Alleima

Shut down corrosion
open up new possibilities

H&I Tubing

Whether you're operating an oil rig or petrochemicals plant, the need to boost output without sacrificing safety is ever-present. In the big scheme of things, your choice of hydraulic and instrumentation tubing might not seem critical. But it does make a major difference in eliminating unnecessary risks. No unscheduled downtime. No leaks. Zero accidents. And immediate support if you need it. It's what we call The Alleima Peace of Mind Standard.

Peace of mind – the perfect balance between safety and performance

There's more than one reason why Alleima tubing is used by leading multinationals for some of the world's most demanding upstream and downstream applications. For some, it's the ability to handle hotter, more sour wells under extreme pressures – in highly corrosive environments. For others, it's to ensure failsafe hydraulic control lines or subsea umbilicals for years to come. Because when it comes to the world's toughest jobs, only the most advanced and well-proven materials will deliver safe and reliable performance.

50 years of serving the industry
For more than 50 years, we've been serving some of the most demanding customers in the global oil and gas industry. From the early days of subsea exploration to today's industry-leading refineries and deep sea rigs, we've led the way in engineering the market's most comprehensive range of stainless steel and nickel alloy tubing. And backed it up with a global service network that's always on call, and always close at hand. All so you can push the limits of performance, without putting your investments, or your people, on the line.

No compromises on safety
In the end, striking the right balance all comes down to your ability to achieve your engineering designs in a responsible manner. Our aim is to provide petrochemical and oil and gas producers with the lightest, strongest, most reliable tubing to make it possible. No compromises. It's how we bring you peace of mind.

Zero Accidents is the vision of our "Safety First" program, which also extends to our customers and suppliers, forming an integral part of our EHS program.

Hot sour wells. High humidity. Salt spray. As many of our oil and gas customers drill deeper into harsh environments, the need for reliable, leak-free, corrosion-resistant seamless tube is rising to the forefront. For years, we've provided hydraulic and instrumentation tubing that goes into the umbilicals, Xmas trees and manifolds required to extract oil from the depths of the ocean under immense pressures. Not to mention top-side applications.

Temp 35°C. Humidity 99%. Chloride 30+ ppm

Experience has taught us that there's a big difference between barely meeting a standard and setting a "standard within the standard". When it comes to hydraulic and instrumentation tubing for oil and gas extraction, it's a difference that can mean millions to your bottom line. Any pitting, contamination or loss of containment can bring operations to a halt. And every moment spent waiting for replacements by barge is another missed opportunity.

Taking risk out of the equation
With stakes this high, and in conditions this unpredictable, your tubing should be one thing you can count on. And that's where we come in. With standard or custom grade tubing that is widely appreciated worldwide for its cleanliness, corrosion resistance and superior dimensional tolerances.

Right material at the right time
Whether your business is in exploration or production, on land or at sea, you can rely safely on our decades of experience in the most demanding oil, gas and petrochemical applications. More than just the right quality, right specifications and right timing, it's about applying leading materials technology that give your business a competitive edge in any environment.

100% of all major fabricators and oil companies in all offshore regions are Alleima customers.

$4.6 trillion – the projected size of the global petrochemicals market by 2030. Source: AT Kearney

The less you think of us, the happier we are

Don't get us wrong, we love being top of mind. But when serving our production- and safety-conscious petrochemical customers, we want to be remembered for all the right reasons. And when it comes to seamless stainless hydraulic and instrumentation tubing – once properly selected and fitted – that means being able to forget about us. Literally. Alleima tubing just keeps working, day in and day out. No corrosion or pitting. No downtime. No worries.

Serving forward-thinking petroleum engineers keeps us on our toes. Their ongoing drive to develop innovative refining solutions places increasing demands on new materials and more inspired engineering. We're also proud to collaborate closely with many of the world's leading engineering companies as well as original equipment manufacturers in tackling the future challenges of the industry.

Fully integrated refineries
Take, for example, the trend towards constructing mega-scale refineries alongside petrochemical facilities in the Middle East and China. This desire to integrate facilities opens up new business opportunities as well as challenges. To better utilize all feedstocks at refineries, chemical crackers and derivative plants, there is often a greater need for safe and reliable premium quality hydraulic and instrumentation tubing. Unforeseen downtime is out of the question. Indeed, the engineering specifications are higher, but so are the business opportunities.

In all refining hubs
As one manager said: "Secondary or by-product streams from refining units may have their highest value as feedstock for chemical units. Likewise, by-products from chemical units may be most cost-effective as refinery feeds or fuel blending components."

We see this integration happening in places like Singapore, the Gulf of Mexico and elsewhere. But getting the most value out of such world-scale, fully integrated refining and petrochemicals hubs is something that places strong demands for top-quality materials.

Long lifetime, short maintenance
For more than half a century, Alleima has been a world-leading developer of tube for oil refining, petrochemicals and gas processing. Whether you're distilling light crude, producing olefins or aromatics, you can count on us to provide tubular products made of top-quality corrosion-resistant alloys (CRA) that contribute to longer service life and reduced maintenance. We also provide duplex stainless steel and nickel alloys for sour crude oil. In short, a premium range tube that's so safe and reliable, you can practically forget about it.

Supporting more profitable refining of xylene, ethylene, proplylene butadiene, benzene, toluene, vinyls, styrene and methanol.

Put our 2,700 researchers to work on your toughest challenges

In a recent customer survey, we heard a common refrain: Our metallurgists are regarded as being “obsessed” with technical challenges. We take this as a huge compliment. With one of the largest R&D teams in the world, our mission is to apply our expertise to make our customers more productive and profitable. It’s a quest that has led to many engineering firsts and more than 8,000 Alleima Group patents, many of them relating to extreme uses of tube as well as cutting and drilling tools.

With more than 50 years of experience serving the oil and gas and petro-chemicals industries, we’ve built up a wealth of application knowledge. We love those visionary and extreme engineering challenges you’ve got up on your CAD drawing boards. Pioneering solutions that might allow you to go to remote locations and drill in deeper, hotter and more corrosive environments. Or technical innovations that could breathe new life into an older refinery.

100 million meters of umbilicals
How do we know? For starters, we’ve been heavily involved as a tube supplier to umbilical manufacturers since they came into use in the late 1980s, having supplied more than 100 million meters (330 million feet) worldwide to date. And we’ve long been in the forefront of duplex steels, an area where we continue to excel and push limits.

Our lightweight corrosion-resistant tubing for subsea umbilicals is used by 70% of major oil companies for the extraction of oil and gas in harsh offshore conditions at depths of up to two kilometers.

