

Nu Flow Frequently Asked Questions and Answers

1. **Who/What is Nu Flow?** Nu Flow manufactures and installs innovative, non-intrusive, and eco-friendly technologies for the restoration of failing pipe systems. It is the only small-diameter pipe lining company to provide dual lining technologies from a single source and the master licensee for the longest time-tested small diameter epoxy lining in North America. Nu Flow's lining solutions apply to a wide range of interior infrastructure, including HVAC, sewer and drain lines, potable water service lines, mechanical and hydronic systems, and fire suppression systems in commercial, residential, municipal, government, hospitality, institutional and medical facilities, naval and seagoing vessels, industrial, and petrochemical facilities.
2. **How long has Nu Flow been in business?** Nu Flow began as a new technology company in 1998 manufacturing and installing patented and proprietary trenchless drain and sewer lining solutions. In 2005, Nu Flow added epoxy coating technology for restoration of potable pipes and mechanical systems, and in 2006, Nu Flow acquired American Pipe Lining (APL) which developed the epoxy pipe lining native to North America in the early 1980s. Nu Flow has over 200 years of combined experience in the application of epoxy coatings and structural pipe lining. Since 2013, Nu Flow has had its footprint on all continents, and is an integral part of the global leading cleantech company Aquam Corporation.
3. **How long has the potable technology been around and is it being used anywhere else?** The process has been available in Japan for more than 45 years and in North America for more than 30 years. It is in use globally.
4. **How does the potable process basically work?** The patented Nu Flow potable process uses heated air to move a non-toxic abrading agent through designated pipe runs and segments. The movement of the agent through the pipe dislodges the corrosion buildup and transports it to an exit opening in the pipe, where it is collected in a cyclonic grit unit and dust collection system. The corrosion waste is non-toxic and easily disposed of without any harm to the environment. The result is a clean and rust-free inside of the pipe. Following pipe cleaning, a liquid epoxy (potable water safe and Truesdail certified to NSF 61 standards) is distributed through the pipe system using clean and heated controlled air flow to facilitate optimal adhesion and curing. The coating cures within 24 hours. Once the system is inspected for leaks, it is returned to service. The pipe system is left with the benefit of a smooth and durable interior finish that is resistant to further corrosion, deterioration and pinhole leaks.
5. **How safe is the cleaning abrasive and more importantly, the epoxy material which remains in the pipe and is in contact with drinking water?** The garnet is silica-free and is approved for closed blasting purposes. The epoxy lining is a two-part system (base resin and hardener) which is approved for use in potable water (drinking water) systems from ½" to 12" diameter pipe. The material is certified by Truesdail to NSF-61, WRAS in the UK, as well as other certifications in several other countries. This standard governs the use of man-made materials in contact with potable water. The epoxy is solvent free, non-toxic and contains no VOC's.

6. **How long does the epoxy take to cure before the system can be returned to service?**
Typically, with proper heating and drying of the pipe and lining material before and after application, water may be returned to service in 24 hours. An overnight dry time is adequate to achieve a hard durable epoxy finish. Once applied and properly cured in place, the epoxy material will continue to cure even in wet or damp conditions.
7. **What is the expected life of the epoxy?** The inventor of the epoxy lining estimated that the product is over 50 years in standard domestic systems. When used on piping in contact with salt water (e.g., shipboard piping systems), its estimated life is halved.
8. **Is a single coat of epoxy adequate for most applications?** In most domestic water, yes. The only exception would be for pipe diameters greater than 3 inches, a second coat is recommended. Coating can range from 8-20 mils in thickness.
9. **Can the Nu Flow process be used in other applications?** Yes, Nu Flow has been successfully used to remediate aging gas pipes, offering huge savings over the traditional and disruptive option of replacement. Nu Flow has also successfully relined fire suppression systems to inhibit the growth of MICs (microbiologically influences corrosion) and ensure the fire sprinklers stay functional.
10. **In what type of building structures and piping systems can the Nu Flow process be used?** The Nu Flow process can be used in single- and multi-unit residential structures such as homes, apartments, hotels and dormitories. In addition, office buildings, schools, hospitals, industrial and food plant systems can be treated as well. Underground piping mains that deliver water to these systems can also be restored. The process has been used extensively on US Naval shipboard drain piping systems in salt water-based environments. In short, any metal-based piping system is generally treatable using the Nu Flow process.
11. **What specific types of pipe can be restored with the Nu Flow process?** Galvanized steel, copper, cast iron, black malleable iron, ductile iron and lead pipes can be treated with the Nu Flow process. To a lesser degree (due to the generally infrequent need for restoration), the process may also be used on some plastic and fiberglass reinforced piping systems.
12. **What, if any, are the application limitations of the process?** In-place epoxy restoration is not normally recommended for use on pipes which are 1) severely corroded to the point where several leaks are present (repair-clamped) along any given pipe segment of short-to-medium length (e.g. 3 – 5 meters), and 2) corroding on the exterior, as is common with buried pipes that are wrapped in very old insulation. In the latter case, the insulation will pull apart from the pipe, causing condensation that does not always easily evaporate. The continued moisture will promote rust formation and eventual pinholes.
13. **Who are the typical customers that can benefit from the Nu flow process?** K-12 schools, colleges and universities, home associations, public housing authorities, military barracks and facilities, industrial facilities, public utilities, and many more.
14. **Who are some of Nu Flow's past customers?** Nu Flow has restored over 10 million kilometers of piping systems. The US Army, Navy, Air Force, school districts, public housing authorities, apartment owners, residential homeowners, municipalities, just to name a few.

