COOLSEAL™

A/C LEAK SEALER Q&A

1 What is Cool Seal?

Cool Seal is a proprietary blend of non-polymer, nonflammable, and non-carcinogenic additives that seals micro leaks caused from pitting, corrosion, loosened fittings or abrasion, making it safer for technicians to handle the product and maintain the integrity of the system.

2 Why Use a Sealant Product?

The challenge of addressing a cooling system refrigerant leak has been a topic of concern within recent years. A leaking system can have many detrimental effects including: cost of lost refrigerant, environmental impact, increased energy consumption and potential system failure.

The best practice remains a “find it, fix it, or replace it” policy. However, using a sealant product can often assist between when a defective component is discovered until the point where it is repaired or replaced.

3 What does it mean to be non-polymer?

Non-polymer sealants form a seal **without** the activation of moisture or oxygen. Making it safer to use and less risk of compromising the integrity of the system. Whereas the risk of polymer sealant products is that they react with moisture and/or air which can cause plugged hoses, coils, or expansion devices. Several of these products are also highly flammable, toxic and have shipping and handling concerns.

TESTED IN ACCORDANCE WITH ASHRAE 97 STANDARDS FOR CHEMICAL STABILITY

COOLSEAL™ A/C Leak Sealer

- **Non-polymer**, oil-soluble formula
- Non-oxygenated activation
- Not activated by moisture
- Safe for AC&R systems
- Safe for contractor owned tools & equipment
- Non-hazardous formula

VS

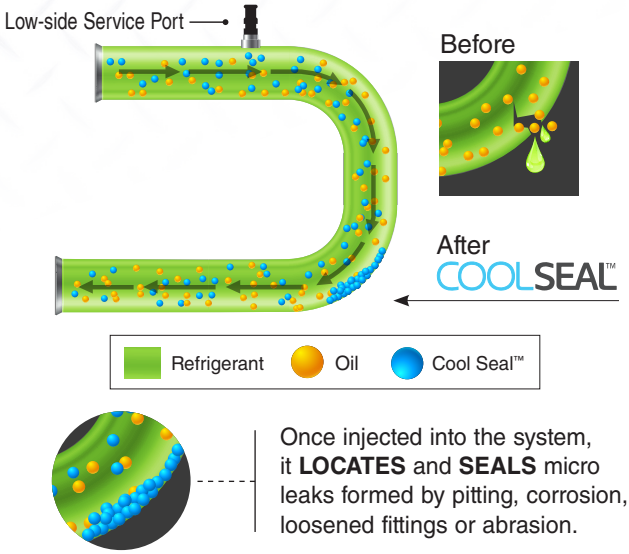
Polymer Type Sealants

- Activated by moisture
- Oxygen activated
- Can damage AC&R systems
- Can damage contractor owned tools & equipment
- Exposure to sealant harmful
- May contain flammable liquids

4 How does Cool Seal Work?

When Cool Seal is added to a leaking system, sealant coagulates at a leak site where there is a pressure or temperature differential. Cool Seal forms a pliable web-like seal, then continues to collect around the outer perimeter of the leak site until it is fully sealed.

***Note: It will not form a seal internally within capillary tubes or expansion valves, nor will it work on large leaks, because these is simply too much refrigerant flow for the sealant to effectively collect at a leak site and form a seal.**



Once injected into the system, it **LOCATES** and **SEALS** micro leaks formed by pitting, corrosion, loosened fittings or abrasion.

5 Will Cool Seal Harm the System?

No, Cool Seal is a non-polymer, oil-soluble formula that **will not form clogs or create buildup while circulating the system**. It is compatible with all popular refrigerants and oils and **can remain safely in the system to help protect against future leaks**. It has been proven safe for cooling systems, recovery units, technician equipment, valves, manifolds, access ports, etc.

6 Does Cool Seal Perform in the Liquid or Vapor Phase of the Refrigeration Cycle?

Cool Seal is effective in both the high and low side of liquid and vapor lines. The mechanism of how it works in either the liquid or vapor line is essentially identical. Temperature changes from expansion cause the paraffinic portion of the sealant to fall out of solution, which then collects around the leak site.

7 How does Cool Seal travel to the leak site?

LIQUID LINES: In refrigerants where the Cool Seal is ***miscible*** (HCFCs or HCs) **the sealant travels as a homogeneous mixture until it leaks out**, whereupon the liquid refrigerant flashes off, leaving the Cool Seal-oil mixture at the leak site. The cooling effect from the pressure drop across the leak allows the sealant to floc out and collect. This will be the longest seal time, due to the fact that the amount of sealant flowing into the leak is minimal as it is dissolved all throughout the entire liquid line.