Since 1980, we’ve supplied more than 100 million meters of consistent, high-quality hydraulic and instrumentation stainless tubing for demanding customers in the oil and gas, petrochemicals and other industries.

A six-star approach to making you and your customers more successful

What do you look for in a producer of seamless tubing? Premium grades that meet ASTM and EN standards? A comprehensive stock range? Stock availability to ensure on-time deliveries? Whatever your specific needs, you demand five-star service. But let's face it, there are standards and there are standards. Good may not be good enough. That is why we at Alleima are adding a sixth star to set an even higher standard. We call it the Alleima Peace of Mind Standard.

1.

Broadest Range
We offer more choices and greater flexibility to find the "right" solution by providing the world's broadest in-stock range of seamless stainless hydraulic and instrumentation tubing in the outer diameters of 1.59 to 50 mm (larger diameters available upon request).

2.

Global Production & Stocks
To ensure 24/7 availability, we operate three dedicated mills for hydraulic and instrumentation tubing on three continents and several comprehensive local stock warehouses on all continents.

3.

Consistent Quality
When it comes to quality standards like corrosion resistance, dimensional tolerance, and hardness control, we set a higher standard within the standard – with all batches traceable back to the original melt at our plant in Sweden.

4.

R&D Expertise
With some 2,700 researchers pushing the boundaries of advanced materials, we are constantly pioneering forward-thinking solutions. Should a situation arise, we can provide local support at your facility.

5.

160 Year Heritage (Approx)
Having produced steel products for nearly 160 years and seamless stainless steel tubes for more than 90 years, you can trust that we have the depth of expertise to support you.

6.

Safe Environment
We place very high requirements on safety routines within all aspects of our company and work with ongoing CSR and EHS programs.

It’s time to corrosion-proof your business

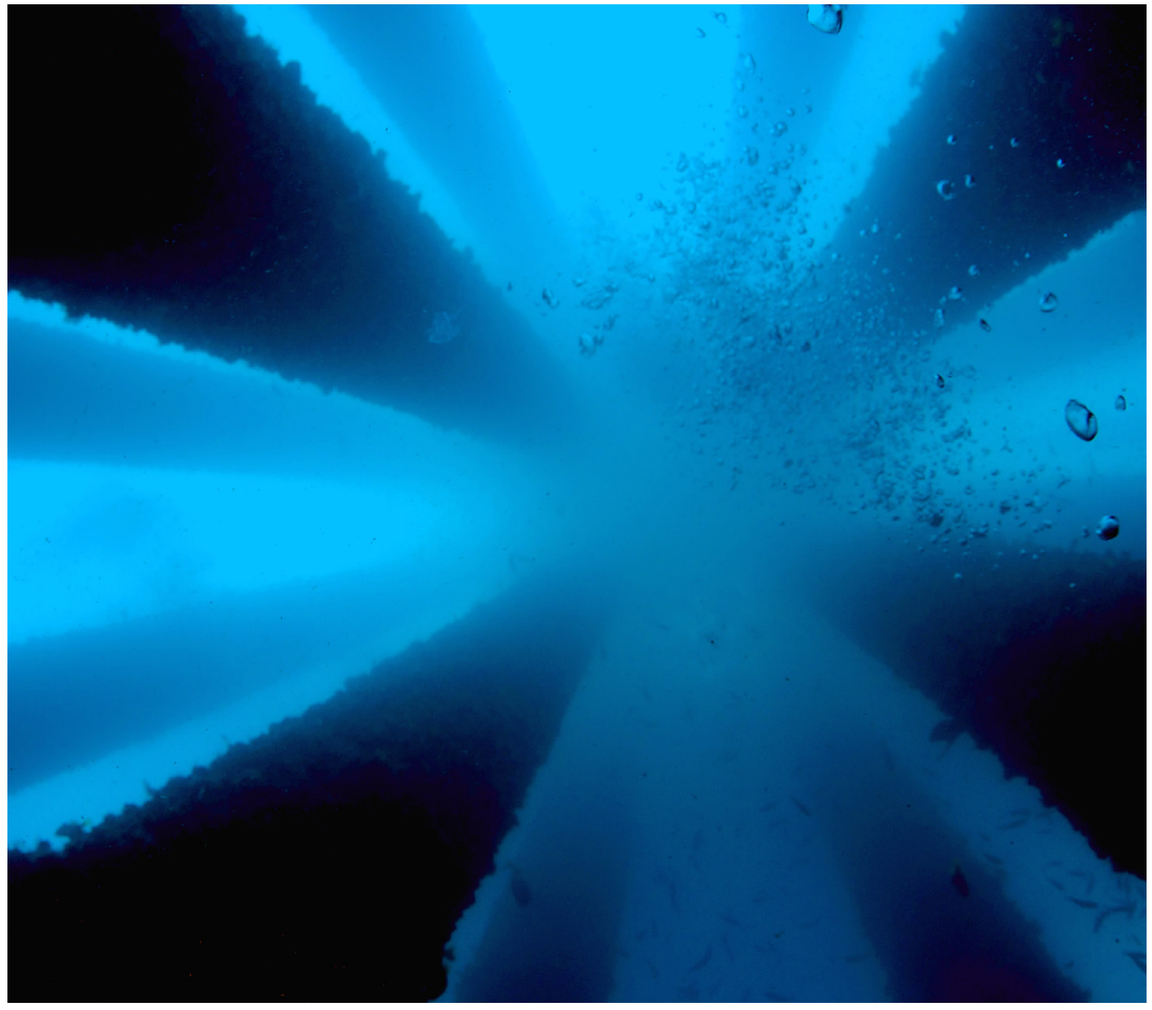
When humidity starts to exceed 75% and temperatures are warm, the risk of corrosion increases exponentially. Add to this salt water in a tropical environment and you’ll notice that poor quality seamless tubing will rapidly start to pit or corrode. There can also be big differences – within the standard – for tubing, as tests with major oil companies and fitters show.

Whether it’s topside, downhole or in another challenging environment, hydraulic and instrumentation tubing tends to pit and corrode when placed in inaccessible locations containing chlorides. Tube material that would normally last 100 years or more in dry conditions could have a service life of five years or less in an aggressive chloride-rich environment.

Tests by Leading multinationals
“Says who?” you ask. Well, this was the conclusion of two of the world’s largest oil companies and one major fitter after conducting a joint field trial in tropical waters. Our own lab results concurred. Most of the pitting and crevice corrosion occurred beneath clamps, support trays and connections.

