The main differences between A1 refrigerants, such as R-410A, R-134a, R-407C, and A2L refrigerants such as R-32, HFO R-1234yf and HFO R-1234ze is the ability to propagate a flame. A2L refrigerants will burn, but their burning velocity is below 10cm/s, which is lower than an A3 refrigerant such as R-290 which actually burn explosively when ignited; hence the new classification. In practical terms, it is very difficult to ignite 2L gases, but some precautions must be taken to prevent accidental build-up of refrigerant, particularly during charging of systems. Manufacturers are suggesting that extract fans be used during this process, especially if the outdoor unit is in an enclosed area

All flammable refrigerants (class 2L and above) will not ignite if the concentration level in a room stays below their lower flammability limit (LFL). International and European safety legislation and standards such as ISO 5149 and EN 378 define requirements to remain far below the lower flammable limit in case of accidental leakage.

It should be noted, however, that the A2L classification is only used in reference to refrigeration, air conditioning and heat pump system safety, and is used by standards such as EN378 and ISO 5149 to determine maximum allowable charge size, etc. It IS NOT recognised by transport regulations (ADR6) and is not a recognised classification on Material Safety Data Sheets (MSDS). GHS7 is the agreed international standard in this instance. When A2L products are stored and transported, they are classified as an extremely flammable gas, much the same as acetylene and MAP gas, commonly used by the industry for brazing. The exception to this is HFO R-1234ze (E), which GHS classifies as non-flammable (at 20 deg C). There should be no significant changes required to vehicles that transport A2L refrigerants, but there should be some form of ventilation and signage to inform authorities if there is an accident. Storage on site and at installer's premises should also comply with ADR and MSDS rules.

IT IS VITAL TO UNDERSTAND THAT A2L REFRIGERANTS MUST ONLY BE USED IN SYSTEMS DESIGNED SPECIFICALLY TO TAKE INTO ACCOUNT THEIR FLAMMABILITY CHARACTERISTICS. THEY SHOULD NEVER BE USED TO REPLACE NON-FLAMMABLE

REFRIGERANTS IN RETROFIT SITUATIONS without a full risk assessment and necessary modifications.

This is because of safety issues and the possibility of a relatively large charge of an A2L being released by accident into an area that has not been risk assessed for use with this class of refrigerants.

Due to their lower flammability, A2L refrigerants are intended for use in equipment specifically designed for these products and should always be used in accordance with the relevant national and international standards. Please consult the appropriate equipment manufacturer regarding which refrigerants can be used in the equipment

