

Regarding the stability of mixed refrigerants

Stability when existing alone

Since new refrigerants are mixed refrigerants composed of HFC types that do not have C-CL bonds in the molecule with lower binding energy than C-F bonds, they do not cause thermal decomposition when existing by themselves.

| Refrigerant | Test results |
|-------------|--|
| R-32 | Thermal decomposition starting temperature is about 893K |
| | Less than 50% in 1123K |
| R-125 | Thermal decomposition is 0.2% in 1180K, and 65% in 1470K |
| | Decomposition main side product is C ₂ F ₄ , and causes hydrogen fluoride elimination reaction |
| | $C_2HF_5 \rightarrow C_2F_4 + HF$ |
| R-134a | Thermal decomposition is 0.1% in 1170K, and 46% in 1410K |
| | Decomposition main side product is CF ₂ CHF, and causes hydrogen fluoride elimination reaction |
| | $CF_3CH_2F \rightarrow CF_2CHF + HF$ |
| R-143a | Thermal decomposition is 0.06% in 1078K, and 18% in 1280K |
| | Decomposition main side product is CF ₂ CH ₂ , and causes hydrogen fluoride elimination reaction |
| | $CF_3CH_3 \rightarrow CF_2CH_2 + HF$ |