

Projectile Types & Applications

The projectile cleans by being compressed against the internal surface of the hose, tube or pipe. This pressure is achieved as the projectile is approximately 20% to 30% larger than the internal diameter of the hose, tube or pipe. For instance, a 2" (50mm) projectile is recommended for a 1-1/2" (38mm) hose.

Individual circumstances may require a smaller or larger projectile. If the projectile is too large it will not leave the nozzle, and if it is too small it will not clean effectively. The enormous variety in the types of couplings available today could also mean in some circumstances that the recommended size is inappropriate. When cleaning assemblies, a reduction in projectile size may be appropriate, as all recommendations are based on the most commonly used coupling sizes.

All Ultra Clean projectiles are made from virgin materials with a specific cell structure and density. This ensures a quality product that is capable of achieving most ISO-4406-99 and ISO-4405 cleanliness levels when our assembly procedures are followed. Ultra Clean never uses rebonded, scrap or recycled materials in our Ultra Clean Projectile offerings like some other manufacturers.

Ultra Clean

Universal application for use with hose, tube, pipe and assemblies. Removes fine particles of loose contamination and can also be used for product purging.



Tube

For use with all types of tubing or pipes - and strongly recommended for stainless steel - with mild to medium amounts of contamination, surface rust or scale build-up. Removes mandrel lubricants, grease and oil after the bending process.



Abrasive

For use with tubes or pipes to loosen mild to medium amounts of contamination, surface rust or scale build-up.

Always follow-up with an Ultra Clean projectile to clear away loosened contaminants and verify cleanliness.

Can be used multiple times.



Ultra-Scrub

For use on straight lengths of tube or pipe to loosen medium to high amounts of contamination, surface rust or scale build-up.

Always follow-up with an Ultra Clean projectile to clear away loosened contaminants and verify cleanliness.

Can be used multiple times.



Ultra Clean 100mm-150mm

Ultra Clean Projectiles 100mm and larger are provided with a laminated backer to prevent air permeation. The laminated backer should be loaded into the nozzle last so that the air is pushing against it.



Bulk Projectiles

Ultra Clean Technologies also offers Ultra Clean & Tube style projectiles packaged in bulk quantities. The bulk projectile program complements the Bench Mount Launchers for use in a production type atmosphere.

Pipe Sizing Chart

SCH 40	NOZZLE	ULTRA CLEAN PROJECTILE	ABRASIVE PROJECTILE	GRINDING PROJECTILE
1/4"	UC-H08	UC14	UC-A12	UC-GR10
3/8"	UC-H13	UC18	UC-A16	UC-GR14 or UC-GR16
1/2"	UC-H16	UC20	UC-A18	UC-GR16 or UC-GR18
3/4"	UC-H19	UC30	UC-A26	UC-GR22 or UC-GR26
1"	UC-H25	UC36	UC-A33	UC-GR26 or UC-GR33
1-1/4"	UC-H32	UC45	UC-A40	UC-GR40
1-1/2"	UC-H38	UC55	UC-A50	UC-GR50
2"	UC-H50	UC65	UC-A55 or UC-A60	UC-GR55
2-1/2"	UC-U55/90	UC75	UC-A70	UC-GR65
3"	UC-U55/90	UC85	UC-A80	UC-GR80
3-1/2"	UC-U55/90	UC100	UC-A95	--
4"	UC-4.5LN	UC120	UC-A110	--
SCH 80	NOZZLE	ULTRA CLEAN PROJECTILE	ABRASIVE PROJECTILE	GRINDING PROJECTILE
1/4"	UC-H06	UC12	UC-A10	UC-GR07
3/8"	UC-H10	UC16	UC-A14	UC-GR10 or UC-GR12
1/2"	UC-H13	UC20	UC-A16 or UC-A18	UC-GR16
3/4"	UC-H19	UC26	UC-A22	UC-GR20
1"	UC-H25	UC36	UC-A30	UC-GR26
1-1/4"	UC-H32	UC45	UC-A40	UC-GR33
1-1/2"	UC-H38	UC50	UC-A45	UC-GR40
2"	UC-H38	UC60	UC-A55	UC-GR50
2-1/2"	UC-H50	UC70	UC-A65	UC-GR60
3"	UC-U55/90	UC85	UC-A80	UC-GR75
3-1/2"	UC-U55/90	UC110	UC-A110	--
4"	UC-4.5LN	UC115	UC-A110	--
SCH 160	NOZZLE	ULTRA CLEAN PROJECTILE	ABRASIVE PROJECTILE	GRINDING PROJECTILE
1/2"	UC-H10	UC16	UC-A14	UC-GR12
3/4"	UC-H16	UC20	UC-A18	UC-GR16 or UC-GR18
1"	UC-H19	UC30	UC-A26	UC-GR22
1-1/4"	UC-H25	UC36	UC-A33	UC-GR30
1-1/2"	UC-H32	UC45	UC-A40	UC-GR33 or UC-GR40
2"	UC-H38	UC55	UC-A45 or UC-A50	UC-GR40 or UC-GR45
2-1/2"	UC-H50	UC65	UC-A60	UC-GR55 or UC-GR60
3"	UC-U55/90	UC75	UC-A70	GR70
4"	UC-U55/90	UC100	UC-A100	--