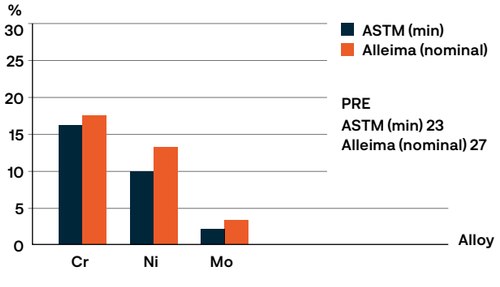
2.6% molybdenum vs 2.0% required by ASTM
The study also showed a big difference in the pitting resistance of the Alleima® 3R60 versus the minimum requirements for the international standard ASTM 316L (see Diagram 1). Alleima was always at the top of the standard, with high percentages of nickel, chrome and molybdenum to combat corrosion. For example, we had a minimum of 2.6% moly vs. the 2.0% minimum required by ASTM. Pitting Resistance Equivalent (PRE) is calculated from the level of Cr, Mo, and N present in an alloy (PRE = 1 x %Cr + 3.3 x %Mo + 16 x %N).

Corrosion-resistant duplex tubes
While Alleima® 3R60 is a reliable all-round material choice, we recommend the SAF™ 2507 super duplex for more corrosive chloride-bearing environments where weight reduction is desirable. And of course, there are even more corrosion-resistant grades too. In all cases, Alleima grades performed at the top of the standard compared with the ASTM minimum value (see Diagram 2).

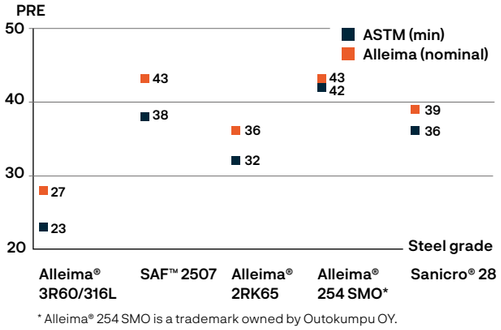


Corrosion resistance benefits
– Zero customer complaints or recalls
– Access to our corrosion expertise
– Well-documented high performance
– Resistant to pitting and crevice corrosion
– Stable level of consistent, high-quality stock

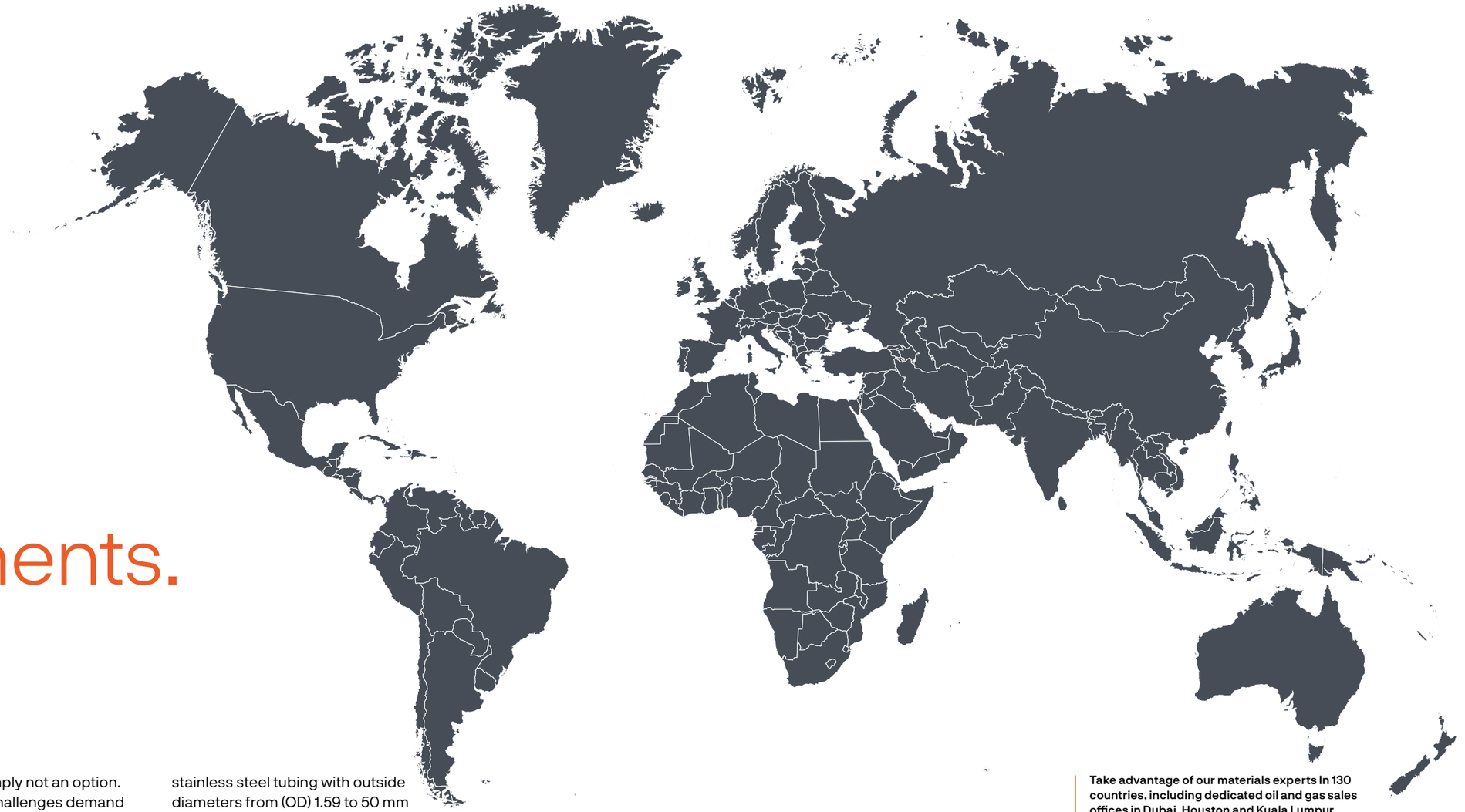
1. Key alloy content Alleima® 3R60 vs ASTM 316/316L
PRE value of Alleima and ASTM (min)



2. PRE values for Alleima grades vs ASTM (min)



* Alleima® 254 SMO is a trademark owned by Outokumpu OY.



Four mills. Three continents. One source

Are you absolutely certain that the quality of your hydraulic and instrumentation tubing is consistent from batch to batch? Day in and day out? Or do you find yourself constantly performing Positive Material Identification (PMI) tests on supplier deliveries to control that you've got the right grade and quality?

