



Frequently Asked Questions

October 2018

TdX 20 History

What is Bluon TdX 20 (R-458A)?

TdX 20 is a refrigerant replacement for R-22 HVAC-R equipment, delivering virtually identical capacity performance, significant energy savings, and extended equipment life. TdX 20 is a blend of five commercially used refrigerants.

What is the composition of Bluon TdX 20?

Bluon TdX 20 (R-458a) is a blend of 5 HFC refrigerants R-32, R-125, R-134a, R-227ea, R-236fa and a proprietary lubricant additive to enable miscibility with Mineral Oil.

Is Bluon TdX 20 (R-458A) EPA SNAP approved?

Yes. Bluon TdX 20 is fully EPA approved (Federal Register, Vol. 82, No. 139). Check out our story on Bluon's EPA approval.

Has TdX 20 received an "R" designation from ASHRAE?

The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) with the consensus of American National Standards Institute (ANSI) has designated Bluon Energy's TdX 20 refrigerant as an approved standard to Refrigerant Blends under Standard 34-2013. TdX 20 has been given the designation of R-458A. R-458A was approved by the ASHRAE Standards Committee on June 26, 2016; by the ASHRAE Board of Directors on June 29, 2016; and by the American National Standard Institute on July 27, 2016. The designation can be found on the ASHRAE website as Addendum aj to Standard 34-2013.

Does TdX 20 meet AHRI standards?

Yes, Bluon TdX 20 refrigerant meets the AHRI 700 Standard for refrigerants. AHRI certification programs only test and certify HVAC-R equipment performance.

What is the flammability rating for TdX 20?

Bluon TdX 20 has an ASHRAE safety group classification of A1, non-flammable and lower toxicity.

Is TdX 20 patented?

Yes, Bluon TdX 20 is a patented formula. There are several utility patents currently filed surrounding Bluon TdX 20's unique blend, chemistry, and multi-phase characteristics. It should be noted that an older patent affiliated with Bluon's early work appears in some search results. That patent and the related product was completely abandoned by Bluon Energy in favor of a



new direction that led to our current product, Bluon TdX 20. Here is the most recent Bluon Patent filing.

Oil

Is Bluon TdX 20 (R-458A) compatible with mineral oil?

Bluon TdX 20 utilizes a proprietary lubricant additive to enable HFC miscibility with MO. Most other replacements use small amounts of hydrocarbons to enable very limited miscibility with MO or require an oil change to POE.

Will I experience oil carry issues with Bluon TdX 20 (R-458A)?

Bluon TdX 20 was designed to have similar miscibility characteristics to R-22. Systems properly piped to industry standards and without historical oil carry issues with R-22 should not have oil carry issues with Bluon TdX 20.

Does Bluon TdX20 affect oil flow in microfin coils?

Bluon TdX 20 has similar oil miscibility with MO and AB oils as R-22 but any system with existing oil carry issues will not be resolved by changing the refrigerant out.

Do I need to change the oil or add 20% POE?

Bluon TdX 20 was designed to have similar oil carry and immiscibility characteristics of R-22 and mineral oil. Systems with proper refrigerant piping should need no alterations.

Capacity

How does TdX 20 perform from a capacity standpoint?

TdX 20 delivers virtually identical capacity to R-22 as demonstrated in extensive field testing and third-party independent testing. Other R-22 replacement refrigerants make claims of comparable or “similar” capacity; however extensive tests and HVAC market feedback indicate they simply don’t perform at R-22 levels not to mention they consume more electricity than R-22. TdX 20 is the first alternative that truly creates R-22 comparable capacity while reducing your electricity consumption. In other words, TdX 20 is the first replacement refrigerant that is an investment with an ROI, not an expense with continued expenses.

TdX 20 Vs. Other Replacements

How is Bluon TdX 20 different from other R-22 Replacements?

Bluon TdX 20 is the only R-22 replacement that is a complete solution for technicians and end-user alike. Bluon is more energy efficient than R-22 with virtually identical capacity; Bluon TdX 20 is fully compatible with MO and never requires an oil change, Bluon has a lower GWP than any other replacement and perhaps most importantly offers the first and only industry-first comprehensive technical support.



How is Bluon TdX 20 different than NU22 (R-422B)?

Bluon TdX 20 has significantly better capacity than NU22, is more energy efficient, and is truly compatible with MO. TdX 20 has a GWP of 1,650 compared to NU22's GWP of 2,526. NU22 is also known to cause significantly higher compressor temps.

How is Bluon TdX 20 different than MO99 (R-438A)?

Bluon TdX 20 is substantially more energy efficient than MO99, has slightly better capacity, and offers true compatibility with MO. TdX 20 has a GWP of 1,650 compared to MO99's GWP of 2,265.

