

# MINUS 45

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## Technical Data Sheet

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### Section 1 : General description

Coolant for electrical and electronic use. CRC MINUS 45 is a non-flammable (Directive 2008/47/EC)\*, inert dry coolant spray for maintenance, trouble shooting and repair. Used to cool down parts and components; the tracking of intermittent faults, the detection of hairline cracks, and the locating of defective components becomes easier.

### Section 2 : Features

- Low Global Warming Potential (GWP)
- Non-flammable (according to directive 2008/47/EC)
- Protects heat sensitive components from high temperatures during soldering and de-soldering.
- Facilitates precision fitting of metal parts: a short spray will shrink one part so a slip fit becomes possible.
- Saves maintenance cost and downtime.
- No chemical attack of components.
- Evaporates completely, leaving no residue.
- Invaluable for testing thermostats and all systems responding to temperature changes.

### Section 3: Applications

- Testing of thermometers and thermostats.
- Locating defective electrical parts.
- Finding faulty connectors ...
- Locating defective diodes , transistors ...
- Shrink fitting / removal of bushes, bearings, spindles ...
- Assembly / disassembly of tolerance equipment.
- Checking of transistor ignition systems.
- Trimming / machining of rubber bushes ...
- Removal of chewing gum, adhesives, sweets ... from fabrics, curtains, carpets, chairs, etc (spray until gum is brittle and then break away).
- Pre-cooling “dental” instruments.

### Section 4: Directions

- For use on energized equipment keep ambient temperature under 28°C.
- Let suspect circuit heat-up, spray one component at a time. Spraying of faulty component will give instantaneous change of output.
- Hairline cracks in PC will be exposed by frosting up the copper circuitry.



- Use extension tube for precise aiming and hard to reach areas.

**A safety data sheet (MSDS) according to EC Regulation N° 1907/2006 Art.31 and amendments is available for all KF products.**

**Note :**

with sensitive or stressed plastic parts, the thermal stress induced by strong local cooling must be considered

### Section 5: Typical product data (without propellant)

Appearance	:	colorless
Specific gravity (liquid, 20°C)	:	1,12
Vapour density (vs. air=1)	:	> 2
Boiling point	:	-19°C
Vapour pressure (@ 20°C)	:	0,42 bar
Ozone depletion potential (vs CFC 11=1)	:	none
Global Warming Potential (versus CO <sub>2</sub> , 100year ITH)	:	7
Maximum Incremental Reactivity	:	0,09 g O <sub>3</sub> /g VOC
Tests according directive 2008/47/EC	:	non flammable*
Flame extension test	:	Pass < 15 cm
Drum test	:	Pass > 300 s/m <sup>3</sup>

### Section 6: Packaging

Aerosol 12x250 ML

\*Although classified as nonflammable by GHS, DOT, IATA and IMDG and as measured by ASTM E-681 and ISO 10156, Solstice® Propellant (HFO-1234ze) can exhibit vapor flame limits at elevated temperatures. Solstice® Propellant has a very narrow flammable range (LFL-UFL) of 8.0-8.5 volume percent in air at one atmosphere under the following conditions:

- Temperature is 86°F (30°C), (and)
- Relative Humidity ≥50%, (and)
- High energy ignition source or open flame is present

Accordingly, CRC recommends that for use on energized electrical equipment the ambient temperature should be below 28°C.

More detailed information can be found on the [HFO document](#).

All statements in this publication are based on service experience and/or laboratory testing. Because of the wide variety of equipment and conditions and the unpredictable human factors involved, we recommend that our products be tested on-the-job prior to use. All information is given in good faith but without warranty neither expressed nor implied.

This Technical Data Sheet may already have been revised at this moment for reason such as legislation, availability of components and newly acquired experiences. The latest and only valid version of this Technical Data Sheet will be sent to you upon simple request or can be found on our website: [www.crcind.com](http://www.crcind.com).

We recommend you to register on this website for this product so you will be able to receive any future updated version automatically.