Demanding time schedules
As a global supplier to leading petrochemical, engineering and service companies, we are fully aware of the pressures you face. What used to be a 24-month build is now an 18-month race to the finish line. In such situations, a delay with your tubing can put everything else behind schedule. Once you're up and running, unscheduled maintenance is simply not an option. In short, the new challenges demand trusted suppliers with a proven track record of delivering on time.

Ultramodern shipping facilities
So you'll be glad to know that Alleima is the only stainless tube producer in the world to operate dedicated hydraulic and instrumentation mills on three continents. Alongside these mills and spread across major industrial hubs, we also have tons of comprehensive tube stock at our warehouses. Ultramodern shipping facilities allow for fast, efficient service.

As a result, we've gained a reputation for having the world's broadest in-stock range of corrosion-resistant stainless steel tubing with outside diameters from (OD) 1.59 to 50 mm (0.0625 to 1.968 in.).

Widest range worldwide
This means you can choose from literally hundreds of thousands of meters of different grades and wall thicknesses (straight length or coiled). You can also rest a little easier knowing that you are getting the right product at the right time. It's our way of offering petrochemical and oil and gas customers a bit more peace of mind.

Take advantage of our materials experts In 130 countries, including dedicated oil and gas sales offices in Dubai, Houston and Kuala Lumpur.

We have zero tolerance for leaks

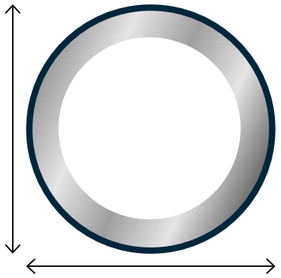
Unscheduled downtime due to a hydraulic line that needs repairing can be a major inconvenience and cost. Even worse, the loss of hydraulic fluids or chemicals could lead to a valve shutdown or a loss of instrumentation control. So ask yourself: Is your tube supplier giving tight enough dimensional tolerances to ensure leak-tight seals? Do you get even consistency from batch to batch?

The reason for mentioning this is that our laboratory tests – together with some of the world's leading connector and fitting manufacturers – show significant differences in the standards applied for dimensional tolerance. Unfortunately, such deviations can increase the risk of leaks, depending on the pressure, flow and medium used.

Beating the allowable variance
Take, for example, ASTM A269 tube, which has an outer diameter dimensional tolerance of +/- 0.13 mm. By contrast, the allowable variance for the comparable Alleima tube is just +/- 0.08 – a major difference (see Figure 1). This means that when evaluating ASTM A269, the variance is a full 0.26 mm, compared to just 0.16 mm for the equivalent Alleima tube.

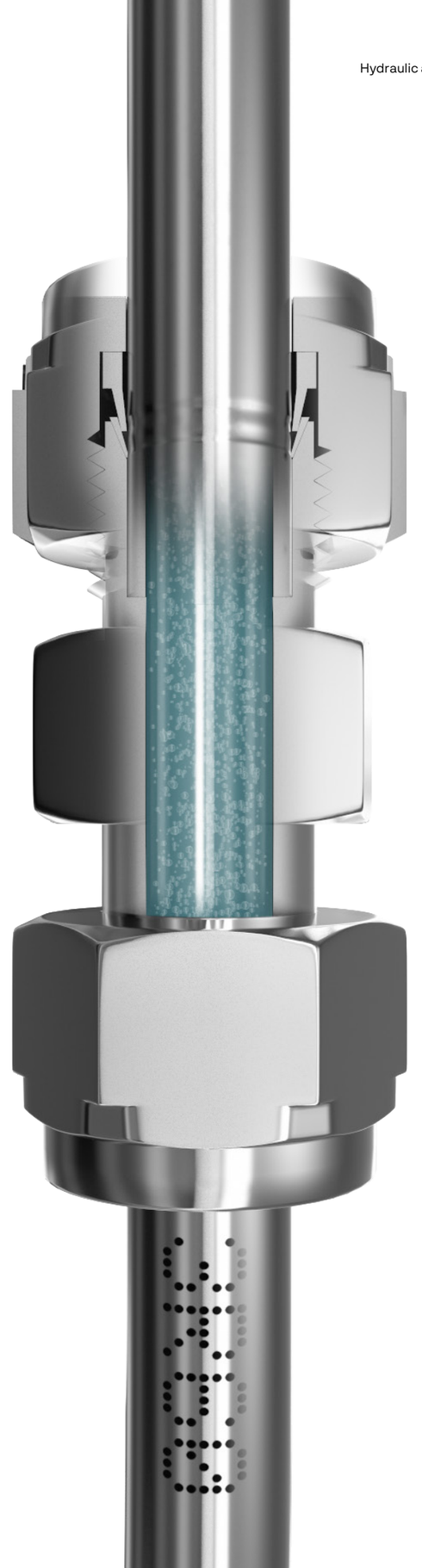
Nearly twice as tight tolerance
In other words, Alleima is often providing tubing that has nearly twice as tight tolerance as the minimum accepted by the ASTM standard. And tighter tolerance is key to getting a leak-proof joint between the connector and tube – letting you compress the ferrule in the connector onto the tube to create a vacuum-tight seal as it moves down the cone of the body. If the tube is too hard or has an uneven wall thickness, it's going to be difficult to get a strong mechanical hold on the ferrules, increasing the chance of leakage.

Consistency is the key
The secret to the Alleima tubing is that the tight tolerances are maintained from batch to batch, meter after meter, year in and year out. In fact, our three dedicated mills have the capacity to produce millions of meters of hydraulic and instrumentation tubing annually with OD tolerance of +/-0.08 on all tubes with OD of 6 to 30,0 mm. So it's little wonder that the world's leading manufacturers of fittings and connectors recommend us.



Alleima standard ASTM A269 | **+/- 0.08 mm** +/- 0.13 mm

1. Key alloy content Alleima® 3R60 vs ASTM 316/316L
The outer diameter tolerence of Alleima hydraulic and instrumentation tubing is tighter than ASTM standard.



Dimensional tolerance benefits
– Zero customer complaints or recalls
– Leak-free fittings or couplings
– Recommended by leading connector companies
– Proven performance to most multinationals
– Consistent stock availability; 24/7 delivery

All bends, no breaks

Can you afford to have wall collapses and cracks in the hydraulic or instrumentation tubing in your system? Is the tubing you are currently using giving you controlled hardness for easy bending and leak-free connections? Beware: There are many definitions of what is a good standard. Fortunately, our tube is at the top of the standard on all counts.

