

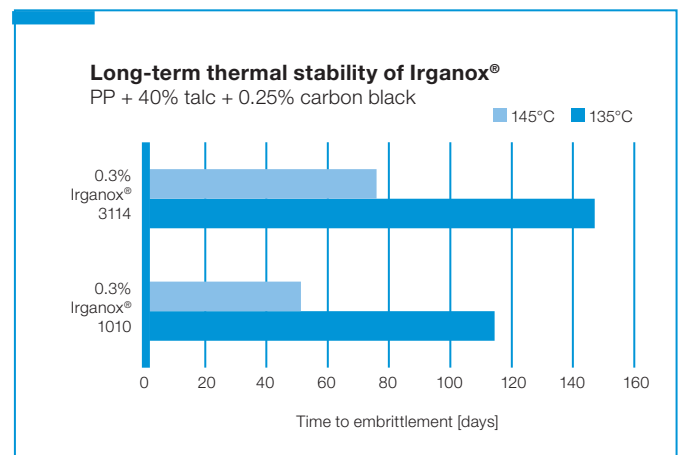
Case Study

Use of HALS as HATS for under the hood PP parts

Chimassorb® 2020 enables the fulfillment of the demanding long-term thermal stability and odourless requirements for HVAC systems (heating, ventilating and air conditioning).

Cars are designed to have a constant throughflow of fresh air that keeps the interior atmosphere pleasant even with all the windows shut. The incoming air can be heated by the engine to keep the windows clear of mist and the car interior at a chosen temperature. HVAC parts must withstand shock and vibrations at operating temperatures of up to 70°C while in continuous service and must remain dimensionally stable with temperature peaks up to 150°C. Absence of odour and low-emission requirements are also specified by the OEMs to prevent undesired smell in heated or cool air conveyed into a vehicle's passenger compartment.

Irganox® antioxidants inhibit the polymer degradation by free radical scavenging during thermal aging at very high temperatures. They also provide long-term thermal stability up to 150°C, over 1000 hours, and therefore ensure key performance for UTH end applications.





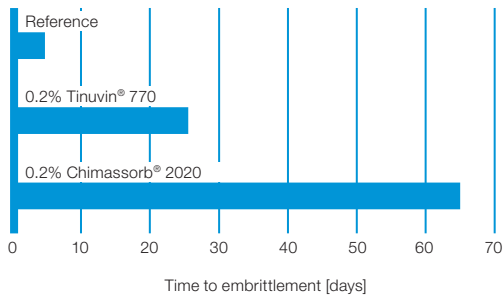
High molecular HALS Chimassorb® increases also the long-term thermal stability. The so-called HATS (hindered amine thermal stabilizer) retards the polymer degradation by scavenging free radicals through a cyclic mechanism.

Chimassorb® 2020 acts advantageously in combination with a non-sulfur antioxidant and contributes to significant odour reduction. It provides excellent heat stability and, due to its high molecular weight and narrow molecular weight distribution, it ensures compliance with OEMs' target on volatile organics such as VDA 270 (odour), VDA 275 (formaldehyde), VDA 278 (VOC & FOG) or VDA75201/SAE J 1756 (fogging). In addition, owing to these prominent features, Chimassorb® 2020 provides consistent performance in use, stable polymer processing and high extraction resistance.



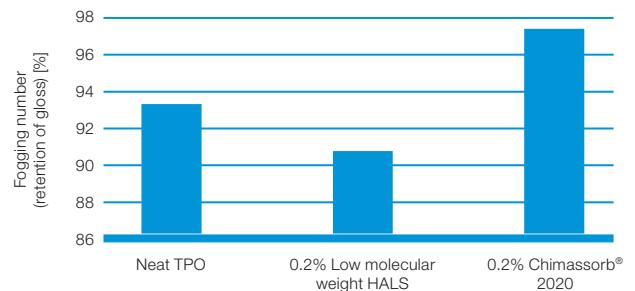
Long-term thermal stability of Irganox®

TPO + 20% talc + 0.75% carbon black + 0.5% TiO2



Fogging test SAE J 1756

Black TPO, 14% talc



Heating in fog test chamber 6 hours at 110°C, chill plate at 38°C