

## Issue no. 05/2023

### Polymerization of refrigerant R1234yf

#### *Polymerization of the refrigerant R1234yf can lead to the total failure of the A/C service unit.*

In isolated cases, polymerization may occur when A/C service units are filled with the refrigerant R1234yf. This results in a substance with a silicone-like consistency that irreparably damages the A/C service unit.

#### Possible causes

Although the causes have not yet been fully investigated, laboratory tests have shown that moisture and high temperatures lead to polymer formation in R1234yf. For example, moisture can enter the bottle through a leaky pressure valve, while high temperatures can occur when bottles are exposed to direct sunlight during transport or storage.

#### Precautions to prevent damage

R1234yf should only be obtained from trusted sources and stored appropriately. When filling the service unit, the bottle valve should be opened slowly, since a sudden increase in pressure can also lead to polymerization. Heavy contamination on the device, especially metal dust, must be avoided at all costs. Hoses, seals, etc. made of peroxide-containing materials (e.g., rubber) must not be fitted. Only approved PTFE sealing tape may be used for sealing. If polymerization has occurred, the customer should refrain from attempting their own repairs and should inform the MAHLE customer service department or the refrigerant supplier.

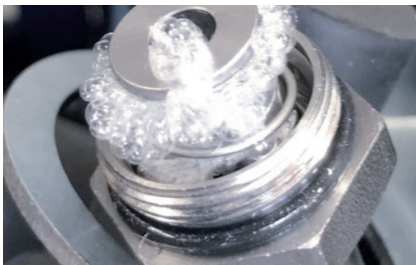


Figure 1: Polymerized refrigerant in connecting piece



Figure 2: Polymerized refrigerant



Figure 3: Polymerization: refrigerant bottle

#### Important!

The following should be noted when using R1234yf:

- Do not use hoses, seals, etc. made of peroxide-containing materials
- Use only suitable extraction valves and approved PTFE sealing tape
- The device should be kept free from metallic swarf (e.g., magnesium) and heavy contamination
- Only top up with refrigerants from trustworthy supply sources
- Check the purity of the refrigerant with a suitable analysis unit if necessary (recommended)
- Regularly check attachments and connections for leaks
- Open refrigerant bottle valves slowly
- Do not attempt your own repairs after damage. Instead, keep the device and bottles for a possible examination