



**NORTH AMERICAN
FIRE HOSE
CORPORATION**

The difference is...your margin of safety

POLY-FLOW 800™

**SPECIFICATION FOR
1", 1-1/2", 1-3/4", 2", 2-1/2" & 3"**

**DOUBLE JACKET MUNICIPAL FIRE HOSE
100% POLYESTER CONSTRUCTION
PLAIN WHITE
OR
ULTRA-SHIELD™ IMPREGNATED OUTSIDE JACKET
LIGHTWEIGHT THERMOPLASTIC LINED**

POLY-FLOW 800™ FIRE HOSE SPECIFICATION

POLY-FLOW 800™ Specification for 1", 1½", 1¾", 2", 2½" and 3" Double Jacket Municipal Attack Grade Fire Hose featuring a 100% polyester construction with a light weight polyurethane lining in either a plain white color or with an optional high performance colored impregnation for the outside jacket.

Scope: The fire hose to be supplied under this specification shall be a superior quality, abrasion resistant, all polyester, double jacket, thermoplastic, attack grade fire hose designed for ease of handling and use. The heavy duty construction shall also be engineered for prolonged storage and for extended service life. All hose supplied shall meet or exceed the requirements of NFPA 1961, Standard on Fire Hose (Latest Edition), for attack hose, which is considered a minimum standard for the industry.

Quality Control: The producer shall maintain total quality control over the entire manufacturing process from the procurement of premium quality raw materials, through the weaving, extrusion, curing and coupling attachment processes. The quality of the coupled hose assemblies shall be validated during the 100% hydrostatic testing procedures, as well as through the other physical laboratory testing methods. A quality control procedure system shall be maintained by the manufacturer and shall be available for inspection and audit by the purchasing authority.

When requested at the time of order placement, hydrostatic test reports of the coupled hose assemblies shall be provided to the purchaser, and shall be preserved on file for a period of five years. The Fire Department also reserves the right to request one sample cut from each 1,000 feet of delivered hose. The sample will be a minimum length necessary to conduct ozone resistance, accelerated aging, adhesion and liner tensile tests by the manufacturer. The results of these tests, along with the samples are to be forwarded to the Fire Department.

Lot Acceptance Inspection: The Fire Department shall have the option of sending two inspectors to the point of manufacture of the fire hose to witness the physical and hydrostatic lot acceptance tests.

Warranty: The manufacturer shall certify that the fire hose he proposes to furnish shall meet the requirements and specifications as herein set forth. The manufacturer shall also, as part of his proposal, warranty such fire hose for a period of five (5) years against failure due to defects in material and workmanship, and shall provide for the replacement of any such hoses as may be defective in this respect at no additional cost to the Fire Department. Manufacturer to accept delivery of any rejected hose by the Fire Department.

Lining: The inner lining shall be a single-ply polyurethane extrusion, and shall be unaffected by ozone deterioration. The finished form shall be free of pits or other imperfections and shall have a smooth bore. The thickness of the liner shall be .015" to .018" for 1", 1½", and 1¾" size hose and shall be .022" to .025" for 2", 2½" and 3" size hose. The shore hardness shall not exceed 40 durometer on the "D" scale. The tensile strength of the liner shall not be less than 3000 psi with a minimum elongation of 400%.

Adhesion: The adhesion between the liner and the inside jacket shall be such that the rate of separation of a 1½" wide strip cut transversely, shall not be greater than 1" per minute, over a ten minute period, under a weight of 12 pounds.

Accelerated Aging: Lining specimens shall be subjected to ASTM-D 573 "Test Methods for Rubber Deterioration in an Air Oven". Specimens shall be exposed to 70 degrees C ± 1 Degree for a duration of 96 hours, and shall normalize for 24 hours before testing. The tensile and elongation of the liner shall not be less than 75% of the initial values.

Ozone Resistance: Lining specimens shall be subjected to ASTM-D1149 (Latest Revision). Specimens shall be made in accordance with ASTM-D518 procedure "C" and shall be elongated 15%. Ozone concentrations shall be 100 ± 5 parts per hundred million by volume. Temperature shall be 100 degrees F. Time shall be 100 hours. There shall be no appearance of cracking when viewed under a 7 power magnifying glass at any time during or after the test.