The good news is that Alleima tubing is optimized for hardness that allows easy, reliable bending and consistent quality – with no wall collapse or cracks. This is important whether you are using a hand-held bender, an automated bender or simply a spanner. By knowing you are getting a consistent hardness – not too stiff, not too pliable – you can work quickly and with confidence.

Tight radius bends
For example, you can always make just the right number of turns with the spanner or ensure the right setting for a hand-held or heavy-duty tube bender. The right hardness allows for accurate, tight radius bends of up to 180 degrees without the walls collapsing. Different hardness in the same tube batch can lead to difficulties when tightening the tube fitting.

HRB 80 – pioneered by Alleima for ASTM 316l
So what is an acceptable standard for hardness? As shown in Table 1, the maximum requirement for an ASTM 316L tube is a hardness level of HRB 90. Here, Alleima was the first to achieve an HRB 80 (low numbers are better). This means we provide a tube that's strong, yet a bit softer than the standard, making it easier to grip and bend. We are also able to supply a hardness of "30 HCR" with our SAF™ 2507 super duplex tubes.

Opening new opportunities
Our aim is to apply our metallurgical knowledge to offer you controlled hardness that sets a standard of its own for easy bending and leak-free connections. Just the right hardness is enabled by Alleima's unique combination of technology, equipment and know-how within the pilgering, drawing and heat-treating processes, which makes the material strong, yet pliable. In all cases, Alleima tube grades performed at the optimum level of the standard compared with the ASTM maximum hardness values.

ASTM grade	Alleima® grade	ASTM	Alleima®
ASTM 316L	Alleima® 3R60	max HRB 90	max HRB 80
UNS S32750	SAF™ 2507	max HRC 32	max HRC 30

Hardness control benefits
– Avoid wall collapses and breaks
– Easy, reliable bending
– Consistent quality for automated bending
– No leakage

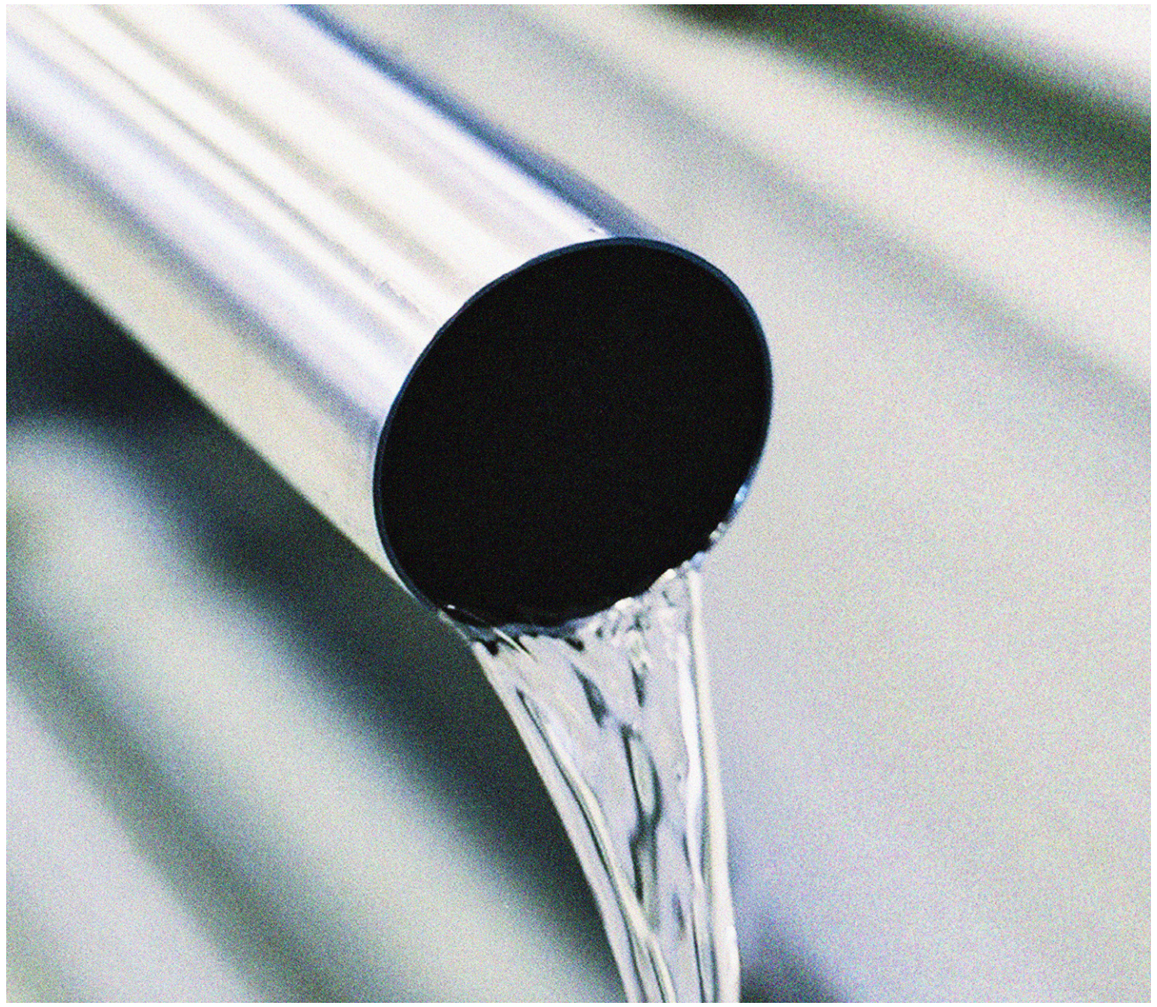
Nine steps towards a clean conscience

1. **Exterior alkaline bath**
   The outer tube surface receives an alkaline bath to clean and passivate it.
2. **Removal of impurities**
   Under high pressure, oil and other impurities are flushed from inside the tube.
3. **Interior alkaline bath**
   The interior of the tube is given an alkaline bath to clean and passivate it.
4. **Interior water cleaning**
   Water is flushed through the interior to further clean it.
5. **Interior air drying**
   High-pressure air is blown through the interior to clean out any impurities.
6. **Bright annealing**
   All sizes with an OD up to and including 25.4 mm are supplied bright annealed.
7. **Polishing**
   To provide a bright, smooth finish, all tube is carefully polished.
8. **Interior cleaning**
   Air and foam plugs are blown through the tube to remove any impurities or particles.
9. **Protection plugs**
   All tubes with outer diameters larger than 6 mm are supplied with plugged ends.

