

IntelliSpense™

ThinWall Precision Machine Tips



Combine the low cost, high performance flow characteristics of a cone-shaped Taper Tip with the precision, durability and repeatable properties of a high-end precision needle.



IntelliSpense™ ThinWall Precision Machine Tips with Disposable Plastic Hubs



ThinWall Precision Machine Tips combine the low cost, high performance flow characteristics of a cone-shaped Taper Tip with the precision, durability and repeatable properties of a high-end precision dispensing tip.

The *IntelliSpense™* **ThinWall Precision Machine Tip** features a universal Luer Lok™ dispense nozzle for easy threading and a stream-lined, low resistance conical fluid path which delivers substantially higher fluid flow rates and lower dispense pump back pressures as well as consistently longer component life.

Simply put, **ThinWall Precision Machine Tips** will cost you less to use while increasing your repeatability, accuracy and throughput.

This revolutionary design offers equipment advantages in addition to the obvious material delivery improvements. Your valves, pumps and component life will improve, including seals and any moving parts, especially with filled materials. The less friction, the less wear!

Naturally, the thin wall enhances both the crucial accuracy and finer definition of dots, lines, or patterns, while dramatically reducing stringing or tailing.

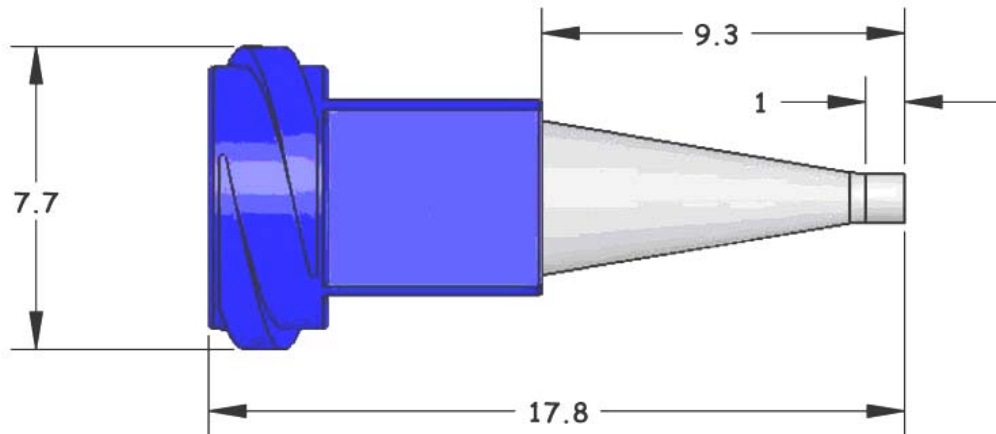
The **ThinWall** design also employs very thin rigid walls offering larger ID fluid paths which enable the use of smaller OD needles without sacrificing fluid dispense rates. Additionally, these thin walls further enhance the accuracy and definition of dots, lines, or special patterns while at the same time dramatically reducing any fluid's tendency to drip, trail or "string."

IntelliSpense™ ThinWall Precision Machine Tip



The *IntelliSpense™* **ThinWall Precision Machine Tip** is a must-have dispensing tip for any robotic application. The complete unit (shown left) is precision molded and swaged to give you all of the benefits of ThinWall technology in a convenient one-piece unit that is available in the gauges and hub colors listed below. **Use the disposable hub in low production applications or to specify the correct tip size.** Samples in convenient sized 8-packs for experimentation. **Boxes of 50:**

Part #	Ga.	Color	Description	I.D.	O.D.
3221118	18	White	ThinWall Precision Machine Tip	0.0409	0.0488
3221119	19	Peach	ThinWall Precision Machine Tip	0.0339	0.0417
3221120	20	Lime	ThinWall Precision Machine Tip	0.0268	0.0347
3221121	21	Blue	ThinWall Precision Machine Tip	0.0240	0.0319
3221122	23	Purple	ThinWall Precision Machine Tip	0.0222	0.0250
3221123	25	Pink	ThinWall Precision Machine Tip	0.0172	0.0200
3221124	27	Red	ThinWall Precision Machine Tip	0.0132	0.0160
3221125	30	Black	ThinWall Precision Machine Tip	0.0092	0.0120



IntelliSpense™ ThinWall Precision Machine Tips with Reusable Metal Hubs



ThinWall Replaceable Precision Machine Tips offer significant cost reductions over precision machined dispense nozzles and are ideal for heated or cooled dispense processes. With the use of a reusable hub, only the core needs to be replaced, which eliminates time-consuming cleaning or component replacement cost. Order one or more Replaceable Hub and order any of the insert sizes you need.

