SURFACTANTS FOR HFO, THE BLOWING AGENT OF TOMORROW IN THE POLYURETHANE INDUSTRY

Polyurethane is widely used for its versatility.

Concentrol has a range of products with HFO, the "ecofriendly" blowing agent:

- **Concentrol STB PU-2248** for integral or spray PU foam.
- **Concentrol STB PU-2272** for discontinuous insulation panels (PUR and PIR) and appliances.
- **Concentrol STB PU-2285** pfor discontinuous insulation panels (PUR and PIR) and block foam.

HFO is a blowing agent that does not have any type of impact on the ozone layer and its use supposes a very small Global Warming Potential (GWP). It is the most viable alternative in terms of sustainability and energy efficiency.

Table 5-1: Decomposition products of HFOs

HFO substance	Intermediate products	Final products
HFO-1234yf	$CF_3C(O)F$ (trifluoroacetyl fluoride, TFF), HCHO (formaldehyde)	$CF_3C(O)OH$ (trifluoroacetic acid, TFA), CO_2 (carbon dioxide), HF (hydrofluoric acid)
HFO-1234ze(E)	$CF_3C(O)H$ (trifluoroacetaldehyde), $HC(O)F$ (formyl fluoride)	CO_2, $HC(O)OH$ (formic acid), HF
HFO-1216	$CF_3C(O)F$, COF_2 (carbonyl fluoride)	$CF_3C(O)OH$, CO_2, HF
HFO-1233zd(E)	$CF_3C(O)F$, $HC(O)Cl$, HCl (hydrochloric acid), $CF_3CH=CHOH$	CO_2, HF, HCl
HFO-1233zd(Z)	$CF_3C(O)F$, $HC(O)Cl$, HCl, $CF_3CH=CHOH$	CO_2, HF, HCl

Source: Wallington et al (2014): Atmospheric chemistry of sort-chain haloolefins: Photochemical ozone creation potentials (POCPs), global warming potentials (GWPs), and ozone depletion products (ODPs). Chemosphere, 129, pp 135-141

Concentrol
Performance Materials