Abrasive projectiles may be used when there is a build-up of contamination, surface rust or scale. For pipe applications where there is a greater build-up of contamination, surface rust or scale, use a grinding projectile. Pipe must be straight for this projectile. NOTE: To ensure cleanliness, an Ultra Clean projectile must be used after abrasive and grinding projectiles. Please call if you need help in sizing your application for the correct nozzles and projectiles.

Recommended Sizing Chart Metric Tubing

OD X WALL	NOZZLE	CLEAN PROJ.	PROJ.		OD X WALL	NOZZLE	CLEAN PROJ.	PROJ.	
		UC	ABR.	TUBE			UC	ABR.	TUBE
3 X .5	UC-T03	UC04	--	--	20 X 2.5	UC-20X3.0	UC24	UC-A20	UC18-TUBE
3 X .7	UC-T03	UC03	--	--	20 X 3.0	UC-20X3.0	UC22	UC-A20	UC18-TUBE
6 X 1.0	UC-6X1.5	UC07	UC-A06	UC06-TUBE	22 X 1.0	UC-22X2.0	UC30	UC-A28	UC26-TUBE
6 X 1.5	UC-6X1.5	UC07	UC-A06	--	22 X 1.5	UC-22X2.0	UC30	UC-A28	UC26-TUBE
8 X 1.0	UC-8X1.5	UC10	UC-A07	UC07-TUBE	22 X 2.0	UC-22X2.0	UC30	UC-A28	UC26-TUBE
8 X 1.5	UC-8X1.5	UC10	UC-A07	UC07-TUBE	25 X 2.0	UC-25X3.0	UC33	UC-A30	UC28-TUBE
10 X 1.0	UC-10X1.5	UC14	UC-A12	UC12-TUBE	25 X 2.5	UC-25X3.0	UC30	UC-A28	UC26-TUBE
10 X 1.5	UC-10X1.5	UC14	UC-A12	UC12-TUBE	25 X 3.0	UC-25X3.0	UC30	UC-A28	UC26-TUBE
12 X 1.0	UC-12X2.0	UC16	UC-A14	UC14-TUBE	28 X 2.0	UC-28X2.5	UC36	UC-A33	UC33-TUBE
12 X 1.5	UC-12X2.0	UC16	UC-A14	UC14-TUBE	28 X 2.5	UC-28X2.5	UC36	UC-A33	UC30-TUBE
12 X 2.0	UC-12X2.0	UC14	UC-A12	UC12-TUBE	30 X 2.0	UC-30X4.0	UC36	UC-A33	UC33-TUBE
14 X 1.0	UC-14X2.0	UC18	UC-A16	UC16-TUBE	30 X 2.5	UC-30X4.0	UC36	UC-A33	UC30-TUBE
14 X 1.5	UC-14X2.0	UC16	UC-A14	UC14-TUBE	30 X 3.0	UC-30X4.0	UC36	UC-A33	UC30-TUBE
14 X 2.0	UC-14X2.0	UC16	UC-A14	UC14-TUBE	30 X 4.0	UC-30X4.0	UC36	UC-A33	UC30-TUBE
15 X 1.0	UC-15X2.0	UC20	UC-A18	UC16-TUBE	35 X 2.0	UC-35X3.0	UC45	UC-A40	UC40-TUBE
15 X 1.5	UC-15X2.0	UC18	UC-A16	UC16-TUBE	35 X 3.0	UC-35X3.0	UC40	UC-A36	UC36-TUBE
15 X 2.0	UC-15X2.0	UC16	UC-A14	UC14-TUBE	35 X 4.0	UC-H25	UC40	UC-A36	UC33-TUBE
16 X 1.0	UC-16X2.5	UC22	UC-A20	UC18-TUBE	35 X 5.0	UC-H25	UC36	UC-A33	UC30-TUBE
16 X 1.5	UC-16X2.5	UC20	UC-A18	UC16-TUBE	38 X 2.5	UC-38X5.0	UC50	UC-A45	UC40-TUBE
16 X 2.0	UC-16X2.5	UC18	UC-A16	UC16-TUBE	38 X 3.0	UC-38X5.0	UC50	UC-A45	UC40-TUBE
16 X 2.5	UC-16X2.5	UC16	UC-A14	UC14-TUBE	38 X 4.0	UC-38X5.0	UC45	UC-A40	UC40-TUBE
18 X 1.0	UC-18X2.5	UC24	UC-A22	UC20-TUBE	38 X 5.0	UC-38X5.0	UC40	UC-A36	UC36-TUBE
18 X 1.5	UC-18X2.5	UC24	UC-A20	UC18-TUBE	42 X 2.0	UC-42X3.0	UC55	UC-A50	UC50-TUBE
18 X 2.0	UC-18X2.5	UC22	UC-A20	UC18-TUBE	42 X 3.0	UC-42X3.0	UC50	UC-A50	UC45-TUBE
18 X 2.5	UC-18X2.5	UC20	UC-A18	UC16-TUBE	50 X 3.0	UC-50X6.0	UC60	UC-A55	UC55-TUBE
20 X 1.5	UC-20X3.0	UC26	UC-A24	UC22-TUBE	50 X 5.0	UC-50X6.0	UC55	UC-A55	UC50-TUBE
20 X 2.0	UC-20X3.0	UC24	UC-A22	UC20-TUBE	50 X 6.0	UC-50X6.0	UC55	UC-A50	UC50-TUBE