Jacket Construction: The warp and filler yarns shall be of adequate number, size and strength to meet all of the hydrostatic requirements of this specification. Also, in order to ensure that the maximum abrasion resistance, durability, service life expectations, and performance margin of safety are achieved, the warp and filler yarns must comply with the minimum requirements contained in table 1:

Nominal Diameter	Inside Jacket		Outside Jacket	
	Min. Warp Yarn Weight Lbs. / 50 ft.	Min. Filler Yarn Weight Lbs. / 50 ft.	Min. Warp Yarn Weight Lbs. / 50 ft.	Min. Filler Yarn Weight Lbs. / 50 ft.
1"	2.90	.0905	3.40	1.10
1½"	4.10	1.35	4.30	1.60
1¾"	4.30	1.70	4.90	1.75
2"	5.00	1.80	5.18	2.00
2½"	6.50	2.65	6.95	2.55
3"	7.40	3.80	9.90	3.85

The warp yarn in both the inner and outer jackets shall be constructed with a superior grade of ring spun polyester yarn. Also, the use of less expensive filament polyester as an inside jacket warp yarn material is not acceptable because of the following: 1, lower initial and long term liner adhesion capability, and 2, the development of a loose or baggy outer jacket. This bunching or baggy jacket condition results in hose that is

subject to increased snagging and cutting during use, as well as concentrating any abrasion to the bunched or baggy areas.

The filler yarn in both jackets shall be high tensile strength, low elongation filament polyester yarn.

To further enhance the low friction loss characteristics of the hose construction, the inside jacket must be constructed with a **Friction Fighter™** reversed twill weave, which results in a smoother waterway surface than can be achieved with a regular twill or square weave.

The outside and inside jacket fit is also critical to the finished hose. The initial outside diameter of both the inner and outer jackets must be carefully monitored and controlled during weaving, coating, and final assembly. This is required to ensure a tight jacket fit and to avoid a bunching or baggy outer jacket, which can result in increased snagging, cutting and abrading in use. Also, after the initial proof test pressure, there shall be no excess outer jacket bagginess. The jackets must fit snugly inside one another under zero pressure, or under proof and service test pressures.

Ultra-Shield™ Impregnation: When required as a special option, the outside jacket shall be pressure impregnated with a high performance, high solids, 100% Polyurethane Ultra-Shield™ coating matrix which thoroughly saturates and encapsulates the individual fiber bundles. The colored coating shall be heat set at temperatures not less than 275° F in a two-stage process to enhance the inherent abrasion resistance, durability, and environmental resistance of the two component Polyurethane blend.

Coatings formulated from Acrylic materials (as used in house paints), or dried with ambient temperatures which do not heat set the polymer to the fibers are not acceptable.

Hydrostatic Test: Every length of hose submitted under this specification shall be subjected to the Hydrostatic Proof Pressure Test at 800 psi in accordance with the procedures and requirements of NFPA 1961 (Latest edition). This 100% hydrostatic testing will be conducted on hose equipped with couplings to be delivered on the order. Test measurements shall include the determination of elongation, twist, warp, rise and kink test, as well as visual inspection for leakage or coupling slippage under pressure. Any lengths of hose that do not meet the NFPA 1961 (Latest Edition) requirements for attack hose shall be rejected, tagged and placed into a separate holding area.

Burst Test: Two individual three foot long sections of hose shall be removed from full lengths of every finished hose lot and shall be subjected to a burst pressure test. The minimum burst pressure achieved shall not be less than 1,200 psi or that lot shall be rejected.

Hose Length: The average length of all hose within a lot shall not be less than the nominal hose length ordered (50', 75' or 100'). Also, no individual length shall be less than 48 feet, except lengths which have had samples removed for burst or physical testing, which shall not be less than 47 feet long in accordance with NFPA 1961.

Hose Weight: The hose maximum weight, which defines the strength, durability and longevity of service for a construction, along with the hose minimum weight, which defines the ease of deployment, handling and maneuverability, shall conform to the following table:

Weight in **Lbs.** per 50' coupled light weight aluminum

	1"	1½"	1¾"	2"	2½"	3"
Minimum	11	14	16	18	25	32
Maximum	12	15	17	19	27	34

Coil Diameter: The coil diameter of a 50 foot length of hose coupled with light weight aluminum couplings shall not exceed the values listed in the following table:

	1"	1½"	1¾"	2"	2½"	3"
Coil Diameter	16"	16"	16"	17"	19"	19"

Markings: Beginning at a point not less than 4 feet from each end, each length shall be stenciled in indelible letters at least 1" in height, with the trade name, name of hose manufacturer and all additional marking required by NFPA 1961 (Latest Edition), for attack grade fire hose. This NFPA marking must also include the Country of Origin marking, which conforms to the following format: MADE IN _____ (As required by the US Customs Service and the Federal Trade Commission, the full English name of the Country of Origin must be evident to the ultimate end user, with the only allowed exception being that USA may be abbreviated in lieu of the UNITED STATES OF AMERICA, per CFR regulations.)

Couplings: The couplings supplied shall be lightweight rocker lug, and comply with NFPA 1963 Standard. One male and one female with NST threads shall be properly installed on each length of hose by the hose manufacturer. The couplings shall be hard coated, and shall have tapered ends on the coupling bowls. The Country of Origin must be stamped on the male and female coupling in letters 1/8" high, and in accordance with the hose marking requirements listed above.