Our conscience, that is. We can't have any peace of mind until we're sure that you're getting ultra-clean hydraulic and instrumentation tubing. After all, when you've spent in excess of $500 million on a refinery or oil platform, you should not risk having contaminated hydraulic fluids in a pump – a situation that could lead to unscheduled maintenance or production stops costing millions.

No time for cleaning at remote sites
So what cleaning method does your current supplier use? Do they plug their tubes? Have you ever noticed dirt? The fact is that small impurities in your tube can cause problems in other parts of your system. And nobody has time to clean shipments of tube that are arriving, especially on remote sites like offshore oil platforms.

Clean tubes, trouble-free systems
To prevent unplanned malfunctions due to impurities, Alleima uses a nine-step cleaning process. This means that before shipping, all Alleima hydraulic and instrumentation tubes routinely undergo a rigorous, proprietary cleansing process to ensure the highest degree of cleanliness. It's just another way we offer our customers complete peace of mind.



Cleanliness benefits
– **No complaints about dirty tubes**
– **Customers avoid costly shutdowns**
– **Interior free of scale and contamination**
– **Reduced risk of system failure or unplanned maintenance**
– **Protects against malfunctioning pumps, filters, valves and actuators**

Benefits of coiled tubing
- **Reduced installation costs due to fewer fitting and faster installation time.**
- **Higher system integrity due to reduced possibility for leaks through fewer fittings.**
- **Ease of installation, especially in vertical applications, reduces maintenance costs.**
- **Reduction in yield loss since it's possible to cut exact lengths for each job.**
- **Ease of shipping and storage due to compact reel sizes.**

Coiled and ready to drive down costs

Want to speed up installation time and drive down costs? Are you dealing with critical applications that demand the highest system integrity – e.g. where leaking hydraulic or other fluids could lead to downtime or a total system shutdown? This is where our premium-quality coiled tubing in longer, weld-free lengths can be a huge advantage.

Unlike straight-length tubing, which normally requires an extensive number of connections, coiled tubing can be rolled out and fitted to the required lengths with significantly fewer connections. Not only does this reduce installation times, it virtually eliminates the risk of system leakage.

Less maintenance, more productivity
Essentially, fewer fittings means fewer "weak spots" that might be prone to leakage. The higher system integrity also means fewer inspections, less supervision and maintenance, allowing you to spend time on other more important activities. Basically, with coiled tubing you can safeguard your performance and productivity objectives.

Wide range of sizes and grades
Alleima coiled tubing is ideal for applications such as instrumentation lines, steam or electrically traced tubing, pre-insulated tubing, stack tubing and heater hose. Offered in outer diameters of from 1/8 inch (3.18 mm) to ¾ inch (19.05 mm), it is supplied with continuous line-marking, bright annealed and polished surfaces. Coils with special cleaning or ID surface can also be supplied upon request.

Global coverage, close to you
Our coiled tube is packaged either as level-wound on plastic-wrapped wooden reels or as level-wound coils, strapped into individual cardboard boxes. We offer global coiled tubing production on three continents, close to you, with mills in Asia, Europe and North America.

Tubes in straight lengths – stock program

Metric sizes

Outside diameter mm	Wall thickness mm	Weight kg/m	Alleima® 3R60 ASTM TP 316/316L EN 1.4435		Alleima® 5R75 ASTM TP 316Ti EN 1.4571		Alleima® 254 SMO* UNS S31254 EN 1.4547	
			Max. working pressure in bar					
			EN	ASME	EN	ASME	EN	ASME
3	0.5	0.03	• 510	470				
	0.7	0.04	• 718	684				
6	1.0	0.13	• 510	470	• 550	470	• 720	632
	1.5	0.17	• 774	738	• 835	738	• 1213	993
8	1.0	0.18	• 366	340	• 395	340	• 574	458
	1.5	0.24	• 587	537	• 633	537	• 920	723
	2.0	0.30	• 774	738			• 1213	993
10	1.0	0.23	• 286	267	• 308	267	• 448	359
	1.5	0.32	• 451	417	• 486	417	• 636	561
	2.0	0.40	• 635	577	• 684	577	• 995	776
12	1.0	0.28	• 234	220	• 252	220	• 330	295
	1.5	0.39	• 366	340	• 395	340	• 517	458
	2.0	0.50	• 510	470	• 550	470	• 720	632
14	1.0	0.33	• 198	186				
	1.5	0.47			• 332	288		
	2.0	0.60	• 426	395	• 460	395		
15	1.0	0.35	• 184	173				
	1.5	0.51	• 286	267	• 308	267		
	2.0	0.65	• 394	366	• 425	366		
16	1.0	0.38	• 172	162				
	1.5	0.54	• 266	249	• 287	249		
	2.0	0.70	• 366	340	• 395	340		
	2.5		• 473	437	• 506	437		
18	1.0	0.43	• 152	143				
	1.5	0.62	• 234	220	• 252	220		
	2.0	0.80	• 321	299	• 346	299	• 453	402
	2.5	0.97			• 445	383		
20	1.5	0.69	• 209	196	• 223	196		
	2.0	0.90	• 286	267	• 308	267		
	2.5	1.09	• 366	340	• 395	340		
	3.0	1.28			• 486	417		
22	1.5	0.77	• 189	177	• 203	177		
	2.0	1.00	• 257	241	• 278	241		
25	1.5	0.88						
	2.0	1.15	• 224	210	• 242	210	• 316	283
	2.5	1.41	• 286	267	• 308	267		
	3.0	1.65	• 350	326	• 377	326		
28	1.5	1.00	• 146	138	• 158	132		
	2.0	1.30	• 198	186	• 214	186		
	2.5	1.60	• 252	236				
30	2.5	1.72	• 234	220				
	3.0	2.03	• 286	267	• 308	267		
	4.0	2.60	• 394	366	• 425	366		
35	2.0	1.65	• 156	147	• 167	147		
	2.5	2.03			• 214	186		
	3.0	2.40	• 241	226				
38	2.0	1.80	• 143	135				
	3.0	2.63	• 221	207	• 238	207		
	4.0	3.41	• 302	282	• 326	282		
	5.0	4.13	• 388	360	• 419	360		
42	2.0	2.00	• 129	122	• 138	122		
	3.0	2.93	• 198	186	• 214	186		
50	5.0	5.63	• 286	267				

• Size in stock
Stock standard length is 6,000 mm, for OD up to 50 mm.

* Alleima® 254 SMO is a trademark owned by Outokumpu OY.