Tubing must be deburred prior to firing projectiles. Depending on the type of contamination present in the tube, abrasive projectiles may be used to remove rust and scale. Always use an Ultra Clean projectile after the use of an abrasive projectile. If the operator is unsure which type or size projectile to use, please call us for technical assistance.

Tube Sizing Chart - Nominal Inch

OD X WALL	NOZZLE	ULTRA CLEAN PROJECTILE	ABRASIVE PROJECTILE	TUBE PROJECTILE
1/8" X .030"	UC-T03	UC04	--	--
1/4" X .035"	UC-T06	UC10	UC-A07	UC06-TUBE
1/4" X .049"	UC-T06	UC08	UC-A07	UC06-TUBE
1/4" X .065"	UC-T06	UC07	--	UC06-TUBE
5/16" X .035"	UC-T08	UC12	UC-A10	UC07-TUBE
3/8" X .035"-.049"	UC-T10	UC14	UC-A12	UC10-TUBE
3/8" X .065"	UC-T10	UC12	UC-A10	UC08-TUBE
1/2" X .035"	UC-J13/T13	UC16	UC-A16	UC14-TUBE
1/2" X .049"	UC-J13/T13	UC16	UC-A16	UC12-TUBE
1/2" X .065"	UC-J13/T13	UC16	UC-A14	UC12-TUBE
1/2" X .083"	UC-J13/T13	UC14	UC-A12	UC12-TUBE
5/8" X .049"	UC-J16/T16	UC22	UC-A20	UC16-TUBE
5/8" X .065"	UC-J16/T16	UC20	UC-A18	UC16-TUBE
5/8" X .083"	UC-J16/T16	UC20	UC-A18	UC14-TUBE
3/4" X .049"-.065"	UC-J19/T19	UC26	UC-A24	UC20-TUBE
3/4" X .095"	UC-J19/T19	UC22	UC-A20	UC18-TUBE
7/8" X .049"	UC-J25/T22	UC33	UC-A30	UC26-TUBE
7/8" X .065"	UC-J25/T22	UC30	UC-A28	UC22-TUBE
7/8" X .095"	UC-H16	UC28	UC-A26	UC22-TUBE
1" X .065"	UC-J32/T25	UC33	UC-A30	UC28-TUBE
1" X .083"-.095"	UC-J32/T25	UC33	UC-A30	UC26-TUBE
1" X .120"	UC-J32/T25	UC30	UC-A28	UC26-TUBE
1-1/4" X .065"	UC-T32	UC40	UC-A40	UC33-TUBE
1-1/4" X .083"	UC-T32	UC40	UC-A36	UC33-TUBE
1-1/4" X .095"	UC-T32	UC40	UC-A36	UC33-TUBE
1-1/4" X .109"	UC-T32	UC36	UC-A36	UC33-TUBE
1-1/4" X .120"	UC-T32	UC36	UC-A33	UC33-TUBE
1-1/2" X .065"-.120"	UC-J38/T38	UC50	UC-A45	UC40-TUBE
1-1/2" X .134"-.148"	UC-J38/T38	UC45	UC-A40	UC40-TUBE
2" X .065"-.120"	UC-J50/T50	UC60	UC-A55	UC50-TUBE
2" X .134"-.188"	UC-J50/T50	UC55	UC-A50	UC50-TUBE