How is Bluon TdX 20 different than R-407C?

Bluon TdX 20 has similar capacity to R-407C, increased energy efficiency, and most importantly does NOT require an oil change for MO systems. TdX 20 has a GWP of 1,650 compared to R-407C's GWP of 1,774.

How is Bluon TdX 20 different than R-427A?

Bluon TdX 20 has significantly better capacity than R-427A, is much more energy-efficient, and is truly compatible with MO. TdX 20 has a GWP of 1,650 compared to R-427A's GWP of 2,138.

How is Bluon TdX 20 different than R-421A?

Bluon TdX 20 has significantly better capacity than R-421A, and is much more energy efficient. TdX 20 has a GWP of 1,650 compared to R-421A's GWP of 2,631.

How is Bluon TdX 20 different than RS-70 (R-453A)?

Bluon TdX 20 has slightly better capacity than RS-70, increased energy efficiency, and most importantly is designed for full compatibility with Mineral Oil. RS-70 only offers partial compatibility with MO. Bluon TdX 20 has a GWP of 1,650 compared to R-453A's GWP of 1,765. Also, R-453A is not currently EPA SNAP approved for HVAC.

Installation

Will I need to make any changes to my equipment or infrastructure to use TdX 20?

While Bluon acknowledges there is no perfect "drop-in" replacement, TdX 20 is a direct replacement for R-22 refrigerant in the vast majority of standard HVAC equipment (direct expansion package and split systems). Bluon does recommend minor component change-outs for certain types of systems (such as large commercial systems with Trane 3D Scroll Compressors) which may include changing TEVs to Electronic Expansion Valves, changing non-adjustable pressure controlled devices, etc. This information is readily available in our Retrofit Guidelines, Best Practices, the Bluon HVAC App, or through our Live Technician Support.



Will I need to adjust the TXV when installing Bluon TdX 20?

Yes, typically TXV's should be adjusted 1-4 turns closed to obtain the desired Superheat when installing Bluon TdX 20.

Does Bluon offer training?

Yes. Bluon offers technician training online via its accreditation program which also allows contractors access to Bluon's warranty and technical support. (Group trainings are also available)

Does Bluon offer technical support for Bluon TdX 20 (R-458A)?

Yes. Bluon is the only refrigerant manufacturer that provides Live Technician support as well as a Mobile App to assist with installations.

Do high pressure safety switches need to be adjusted/replaced with Bluon TdX 20?

No. Bluon TdX 20 operates at lower pressures than R-22 therefore high-pressure safety switches do not need to be adjusted/replaced.

Do low pressure/loss of charge switches need to be adjusted or replaced?

Generally, low pressure safety switches that cut-out below 30 psig in high temp applications do NOT need to be adjusted/replaced.

Do I need to modify/replace low pressure cut-off switches used for pump down or other applications?

Yes. Generally, pump down cut-out switches should be adjusted or replaced for Bluon TdX 20 pressures.

How will glide affect system performance?

When properly tuned, glide can provide a heat transfer advantage to increase efficiency. The primary considerations when working with glide:

- Tune the evaporator to desired Dew temp and condenser to desired Bubble temp
- Entering evaporator temperature will be lower than exit temperature due to glide (not Superheat)
- Superheat calculations utilize Dew column and Subcool calculations utilize Bubble column

What should the starting charge be?

Initial charge should be 80% of nameplate or amount of refrigerant that was recovered (whichever is less). If unsure about the original charge or appropriate starting charge, it is generally better to start lower and slowly work towards desired Superheat and Subcool.



Will Non-Adjustable TXVs need to be replaced?

In units 5 tons and under, charge to OEM recommended Superheat. In units over 5 tons, the non-adjustable valve should be converted or changed when possible to an adjustable valve. Call Bluon Technical Support for more info.

Will TXV's ever need to be changed or replaced?

In some larger systems (specifically Trane 3D Scroll systems), under specific circumstances, Bluon may recommend transitioning to an Electronic Expansion Valve for safety and efficiency benefits. Please see the Bluon Mobile App and corresponding equipment database.

Is Bluon TdX 20 compatible with leak repair/sealant additives?

Bluon TdX 20 is an HFC blend. As long as the sealant manufacturer approves use with HFC's then there should be no compatibility issues. Most leak sealant manufacturers say they are compatible with all refrigerant types. Bluon Energy does not recommend leak sealants over repairing leaks.

In what systems is Bluon TdX 20 not compatible?

Blends are not recommended for flooded evaporators or centrifugal compressors. Additionally, systems containing receivers may require special consideration when using blends. For more information contact Bluon Technical Support. See Also the Bluon Mobile App for system specific info.

What specific types of pressure controls should be assessed for compatibility with Bluon TdX 20?