In refrigerants where the Cool Seal is ***immiscible*** (HFCs) **the sealant travels as individual droplets, or as a thin coating on the interior of the line until it leaks out**. At that time, it acts exactly like it would in the miscible case. Sealing time will be shorter in these systems, due to the fact that the amount of sealant flowing into the leak is maximized.

VAPOR LINES: The sealant miscibility has little effect now that the liquid refrigerant boiled off and the sealant-oil mixture is traveling on the interior surfaces of the lines and evaporator. As is the case with the immiscible refrigerants, the sealant-oil mixture will already be at the leak site, and as the flow is significantly cooler with less pressure, the sealant should floc out faster and seal more quickly.

8 What is the suggested Sealant to Oil Ratio for Cool Seal?

There is a loose correlation between compressor oil charges and refrigerant capacity, but there are many variables involved that make it impossible to know exactly how much oil is in equipment based on cooling capacity alone.

Due to this, the Cool Seal instructions involving refrigeration capacity usually result in a system being charged with more sealant than is absolutely required, as the capsules and cartridges have to be able to treat a wide range of system sizes based on cooling data alone.

If a system's oil charge is known, the most economical and effective dosage of Cool Seal can be determined by **using a volumetric sealant to oil ratio of 1:30, or 3.25%**. This amount represents the minimum amount of Cool Seal required to perform properly.

Smaller doses will still work, but not as quickly as if a system were to be properly dosed. Larger doses are safe and may perform slightly better, but not to a large degree.

9 What are the Injection Methods for using a Sealant?

Typically, a variety of injection methods are used for sealants such as; plastic syringes, direct injection, and aerosol cans. These offer disadvantages that may require overcoming internal pressures, employing the use of manifolds, additional refrigerant, or expensive disposable hardware.

Cool Seal is available in several easy injection options based on varying applications including; multi-dose disposable cartridges, bottles, and syringes. Most of these methods are **engineered for use with high pressure systems**.

EZ-Ject™

BigEZ™

Stick Capsule

Conclusion:

Cool Seal is the hassle-free way to seal refrigerant leaks in condensers, evaporators, O-rings, and hoses. It's an economical alternative to expensive replacement parts and can add years to older, out-of-warranty AC&R systems leaking small amounts of refrigerant. As an added benefit, this dependable sealer can remain safely in the system to guard against future leaks.

Cool Seal meets ASHRAE 97 standard for chemical stability. Its non-polymer, oil-soluble formula is safe for all AC&R system components and recovery equipment. It works in all popular AC&R systems, including high-pressure R-410A systems – and can be injected with the unit off or running. Unlike aerosol can-type leak sealers, Cool Seal is non-flammable, has no storage-related safety issues, no need for system pump down, and packaging allows the technician to see the contents injected into the system.

Three Convenient Delivery Methods

EZ-Ject™ Injection

CS-100CS
Cool Seal™ EZ-Ject™ Injector Kit

Includes EZ-Ject™ injector assembly, hose/coupler with check valve and purge fitting and (2) EZ-Ject™ cartridges prefilled with Cool Seal™ A/C leak sealer. Each cartridge treats up to 4 tons (14.1 kW) of cooling.

Reusable Injector Assembly:
Save money on unnecessary hardware with each application!

UP TO 450 PSI

Works in all AC&R systems,
overcomes system pressure

CS-1CS
Cool Seal™ EZ-Ject™
Replacement Cartridge
0.5 oz (15 ml)

Treats up to
4 tons (14.1 kW)
of cooling.

BigEZ™ Injection

CS-2CS
Cool Seal™ BigEZ™ Cartridge
2 oz (60 ml)

Large, prefilled cartridge works with BigEZ™ injector. Can also be used with EZ-Ject™ injector. Cartridge treats up to 16 tons (56.3 kW) of cooling.

BigEZ™ Assembly:
RP-BEZ-50 BigEZ™ injector assembly

EZ-Ject™ Assembly:
RP-CS-50 EZ-Ject™ adapter
RP-EZ-50 EZ-Ject™ injector assembly
RP-PF-01 Purge fitting

NOTE: Injection assembly not included.

Stick Capsule Injection

CS-3CS
Cool Seal™ Stick Capsule
0.5 oz (15 ml)

Add Cool Seal™ A/C Leak Sealer and refrigerant in one simple step. Requires bleed valves for injection. Capsule treats up to 4 tons (14.1 kW) of cooling.

ALSO AVAILABLE:

SPE-CSMS-CS
Cool Seal™ Mini-Stick 0.3 oz (10 ml) capsule
Treats up to 3 tons (10.6 kW) of cooling

RP-BV-50
Bleed Valve
Requires two (not included)

Red "CS" part number suffix denotes full-color, hanging clamshell packaging

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