



ISO-9001 Certified

Tensile Strength of Hose

Longitudinal Strength of Snap-tite Hose					
NOMINAL Size		Designed Strength		Not to Exceed	
Inches	MM	Lbs	KG	Lbs	KG
1¼"	32	7500	3400	2625	1190
1½"	38.5	9000	4100	3150	1435
1¾"	47.5	10500	4800	3675	1680
2"	54	12100	5500	4235	1925
2½"	65.5	16700	7600	4845	2660
3"	79.5	19800	9000	6930	3150
3½"	89.5	22900	10400	8015	3640
4"	104.5	29300	13300	10255	4655
4½"	113.5	34100	15500	11935	5425
5"	127	39000	17700	13650	6195
6"	154	43800	19900	15330	6965

Notes:

The Tensile Strength of Hose is determined by taking account of the Designed Tensile Strength of the yarn weave and the Tested Longitudinal Strength (Longitudinal Loadbearing Capacity) of the hose to produce a result which guides the user on the amount of force that can be safely exerted on the finished hose before a fail will be encountered.

This is usually expressed in lbs or kg, but can/should be expressed in Newtons.
(Note; to convert lbs to Newtons, multiply lbs x 4.448)

Total Designed Tensile Strength: this term reflects the strength of the warp/longitudinal yarn portion contained in a hose reinforcement jacket, based on the yarn manufacturer's certification (or laboratory tests conducted on a single strand of yarn) and multiplied by the total number of warp ends contained in a particular reinforcement jacket.

Example: a laboratory test shows a force of 890 Newtons/200lbs and a reinforcement containing 200 warp ends, then the total designed (tensile strength) longitudinal strength is 890 Newtons x 200 = 178,000 Newtons (approximately 40,000lbs).

The **ACTUAL tested longitudinal strength** is always much lower than this, due to several factors, including:

- tension and abrasion during twisting of the yarn and weaving of the reinforcement,
- the design of the reinforcement as pertains to the relationship of warp and weft yarns, their thickness and their number (this determines the number and radii of the crimp (yarn bends) and the density of the reinforcement).
- It is virtually impossible to install adapters and/or couplings in a manner that would result in all the warp yarn ends being of equal length between couplings and thus contributing equally to the longitudinal strength of the hose.

Tests: Many longitudinal strength tests on finished products have been conducted and compared to single warp yarn strength multiplied by the number of ends in a product. Actual results are 50% to 65% of the 'Designed Longitudinal Strength' due to the factors mentioned above.

Safety Factor: To retain a positive margin of safety, the actual load a hose is subjected to must not exceed 35% of the 'Designed Longitudinal Strength'. The chart above lists hose types and their 'Designed Longitudinal Strength' as well as a listing of the maximum Longitudinal Load that must not be exceeded.