Hot gas bypass valves, fan cycling switches, unloaders, and low ambient kits controlled by pressure may need to be adjusted or changed to Bluon TdX 20's pressures. See Bluon Best Practices on Pressure Controls.

Why are crankcase heaters especially important for Bluon TdX 20 and Blends in general?

Crankcase heaters are intended to keep liquid refrigerant from saturating the oil in the compressor oil sump during the off cycle. Blends, because of their varying boiling points, can condense at higher temperatures than R-22 making operational crankcase heaters more important.

Should seals and gaskets be replaced when converting to Bluon TdX 20?

Converting to Bluon TdX 20 (R-458A) does not require pro-actively changing seals and gaskets. Always follow industry standard practices for leak checking (e.g. standing pressure and evacuation tests) to ensure a tight and dry system. See Bluon Best Practices on Elastomer Seals & Gaskets.

Can I "top-off" an R-22 system with Bluon TdX 20?

Refrigerants should never be mixed as it is against EPA regulations.



If I have a leak with Bluon TdX 20, should I recover and replace the refrigerant?

Bluon recommends following the industry standard “20% Rule” – if the system loses more than 20% of the original charge, then the system should be evacuated, and the refrigerant replaced with a virgin charge. If the leak is in the liquid line, the refrigerant charge should be ok to “top-off”.

What Superheat and Subcool numbers should I aim for when charging with Bluon TdX 20?

Bluon recommends using OEM recommendations but as a general rule the Subcool should be between 8-12 F and the Superheat should be between 12-20 F at the compressor.

Will I have to change out electronic expansion valves when converting to Bluon TdX 20?

The electronic expansion valve should have the proper refrigerant profile. Bluon TdX 20 (R458a) is in Carel, Sporlan and soon will be in Danfoss software. Contact Bluon Technical Support for more info.

Is Bluon TdX 20 (R-458A) recommended for use in low temp systems?

No, Bluon TdX 20 (R-458A) is only recommended for use in High and Medium temp applications.

Energy Savings

How does Bluon TdX 20 impact an end-user’s carbon footprint?

Replacing R-22 with Bluon TdX 20 is one of the most impactful and cost-effective measures anyone can do to lower their Carbon Footprint. For a 100,000 SF office building, converting to Bluon TdX 20 can save over 100 metric tons of CO2 per year. See www.bluonenergy.com/sustainability.

What performance should our clients expect from Bluon TdX 20?

They can expect a 5% – 25% energy savings with like capacity. Bluon TdX 20 also extends equipment life due to lower operating pressures and reduced head temperatures.

How does TdX 20 reduce energy consumption?

TdX 20 works with your existing equipment and compressor to reduce energy consumption by 5% to 25% versus R-22. TdX 20 creates these energy savings primarily through reduced amp draw to the compressor.

What is the estimated payback or ROI for installing TdX 20?

While energy savings and electricity costs can vary, the payback for installing TdX 20 is typically between 12-36 months with an ROI of 35%-100%.



How does TdX 20 compare to other energy efficiency measures (EEMs)?

TdX 20 represents one of the most cost-effective EEMs available today. TdX ranks in the top 5% of all EEMs as measured by the Department of Energy's method of determining the cost per kWh saved.

What is the GWP of Bluon TdX 20?

Bluon TdX 20's GWP is 1,650 – the lowest of all R-22 replacement refrigerants for use in high temp applications (HVAC).

Price & Availability

Why does Bluon TdX 20 (R-458A) cost more than some other R-22 replacements?

Bluon is priced to reflect its unique value proposition while remaining far less expensive than R-22. Bluon has two primary value propositions:

1. Bluon offers comprehensive support to our contractor clients including installation tools, specific instructions for over 16,000 models (and growing), plus and live technician support.
2. TdX 20 (R-458A) is the only R-22 Replacement that is more energy efficient than R-22 and therefore creates a return on investment.

What is the price of Bluon TdX 20?

Current 2018 pricing is \$13.00 per lb. from the Suppliers. Bluon is establishing an industry first fixed pricing structure to benefit our clients. Bluon TdX 20 is the only replacement that rapidly pays for itself with electricity savings.

Where can I buy Bluon TdX 20?

Currently Bluon TdX 20 is available at Johnstone Supply and CD Jones, and is currently working with additional suppliers to stock the product. Where suppliers are not available Bluon sells direct to contractors with shipping included. Please contact Bluon for more information at sales@bluonenergy.com or call 1.855.425.8686

Are there any requirements to receive Bluon's best-in-class Tech Support and Product Warranty?

To access Bluon's Live Technician Support, the Bluon Mobile App and to receive Bluon's Warranty, contractors must become Accredited. To become Accredited, take the 30-minute online training or organize an in-person Group Training from Bluon.