Tubing must be deburred prior to firing projectiles. Depending on the type of contamination present in the tube, abrasive projectiles may be used to remove rust and scale. Always use an Ultra Clean projectile after the use of an abrasive projectile. Tube projectiles should be used to remove mandrel lubricants, grease and oil. If the operator is unsure which type or size projectile to use, please call us for technical assistance.

Recommended Sizing Chart Hose and Hose Assemblies

HOSE**			
HOSE ID		NOZZLE	ULTRA CLEAN PROJECTILE
NOM. IN.	DN MM		
3/16"	5	UC-H06	UC06
1/4"	6	UC-H06	UC10 OR UC12
5/16"	8	UC-H08	UC12 OR UC14
3/8"	10	UC-H10	UC14 OR UC16
1/2"	13	UC-H13	UC18 OR UC20
5/8"	16	UC-H16	UC22
3/4"	19	UC-H19	UC26
1"	25	UC-H25	UC33 OR UC36
1-1/4"	32	UC-H32	UC40 OR UC45
1-1/2"	38	UC-H38	UC50 OR UC55
2"	50	UC-H50	UC60 OR UC65
2-1/2"	63	UC-U55/90	UC75
3"	76	UC-U55/90	UC85
3-1/2"	89	UC-U55/90	UC100
4"	102	UC-4.5LN	UC120
4-1/2"	114	UC-4.5LN	UC130

ASSY W/FJIC		
FJIC SIZE	NOZZLE	ULTRA CLEAN PROJECTILE
DASH		
-4	UC-J06	UC06 OR UC07
-6	UC-J10	UC12
-8	UC-J13/T13	UC16
-10	UC-J16/T16	UC22
-12	UC-J19/T19	UC26
-16	UC-J25/T22	UC33
-20	UC-J32/T25	UC40
-24	UC-J38/T38	UC50
-32	UC-J50/T50	UC60

ASSY W/FFORX		
FFORX SIZE	NOZZLE	ULTRA CLEAN PROJECTILE
DASH		
-4	UC-4FFORX	UC06 OR UC07
-6	UC-H06	UC12
-8	UC-H10	UC16
-10	UC-H13	UC22
-12	UC-H16	UC26
-16	UC-H19	UC33
-20	UC-H25	UC40

ASSY W/CODE 61 & 62 FLANGES		
FLANGE SIZE	NOZZLE	ULTRA CLEAN PROJECTILE
DASH		
-8	UC-H10	UC16
-12	UC-H16	UC26
-16	UC-H19	UC33
-20	UC-H25	UC40
-24	UC-H32	UC50
-32	UC-H38	UC60

**Use larger recommended Ultra Clean Projectiles when cutting hose with an abrasive wheel. The above sizes are recommendations. Due to different manufacturers, types of fittings, and the amount of contamination in the line, the size projectile may need to be adjusted.



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Fluid Flushing or Projectile Cleaning? *The Pros and Cons*

Fluid Flushing:

Pros:

- Capable of achieving ISO 4406 & 4405 Cleanliness levels if procedures are followed and the system is properly maintained.

Cons:

- Initial investment is costly
- Time consuming to hook up and unhook assemblies from the flush tank
- Cycle time of solvent flush has to be so many seconds or minutes depending on hose size and length.
- The hose has to have the solvent removed after the flushing operation which takes time and energy.
- Cost to purchase the solvent and dispose of used solvent can be costly.
- Maintenance on flushing system and changing of filters.
- Health hazards to employees who do the flushing job.
- Space for the equipment.
- Can only be used in a cleaning cell.

Projectile Cleaning:

Pros:

- Inexpensive initial investment.
- 10 to 15 seconds total cleaning time per assembly.
- Capable of achieving ISO-4406 & 4405 cleanliness levels.
- Can be used in a cleaning cell or at the job site.
- No chemicals or hazardous waste to dispose of.
- No employee health issues.

Cons:

- A projectile can be left inside of a hose or tube if a UC-PVS is not incorporated into the launching system.