For latest information, please refer to: Alleima.com

Imperial sizes

Outside diameter mm	Wall thickness mm	Imperial size			Weight kg/m	Alleima® 3R60 ASTM TP 316/316L EN 1.4435		Alleima® 2RK65 UNS N08904 EN 1.4539		SAF™ 2507 UNS S32750 EN 1.4410		Sanicro® 28 UNS N08028 EN 1.4563		Alleima® 254 SMO* UNS S31254 EN 1.4547		Sanicro® 625	
						Max. working pressure in bar											
						EN	ASME	EN	ASME	EN	ASME	EN	ASME	EN	ASME	EN	ASME
1.59	0.36	1/16"	x	28 BWG	0.011	• 740	662										
	0.51			25 BWG	0.014	• 1008	961										
3.18	0.71	1/8"	x	22 BWG	0.044	• 727	652										
	0.89			20 BWG	0.051	• 874	834										
4.76	0.89	3/16"	x	20 BWG	0.086	• 585	536										
6.35	0.71	1/4"	x	22 BWG	0.100	• 323	301										
	0.89			20 BWG	0.122	• 417	386	• 469	392	• 962	748			• 588	520	• 773	
	0.91			20 SWG	0.124	• 428	396	• 481	402								
	1.22			18 SWG	0.157	• 604	552	• 680	560								
	1.24			18 BWG	0.159	• 616	562	• 693	570	• 1421	1088			• 869	756	• 1124	
	1.63			16 SWG	0.193	• 797	759	• 896	771								
	1.65			16 BWG	0.194	• 807	770	• 908	781	• 1861	1490			• 1265	1035	• 1540	
7.94	0.89	5/16"	x	20 BWG	0.157	• 324	302										
	0.91			20 SWG	0.160	• 332	310										
9.53	0.89	3/8"	x	20 BWG	0.193	• 265	248	• 298	252	• 611	480			• 415	334	• 497	
	0.91			20 SWG	0.196	• 272	254	• 305	258								
	1.22			18 SWG	0.254	• 376	350	• 423	355			• 416	362				
	1.24			18 BWG	0.257	• 383	356	• 431	361	• 884	689	• 424	368	• 601	479	• 712	
	1.63			16 SWG	0.322	• 526	484	• 591	491			• 582	501				
	1.65			16 BWG	0.326	• 534	490	• 600	498	• 1230	950	• 590	508	• 753	660	• 981	
	2.03			14 SWG	0.381	• 686	619										
	2.11			14 BWG	0.391	• 720	646							• 1062	869		
12.7	0.89	1/2"	x	20 BWG	0.263	• 194	183	• 219	185	• 448	354	• 219	189	• 305	246	• 366	
	0.91			20 SWG	0.268	• 199	187	• 224	190								
	1.22			18 SWG	0.350	• 273	256	• 313	264								
	1.24			18 BWG	0.356	• 278	260	• 313	264	• 642	504	• 314	269	• 436	350	• 521	
	1.63			16 SWG	0.452	• 377	351	• 430	361			• 423	368				
	1.65			16 BWG	0.456	• 383	355	• 430	361	• 882	688	• 423	368	• 540	477	• 711	
	2.03			14 SWG	0.542	• 486	448	• 546	455								
	2.11			14 BWG	0.559	• 508	468	• 571	475			• 574	484	• 717	629	• 936	
15.88	1.22	5/8"	x	18 SWG	0.448	• 214	201										
	1.24			18 BWG	0.454	• 218	205										
	1.63			16 SWG	0.582	• 294	275										
	1.65			16 BWG	0.588	• 298	278										
19.05	1.22	3/4"	x	18 SWG	0.544	• 176	166										
	1.24			18 BWG	0.553	• 180	169			• 414	328						
	1.63			16 SWG	0.711	• 241	226										
	1.65			16 BWG	0.718	• 244	229										
	2.11			14 BWG	0.895	• 320	298										
	2.41			13 BWG	1.00	• 371	345										
	2.77			12 BWG	1.13	• 435	403										
25.4	1.22	1"	x	18 SWG	0.739	• 130	123										
	1.24			18 BWG	0.750	• 132	125										
	1.65			16 BWG	0.981	• 179	169										
	2.11			14 BWG	1.23	• 233	219										
	2.41			13 BWG	1.39	• 270	252										
	3.20			–	1.78	• 370	343										

• Size in stock
[1] SWG = Standard Wire Gauge, BWG = Birmingham Wire Gauge
28 BWG = 0.014 inch 25 BWG = 0.020 inch 22 BWG = 0.028 inch 20 BWG = 0.035 inch 20 SWG = 0.036 inch 18 BWG = 0.049 inch 18 SWG = 0.048 inch 16 BWG = 0.065 inch 16 SWG =0.064 inch 14 BWG = 0.083 inch 14 SWG = 0.080 inch 13 BWG = 0.095 inch 12 BWG = 0.109 inch 11 BWG = 0.120 inch
[2] 1 bar = 0.1 MPa, 1 ksi = 6.895 MPa
[3]) EN 13480-3 at 50°C.
[4] ASME B31.3 at 40°C. Max. allowed stress for Alleima® 3R60™ = ASTM TP 316. Calculated wall thickness tolerance -10%.

* Alleima® 254 SMO is a trademark owned by Outokumpu OY.

For latest information, please refer to: Alleima.com

Steel grades

	Standards		Chemical composition (nominal), %					PRE (nominal)	Mechanical properties		
									Proof strength $R_{p0.2}$	Tensile strength R_m	Elong. A
Grade	ASTM TP UNS	EN steel no.	C	Cr	Ni	Mo	Others		MPa min.	MPa	% min.
Alleima® 3R60	316/316L	1.4435	≤0.030	17.5	13	2.6	–	27	220	515	45
Alleima® 5R75	316Ti	1.4571	0.05	17	12	2.1	Ti	24	220	510	45
Alleima® 2RK65	N08904	1.4539	≤0.020	20	25	4.5	Cu	36	230	520	35
Sanicro® 28	N08028	1.4563	≤0.020	27	31	3.5	Cu	39	220	550	40
Sanicro® 35	N08935		≤0.030	27	35	6.5	Mn,Cu,N	52	425	750	35
Sanicro® 276	N10276		≤0.010	16	57	16	-	68	283	690	40
Sanicro® 625	N06625	2.4856	≤0,025	21.5	60	8.3	-	48	276	690	30
Alleima® 254 SMO*	S31254	1.4547	≤0.020	20	18	6.1	N,Cu	43	310	655	35
SAF™ 2507	S32750	1.4410	≤0.030	25	7	4	N	43	550	800	25