15. **What types of structures has the process been used in, and what are the pipe sizes?** Low rise (2-3 floors) and high rise (6-30 floors) multi-unit residential and commercial office buildings, duplex housing units, 3 and 4-plex units, school buildings, university dormitories, Naval shipboard piping. Pipe diameters treated range from 1/2" to 12". Primarily, galvanized, copper and ductile iron pipe.
16. **What are the common symptoms in problematic pipe systems that would make the Nu Flow process a good option for potential customers?** Rusty water, pinhole leaks and the need for ongoing repair work, poor water flow and pressure, foul smelling water and the presence of high concentrations of metal compounds.
17. **How does Nu Flow differ from its competitors?** Extensive experience, wide coverage of our licensee network, and our streamlined quality control in both product manufacturing and applications. Nu Flow has treated piping systems in a variety of client structures and across six continents. Nu Flow's management and operation crews continually strive to be competitive, friendly and customer-centric.
18. **What tests will the installation team undertake to validate the integrity of the epoxy resin on completion of the curing process?** We keep detailed batch records of each mix and retain samples to confirm mix quality. Temperature and dew points in the pipe are monitored by equipment to ensure coating quality. Our technicians perform a pressure test confirm coating integrity prior to the handover.
19. **What do the customers do while their pipes are being treated? Can they remain in their homes?** Yes. A hot and cold water temporary bypass system can be installed to one bathroom sink fixture (hot/cold) and one toilet in the same bathroom using clear plastic braided hoses which are typically routed into the units through the windows. In the majority of cases, Nu Flow will offer just cold water to our customers unless they specifically cite a need for hot water. With the bypass system, customers can remain in their units and still cook, make hot drinks on the stove, and sponge bathe during the work period. Most customers remain in their homes; others will stay with friends or relatives.
20. **What are the primary plumbing fixture locations whose piping is typically affected by and treated with the Nu Flow process?** They include: bath sinks, kitchen sinks, toilets, bath/showers, laundry, dishwashers, wet bars, building perimeter fittings, drinking fountains, eye wash stations, janitor's closet sinks, classroom sinks, and rooftop evaporative coolers.
21. **What is required for the customer to obtain pricing from Nu Flow?** Plumbing and mechanical drawings are ideal. If possible and convenient, a site review is recommended to confirm drawing details or obtain detailed information regarding the piping system when drawings are unavailable. When drawings are not available, it is helpful to ask for general building sketches or schematics which show floor plans and the general layout of the property.
22. **How is pricing to customers conveyed? By unit? By fixture?** Pricing can be proposed by price per unit in the case of apartments and condominiums. For larger non-residential structures (schools, commercial office building, etc.), pricing should normally be presented on a lump-sum basis. For example, galvanized pipe takes about 3 times the abrading material and much more time to clean than copper tubing.

