors; who are seeking to maintain sealing quality and process consistency, while simultaneously reducing sealant consumption, effluent disposal costs and water usage.

Ultraseal recycling sealants are specially formulated to give them hydrophobic properties. They have a specific gravity less than 1.0 which means they will naturally tend to separate from water. The separation process involves the Sealant Recycling System (SRS). This is a custom-built separator that takes sealant-laden water from the wash tank and passes it through filters, before separating the sealant from the water. The wash water solution is dosed with Ultraseal Wash Water Conditioner (WWC), which ensures separation of the sealant from the cold wash water.

The recovered sealant is then returned back to the autoclave and the remaining wash solution is pumped directly back to the wash tank, giving a totally closed loop system. Unlike conventional systems, there is no requirement to change the cold wash water.

Therefore manufacturers who use this system experience substantial cost savings through lower sealant consumption, conservation of water, reduced down time and in addition, less effluent and the associated environmental benefits.

Ultraseal Rexeal 100 - A New Generation

Ultraseal never relax from their vision of continuous improvement and through extensive research by the Ultraseal research and development department, they have drawn upon a proven track record of more than two decades in the use of recycling sealants to develop this evolutionary product.

By examining the performance of Ultraseal MX2 in the field, and taking into account extensive feedback from the market, Rexeal 100 has been purposely formulated to meet the ever changing requirements of companies. It brings additional tangible benefits to manufacturers that require the highest possible levels of sealing quality and environmental conformance.

Quality as Standard

Ultraseal puts all products through internationally accepted test conditions. Our rigorous laboratory testing ensures that our sealants deliver substantially superior qualities and also carry the US Military Specification MIL-I-17563C approval, therefore our customers can have the confidence that our quality statements are approved by independent accreditation (outlined in following tables) and we can provide substantiated evidence that our products will work effectively in tough service environments.

US Military Specification MIL-I-17563C Class 1 & 3 Approval

Environment	Time	Temperature	Result
Water	14 days	100°C (boiling)	No leak
Oil	14 days	99°C (+/- 2.8°C)	No leak
Hydrocarbon Fluid	14 days	23°C (+/- 2°C)	No leak
Carbon Removal Fluid	30 minutes	23°C (+/- 2°C)	No leak
Lubricating Oil	48 hours	121°C (+/- 2°C)	No leak
Turbine Fuel	48 hours	23°C (+/- 2°C)	No leak
Ethylene Glycol	14 days	149°C (+/- 2.8°C)	No leak
Hydraulic Fluid	14 days	99°C (+/- 2.8°C)	No leak
Fuel	48 hours	23°C (+/- 2°C)	No leak
Diester Grease	48 hours	23°C (+/- 2°C)	No leak
Sulphuric Acid (18%)	2 hours	23°C (+/- 2°C)	No leak
Stoddard Solvent	48 hours	23°C (+/- 2°C)	No leak
Ethyl Alcohol	14 days	23°C (+/- 2°C)	No leak

Impregnated US MIL Test Rings. Test pressure 3.5 bar (3.57kg/cm²)

Ultraseal International Additional Tests

Environment	Time	Temperature	Result
Engine Oil	14 days	150°C	No leak
Brake Fluid	14 days	150°C	No leak
Ethylene Glycol	14 days	150°C	No leak
Hydraulic Fluid	14 days	150°C	No leak
Unleaded Petrol	14 days	25°C	No leak
Water	14 days	100°C	No leak
PAG Oil	14 days	150°C	No leak
R134a Refrigerant	6 months	Ambient -10°C to 35°C	No leak
R134a Refrigerant	6 months	150°C*	No leak

*test completed by an external global manufacturer of air compressors

Technical Data - Rexeal100 Sealant

Liquid Phase:

Appearance	Clear pale straw liquid	Odour	Mild methacrylate
Viscosity (20°C Seta Zahn No 1)	28 - 30 seconds	Specific Gravity at 20°C	0.910 -0.935
Flash Point (Twin Pack (uncatalysed))	>100°C	Surface Tension	31 dynes/CM
Drag Out (g/m²)	34	Gel Time (0.8% DB42)	90 sec - 180 sec
Contamination Tolerance	Very Good	Washability	Very Good
Pot Life (under normal operating conditions)	Indefinite	Shelf Life (under normal storage conditions)	12 months (uncatalysed) 6 months (catalysed)
Temperature Range	-50°C / +220°C		



Product is available in 20 litres, 185 litres and 900 litres pack sizes

The US Military approval process subjects test rings manufactured from Aluminium, Copper Alloy and Iron to a number of stringent sealing capability tests. These show the chemical resistance and thermal stability of the sealant over a wide range of standard conditions.

R134a Refrigerant

An impregnated test ring was installed in a refrigerant line for 6 months (R134a). Temperature exposure was ambient. At the end of the 6 month period the ring was tested and remained leak free.

Independent tests carried out by a global manufacturer of air conditioning compressors over an extended period confirmed the suitability of Rexeal 100 when put in elevated temperatures representative of the working environment of the unit. It showed that Rexeal 100 remained effective at 150°C.