Unlimited Polymer Solutions

TECHNICAL BULLETIN TB218
UV RESISTANCE

Product: REHAU PEXa Pipe

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Plastics are susceptible to damage from exposure to sunlight (ultraviolet light). The effect is accelerated where more UV radiation is found, such as in southern US regions. PEX pipes can be designed to protect against short-term UV damage, but after some time, UV radiation will reduce the lifetime of the pipe. The reduction of pipe lifetime depends on factors such as temperature, pressure and levels of chlorination in potable water. If excessive UV exposure occurs, a PEX pipe may not last its full design life.

ASTM F2657-07 Standard *Test Method for Outdoor Weathering Exposure of Crosslinked Polyethylene (PEX) Tubing* is the test method for exposing PEX pipes to natural (sunlight) UV and evaluating the effects of the exposure. The Standard Test Method is based on a standardized worst-case North American environment in central Arizona, with high ambient temperature and high UV radiation. Based on weather data collected over several years, worst-case single month and consecutive months have been identified. ASTM F876-10 has incorporated acceptable listing criteria for our PEXa pipes, when tested according to ASTM F2657. The ASTM F876 standard dictates that the UV resistance of PEX pipe be listed in the Material Designation Code on the pipe. The second digit of the Material Designation Code has been reserved for the UV resistance of the pipe. The following digits have been assigned to show the UV resistance:

0= Not tested or rated
1= 1 Month UV resistance
2= 3 Months UV resistance
3= 6 Months (or greater) UV resistance

Although ASTM F876 only categorizes up to 6 months of UV resistance at this time, REHAU has tested and certified our PEXa pipes according to ASTM F2657 for the following maximum UV exposure periods:

- **RAUPEX® Non-Barrier**: Maximum exposure time of 15 days accumulated (3006)
- **RAUPEX® O_2 Barrier**: Maximum exposure time of 90 days accumulated (3206)
- **RAUPEX® Red, White and Blue UV Shield**: Maximum exposure time of one year accumulated (3306)
- **RAUGEO®**: Maximum exposure time of one year accumulated (3306)
- **MUNICIPEX®**: Maximum exposure time of one year accumulated (3306)

In addition to the inherent UV resistance of REHAU PEXa pipes, REHAU PEXa pipes are shipped in cardboard boxes or opaque plastic bags that offer extra protection. REHAU PEXa pipes must be kept in the original packaging until time of installation. REHAU PEXa pipes must not be stored outdoors and are not designed for permanent outdoor exposure (with the exception of non-exposed buried applications).

Note on UV emitted by fluorescent lamps:
ASTM F2657 was established to test to the worst case scenario for UV exposure by testing in direct sunlight. UV emitted by fluorescent lamps is insignificant when compared to UV present in sunlight. GE Lighting has stated *"Solar UV is enormously more photoactive and damaging than the UV*

from linear fluorescent lamps. Solar UV includes UV-A, UV-B and UV-C. UV-A is near UV, not very energetic and is the bulk of UV emitted by florescent lamps." Therefore, when REHAU PEXa pipes are installed in the presence of fluorescent lamps the UV emitted by those lamps should have no effect on the lifetime of the pipes. For example, there is no concern of UV damage on REHAU PEXa pipes installed in a boiler room where fluorescent lamps are present.

Failure to follow recommendations for maximum UV exposure could result in premature pipe failure and will negate any warranty provided by REHAU for such pipes.