23. **What quality assurance procedures are used in the Nu Flow process to ensure a satisfactory restoration?** Visual inspections (naked eye, camera/bore scope), air pressure and leak test, use of temperature and pressure gauges on all equipment, water flow and volume testing, use of proper air filtration and moisture control equipment and accessories, the use of proper hose and fitting materials, and strict quality control on the equipment.
24. **What does Nu Flow do when a given pipe section or fitting cannot be treated due to age and wear?** Nu Flow will normally replace the faulty pipe or fittings with a new section of pipe or replace the pipe or fittings with pre-lined (with epoxy) pipe and fittings. Such items are chargeable to the customer on a per-unit/per-foot basis, and subject to customers' prior approval of such repairs.
25. **Can more than one (1) pipe run or segment be restored at the same time to shorten the worktime?** Yes. Depending on pipe lengths and especially diameters, multiple runs can be treated provided the operatives have the air source (compressor) and manpower adequate to manage multiple runs. In taller buildings, it is common for Nu Flow to clean and line both hot and cold riser sets simultaneously.
26. **Are permits necessary to perform work on customers' facilities?** No. Like water treatments are not typically required because Nu Flow's work does not alter or modify the existing pipe system. It is only treating the pipes with a liner.
27. **Is Nu Flow an approved product?** Yes. Nu Flow 7000 series epoxy is Truesdail certified safe to NSF/ANSI Standard 61, has full WRAS approval, and is approved in several other countries.
28. **What is the size of a typical work crew?** Depending on the size of the job, 2 to 5 persons. This would include a site manager, 1 to 2 technicians, a plumber (if needed) and a labourer (if needed). On projects involving many floors, work crews are typically 6 to 7 men due to the necessity of personnel for material/equipment handling during setup and runs, and safety management.
29. **What kind of air pressures and temperatures is use in the Nu Flow process?** 100 - 120 psi to purge water out of system, 32°C heating temperature at 100 psi to dry pipe, 38°C degrees preferred. 60-100 psi to clean pipe, 32°C-40°C degrees preferred. 130-150 psi to pressure test cleaned pipe, 30-120 psi to epoxy line pipes, 32°C-40°C degrees preferred.
30. **What are the primary pieces of equipment used in the Nu Flow process?** They include: an air compressor (oil-free preferred), an after-cooler/water separator, an air reheater unit, a main pipe manifold (splitter), a blast pot, an air distribution rack, a primary dust collector (cyclone), a secondary dust collector (bagged filter or similar) and hoses that connect to every water location.
31. **What do customers have to do, if anything, to prepare for Nu Flow's arrival to their complex or residential unit?** In residential units, customers should clear their kitchen and bathroom sink cabinets of all items and cleaning products to allow Nu Flow workers to access piping and valves. Outside-accessible storage rooms and garage work areas should also be cleared as necessary to allow access (main shutoff valve, hot water heater, etc.). In larger buildings (both commercial and non-commercial), customers

should provide Nu Flow with access to boilers rooms, main cold water manifolds and associated valves, ceiling and sub-floor crawl spaces.

32. **If and when asbestos might be present, what should Nu Flow do to facilitate its initial assessment?** Nu Flow workers should always ask if the customer is aware of any asbestos. They should also ask for a copy of the building's asbestos register.
33. **How effective and feasible is the Nu Flow process in structures with asbestos?**
Excellent. From a cost perspective, the savings to the customer is enormous given that in-place restoration eliminates the need to tamper or disturb the existing pipes, with the one exception of valves and fittings that require handling for Nu Flow's hose hook-up. Such spot locations requiring access may be abated with any certified abatement specialist on a "glove bag" or per-unit basis. In short, the more asbestos present in the structure, the more cost effective the Nu Flow process becomes. Asbestos abatement in a building's re-pipe project can easily double the overall cost of the project.
34. **How much room does Nu Flow need for equipment storage and staging on a customer's property?** Typically, 45 square metres of open outdoor space will suffice. The size of the compressor being used will often dictate the space requirement.
35. **Is the air compressor and related equipment noisy?** The average air compressor used by Nu Flow will run at 72 decibels, which is not considered a noise hazard. Some of the oil and water separation equipment may create higher decibel levels, but only intermittently and when such purging is needed. Nu Flow will always consider staging locations that best minimize noise and traffic disruptions.
36. **How soon can Nu flow provide pricing to a customer after the initial visit?** Nu Flow should be able to provide pricing on most projects within 2 weeks, provided that adequate drawings are received from the customer or site details are satisfactory to warrant pricing. On residential projects, pricing can be prepared in 1 - 2 days.
37. **What is typically excluded in Nu Flows' standard scope of work?** Normally excluded items are asbestos abatement, pipe insulation, wall/ceiling repair (except for cases where the problem is related to the process).
38. **How much advance notice does Nu Flow give residential unit occupants before entering the unit to restore piping?** Typically, a 48-hour notice at a minimum is reasonable to most tenants or occupants.
39. **What is the temperature rating of the cured epoxy material?** 60°C on our standard treatments which covers a multitude of applications.
40. **What is the maximum permitted operating temperature of the epoxy?** 60°C on our standard treatments, but as described above, in excess of 100°C on project-specific applications.
41. **What is Nu Flow's standard warranty on its installations?** 10 years.
42. **What are the exclusions to the Nu Flow warranty?** Acids, acts of god, damage to or use of the pipe system which is not normal for the intended use or function of the pipe system.
43. **Can the Nu Flow process be used on drain systems?** Yes, to a degree, provided that the drain is cleared of (via jetting, snaking) internal corrosion and other non-ferrous products (grease, food, waste and other organic material).

44. **What happens to the epoxy material if a coated piece of galvanized pipe at a valve or pipe fitting must be removed in the future as part of a pipe modification?** The epoxy lining will fracture and leave a hair-line crack at the point of disassembly. The new connection, of course will now be exposed to a minimal degree when the connection is reassembled.