Encoding of CFC-free and CFC-containing compressors

Compressors of refrigerators can be operated with very different cooling agents.

Generally cooling agents are divided into those containing CFC (chlorofluorocarbons) and cooling agents, which are not counted among the CFCs.

The encoding of a compressor reveals which cooling agent it contains.

At first the most important CFCs are listed below:

fully halogenated CFCs

R 11 ($CFCl_3$)
R 12 (CF_2Cl_2)
R 13 (CF_3Cl)
R 111 (C_2FCl_5)
R 112 ($C_2F_2Cl_4$)
R 113 ($C_2F_3Cl_3$)
R 114 ($C_2F_4Cl_2$)
R115 (C_2F_5Cl)
R 211 (C_3FCl_7)
R 212 ($C_3F_2Cl_6$)
R213 ($C_3F_3Cl_5$)
R 214 ($C_3F_4Cl_4$)
R 215 ($C_3F_5Cl_3$)
R 216 ($C_3F_6Cl_2$)
R 217 (C_3F_7Cl)

partially halogenated CFCs

R 21 ($CHFCl_2$)
R 22 (CHF_2Cl)
R 31 (CH_2FCl)
R 121 (C_2HFCl_4)
R 122 ($C_2HF_2Cl_3$)
R 123 ($C_2HF_3Cl_2$)
R 124 (C_2HF_4Cl)
R 131 ($C_2H_2FCl_3$)
R 132 ($C_2H_2F_2Cl_2$)
R 133 ($C_2H_2F_3Cl$)
R 141 ($C_2H_3FCl_2$)
R 142 ($C_2H_3F_2Cl$)
R 151 (C_2H_4FCl)
R 221 (C_3HFCl_6)
R 222 ($C_3HF_2Cl_5$)
R 223 ($C_3HF_3Cl_4$)
R 224 ($C_3HF_4Cl_3$)
R 225 ($C_3HF_5Cl_2$)
R 226 (C_3HF_6Cl)
R 231 ($C_3H_2FCl_5$)
R 232 ($C_3H_2F_2Cl_4$)
R 233 ($C_3H_2F_3Cl_3$)
R 234 ($C_3H_2F_4Cl_2$)
R 235 ($C_3H_2F_5Cl$)
R 241 ($C_3H_3FCl_4$)
R 242 ($C_3H_3F_2Cl_3$)
R 243 ($C_3H_3F_3Cl_2$)
R 244 ($C_3H_3F_4Cl$)
R 251 ($C_3H_4FCl_3$)
R 252 ($C_3H_4F_2Cl_2$)
R 253 ($C_3H_4F_3Cl$)
R 261 ($C_3H_5FCl_2$)
R 262 ($C_3H_5F_2Cl$)
R 271 (C_3H_6FCl)

Compressors containing CFC as cooling agent are hazardous waste and should be classified to AVV[1] entry **16 02 11*** (Discarded equipment containing chlorofluorocarbons, HCFC, HFC).

Besides the above mentioned CFCs there are other cooling agents, which are **not** counted among the CFCs. The most important exponents are:

R 23 (CHF_3)
R 32 (CH_2F_2)
R 116 (C_2F_6)
R 125 (C_2HF_5)
R 134a ($C_2H_2F_4$)
R 143a ($C_2H_3F_3$)
R 218 (C_3F_8)
R 290 (propane)
R 152a ($C_2H_4F_2$)

[1] Abbr. for „Abfallverzeichnis-Verordnung“, translated: German Waste Catalogue Ordinance. Entries and designations of the AVV comply with those of the European list of wastes (Decision 2000/532/EC).

R 170 (ethane)
R 404A (blend of 44 % R 125, 4 % R 134a, 52 % R 143a)
R 407A (blend of 20 % R 32, 40 % R 125, 40 % R 134a)
R 407C (blend of 23 % R 32, 25 % R 125, 52 % R 134a)
R 410A (blend of 50 % R 32, 50 % R 125)
R 413A (blend of 9 % R 218, 88 % R 134a, 3 % R 600a)
R 417A (blend of 46,5 % R 125, 50 % R 134a, 3,5 % R 600a)
R 507 (blend of 50 % R 125, 50 % R 143a)
R 508A (blend of 39 % R 23, 61 % R 116)
R 600a (isobutene)
R 744 (CO_2)
R 1270 (propylene)

Compressors not containing CFC as cooling agent are also hazardous waste and should be classified to AVV entry **16 02 15*** (Hazardous components removed from discarded equipment).

Note:
If the encoding of the compressor of a refrigerator is **not clearly readable**, it precautionary should be classified to AVV entry **16 02 11*.**

Generally note:
Refrigerators including compressors originating from private households should be assigned to chapter 20 of the AVV, those originating from the commercial or industrial sector to chapter 16 of the AVV, as well as already removed compressors from refrigerators in principle.