Hubs ordered individually. Inserts ordered in **boxes of 50**;

IDS Part #	Reusable Hubs- Boxes of 50	I.D.	O.D.
3221126	18GA Disposable ThinWall Precision Inserts ONLY	0.0409	0.0488
3221127	19GA Disposable ThinWall Precision Inserts ONLY	0.0339	0.0417
3221128	20GA Disposable ThinWall Precision Inserts ONLY	0.0268	0.0347
3221129	21GA Disposable ThinWall Precision Inserts ONLY	0.0240	0.0319
3221130	23GA Disposable ThinWall Precision Inserts ONLY	0.0222	0.0250
3221131	25GA Disposable ThinWall Precision Inserts ONLY	0.0172	0.0200
3221132	27GA Disposable ThinWall Precision Inserts ONLY	0.0132	0.0160
3221133	30GA Disposable ThinWall Precision Inserts ONLY	0.0092	0.0120

Hubs ordered individually

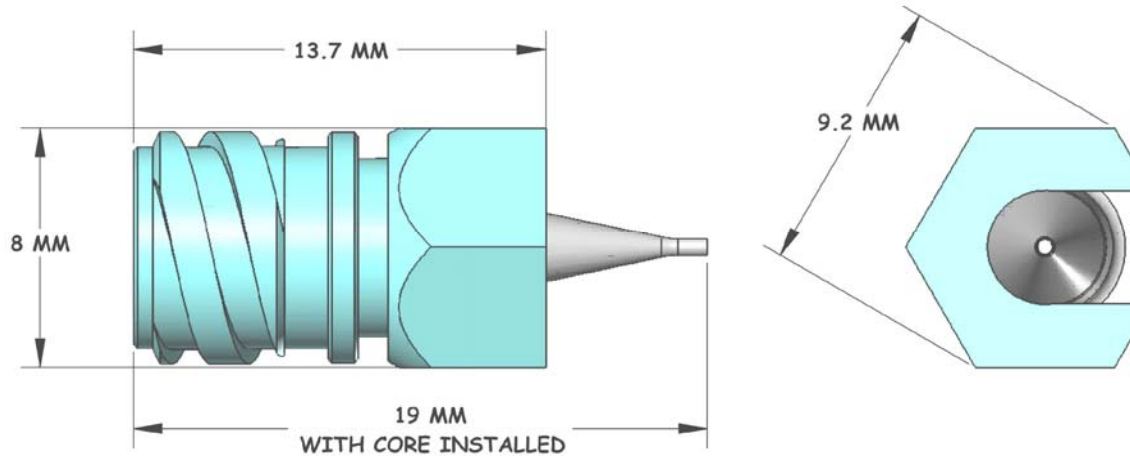
322111RH Reusable Hubs - **Hub Only** – For ALL GAUGES

As always, if the hubs are critical to production, order extras!



IntelliSpense™ ThinWall Precision Machine Tip

Dimensions



Flow rate performance:

IntelliSpense™ ThinWall Precision Machine Tip VS. Medical needles

Gage	ID in. (mm)	OD in. (mm)	FLOW RATE PERFORMANCE Thin wall nozzle VS. Medical needles		
			Thin wall nozzle	Effective Flow Rate Improvement	Medical needle
18	0.041 (1.041)	0.049 (1.245)	18	>25%	15g
			18	>150%	16g
			18	>300%	18g
19	0.034 (0.864)	0.042 (1.067)	19	>25%	16g
			19	>150%	18g
			19	>300%	19g

IntelliSpense™ ThinWall Precision Tip vs. needles (continued)

Gage	ID in. (mm)	OD in. (mm)	FLOW RATE PERFORMANCE Thin wall nozzle VS. Medical needles		
			Thin wall nozzle	Effective Flow Rate Improvement	Medical needle
20	0.027 (0.686)	0.035 (0.889)	20	>25%	18g
			20	>150%	19g
			20	>300%	20g
21	0.024 (0.609)	0.032 (0.813)	21	=	18g
			21	>150%	20g
			21	>300%	21g
23	0.022 (0.564)	0.025 (0.635)	23	=	18g
			23	>250%	21g
			23	>1000%	23g
25	0.017 (0.437)	0.020 (0.508)	25	>100%	22g
			25	>600%	23g
			25	>1000%	24g
27	0.013 (0.335)	0.016 (0.406)	27	=	21g
			27	>200%	23g
			27	>600%	25g
			27	>1000%	27g
30	0.009 (0.233)	0.012 (0.305)	30	>25%	23g
			30	>150%	25g
			30	>400%	27g
			30	>1000%	30g

Metal Composition for Reusable Hubs

Hubs are 303 Stainless

(Also Available in Tolorium Copper and Aluminum 100 piece MOQ)

Metal Composition for Plastic Hubbed and Thin Wall Tips

18, 19, 20, 21, 23, 25 Gauge Metal Composites:

Phosphor Bronze, UNS C51000, 94.8 % Cu, 5.0 % Sn, 0.2 % P

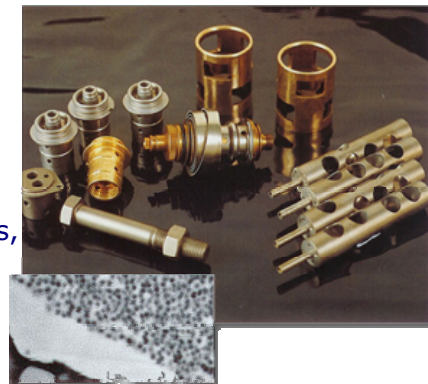
27, 30 Gauge Metal Composites:

0.006, 0.004, 0.002 inch: Nickel Silver, UNS C74500, 65% Cu, 25% Zn, 10% Ni

**Phosphor bronze cores are plated with Electroless Nickel, Class II.*

**18 - 25 also available in Symcoat Apticoat 450-F coat.*

Apticote 450 is a unique, improved self-lubricating Nickel Alloy Composite which gives even lower friction and greater load carrying capacity than before. It is a revolutionary coating for design engineers, combining the dimensional accuracy of electroless nickel with the excellent sliding properties of PTFE. Apticote 450 can be applied in very thin deposits with high dimensional precision on most metallic substrates, including mild steel, stainless steel, cast iron, aluminium and titanium. This allows the designer to choose his substrate and mating parts on the basis of a need for strength, light-weight or corrosion resistance. Any problems of galling or wear which might occur with such materials can be completely overcome with Apticote 450.



Features

- Extremely low friction
- Superb accuracy of deposition
- Completely uniform coverage
- Thin deposits i.e, 5-10 Microns
- Extended component life
- Non-stick
- No post-matching
- Plates on most metals
- Excellent anti-galling
- Can be hardened to 400Hv
- Very low wear
- Electrically conducting
- Pleasing visual appearance

Benefits

Low Friction

The superior friction properties of Apticote 450 are invaluable in an unlubricated situation. The uniform dispersion of polymer within the coating produces low friction throughout the component life.

Apticote 450 also imparts non-stick properties, with a reduced drag or torque during initial running. Additional polymer is available on the coating surface to provide a start-up and assembly aid.

Surface Finish

Apticote 450 is available in thickness from 2 microns to a practical maximum of 20 microns; on thin coatings the manufactured finish is maintained after plating, however, on thicker coatings above 10 microns there is a deterioration of the post plating finish.

Uniformity

Apticote 450 provides predictable uniform coverage in the range 5 to 20 microns, depending on the application. It can be applied to your finished product without the need for post machining. It can even coat internal surfaces, thread forms and bores.

Applications

- Mould
- Tools
- Connectors
- Fasteners
- Circuit Breaker Components
- Valve Seats
- Pump Bearings
- Machine Tools

Substrate Materials

Symcoat has solved all the pre-treatment problems, so that Apticote 450 can be applied with confidence to materials like Titanium and Aluminium as well as the more usual range of mild steel and stainless steels. Often, Apticote 450 can bring desirable tribological properties to a light-weight material — a vital property for aerospace and automotive applications.

Hardness

Apticote 450 has a bulk hardness of about 250VPN, although this can be increased after heat treatment of the coating at 300°C for four hours to 400VPN. There is no reason to doubt that the matrix in Apticote 450 has a hardness of at least 500VPN, increasing to 1000VPN after this type of heat treatment.

Low Wear and Anti-Galling

In lightly loaded situations, Apticote 450 has been known to show no detectable wear for many thousands of operations, such is the efficiency of its self lubrication. At higher loads, it will exhibit some wear, but it is excellent for threads or connectors which can always be undone, no matter how tight you fasten them - even with stainless steel threads, galling is a thing of the past.

DEPOSIT PROPERTIES

COMPOSITION

Nickel

Phosphorus

PTFE (Polytetrafluoroethylene)

80-83% by weight

9-11% by weight

8-9% by weight

(20-25% by volume)

DENSITY	6.5 to 7.5 g/cm ³
HARDNESS HVN/100 As plated Heat treated, 500°F (260°C), 4 hours 400-450 or approx. 41-45 HRC	300-350 or approx. 31-36 HRC
MAXIMUM HEAT TREAT TEMPRATURE PTFE decomposition	550°F (288°C) 645°F (340°C)
COEFFICIENT OF FRICTION, ASTM D-2714 Dry Wet 0.1 or less	0.2 or less
SURFACE FINISH, Ra	0.5 micrometers or better
WEAR RESISTANCE - Sliding surfaces moderate load/low speed	Low load/moderate speed, or
TABER ABRASER WEAR (1,000 cycles, CS-10 wheel 1,000 g. load) as plated Heat treated, 480°F (250°C), 6 hours 12 mg	16 mg
COROSION RESISTANCE - ASTM B-117 0.5 mil 1.0 mil 1,000 hours	650 hours

The deposit properties listed are typical values. Depending on the application, the deposit composition may intentionally be modified to optimize specific properties.