Tolerance

Metric/Imperial sizes

Alleima® 3R60 OD <6 mm,
tolerances according to ASTM A632

Size OD, mm	Tolerances OD, mm	Wall thickness %
<2.38	+0.05/-0	+/-10
<4.77-2.38	+0.08/-0	+/-10
<6-4.77	+0.10/-0	+/-10

Alleima® 3R60, Alleima® 5R75, Alleima® 254 SMO*,
Alleima® 2RK65, Sanicro® 625, Sanicro® 28, od 6-50 mm EN 10305-1

Size OD, mm	Tolerances OD, mm	Wall thickness %
6-30	+/-0.08	+/-10
32-40	+/-0.15	+/-10
42	+/-0.20	+/-10

SAF™ 2507

Size OD, mm	Tolerances OD, mm	Wall thickness %
≤19,05	+/- 0,13	10%

Fixed lengths
6,000 -0/+5 mm

Straightness
Maximum deviation from a straight line = 1.5 mm/6,000 mm.

Ovality
Ovality is calculated as ODmax – ODmin
Max allowed is 0.005", (0.127 mm) for OD < 30 mm.
For OD > 30 mm, max allowed is same as OD tolerances according to EN 10305-1

Standards

Alleima® 3R60
ASME/ASTM SA/A-213 AW
ASTM A-269
ASTM A-1016
EN 10216-5 TC-1
ISO EN 3651-2 A
EN 10305-1 (Only Tolerances - Table 5)
PED /2014/68/EU

Alleima® 5R75
ASTM A-1016
EN 10216-5 TC-1
ISO EN 3651-2 A
EN 10305-1 (Only Tolerances - Table 5)
PED /2014/68/EU

Alleima® 254 SMO*
ASME/ASTM SA/A-213 AW
ASTM A 269
ASTM A-1016
EN 10216-5 TC-1
EN 10305-1 (Only Tolerances - Table 5)
PED /2014/68/EU
NORSOK M630, MDS R18

Alleima® 2RK65
ASTM A-213/A-269
ASTM A-1016/A-999
EN 10216-5 TC-1
ISO EN 3651-2 C
EN 10305-1 (Only Tolerances – Table 5)
PED /2014/68/EU
NACE MR 0175/ISO 15156

Sanicro® 28
ASTM B668
ASTM B829
EN 10216-5 TC-1
EN 10305-1 (Only Tolerances – Table 5)
PED /2014/68/EU
NACE MR 0175/ISO 15156

Sanicro® 35
UNS: N08935
NACE MR0175/ISO 15156-3:2015
ANSI/NACE MR0103/ISO 17495-1:2016

Sanicro® 276
UNS: N10276
W.Nr.: 2.4819
ASTM B622

SAF™ 2507
ASTM A-789
ASTM A-1016
EN 10216-5 TC-1
PED /2014/68/EU
NORSOK M630, MDS D58
NACE MR 0175/ISO 15156

Sanicro® 625
ASME/ASTM SB/B 444
ASTM B-829
PED /2014/68/EU
Grade 2

* Alleima® 254 SMO is a trademark owned by Outokumpu OY.

Coiled tubing – standard size range

Imperial sizes

Size, inch		Single coil length *, ft
1/8	x .020	1,300
	x .028	1,300
	x .035	1,300
	x .049	1,300
3/16	x .020	1,000
	x .028	950
	x .035	750
	x .049	600
1/4	x .035	2,005
	x .049	1,528
	x .065	1,256
3/8	x .035	1,267
	x .049	941
	x .065	749
	x .083	612
1/2	x .035	927
	x .049	681
	x .065	534
	x .083	427
5/8	x .035	446
	x .049	325
	x .065	253
	x .083	203
3/4	x .035	367
	x .049	266
	x .065	207

* Minimum guaranteed length for TP 316/316L.

Metric sizes

Size, mm		Single coil length *, m
3.0	x 0.5	400
	x 0.75	400
	x 1.0	400
3.5	x 0.5	400
	x 0.75	400
	x 1.0	350
	x 1.5	280
4.0	x 0.5	350
	x 0.75	350
	x 1.0	300
	x 1.5	230
6.0	x 1.0	594
	x 1.2	515
	x 1.5	440
8.0	x 1.0	424
	x 1.2	364
	x 1.5	304
10.0	x 1.0	330
	x 1.2	281
	x 1.5	233
	x 2.0	182
12.0	x 1.0	270
	x 1.2	229
	x 1.5	188
	x 2.0	146

Sizes above 12 mm – please inquire.

Steel grades

Grade	ASTM	UNS	EN, steel no.
Alleima® 3R12	304/	S30400/	1.4306/
	304L	S30403	1.4301
Alleima® 3R60	316/	S31600/	1.4435
	316L	S31603	
Alleima® 3R65	316/	S31600/	1.4404
	316L	S31603	
Alleima® 6R35	321/	S32100/	1.4541/
	321H	S32109	1.4940
Alleima® 5R75	316Ti	S31635	1.4571
Alleima® 8R40	347/	S34700/	1.4550/
	347H	S34709	1.4912
SAF™ 2205		S31803/	1.4462
		S32205	17,162
SAF™ 2304		S32304	1.4362
SAF™ 2507		S32750	1.4410
Alleima® 2RK65		N08904	1.4539
Sanicro® 28		N08028	1.4563
Sanicro® 30	Alloy 800	N08800	1.4558
Sanicro® 35	B163	N08935	
Sanicro® 41	Alloy 825	N08825	
Sanicro® 70	Alloy 600	N06600	
		N04400	
		N02200	
Sanicro® 276	B622	N10276	

Standards

ASTM: A213, A269, B163, B167, B668, A632, A789, A790
ASME: SA213, SB163, SB167, SB 668, SA789, SA790
NACE: MR 0175
EN: 10216-5 TC1

Eddy Current or hydrostatic test at option of Alleima.

Alleima

About Alleima

Alleima is a leading manufacturer of high value-added products in advanced stainless steels and special alloys as well as products for industrial heating. Based on long-term customer partnerships, we advance processes and applications in the most demanding industries. With more than 900 active alloy recipes, our offering comprises products for several customer segments, mainly seamless stainless tubes, electric heating technology and resistance materials, ultra-fine wire, and precious metals for use in medical devices and electronic appliances, as well as precision strip steel and strip-based products. Our fully integrated value chain, from R&D to end-product, ensures industry-leading technology, quality, sustainability, and circularity. Alleima, with headquarters in Sandviken, Sweden, has more than 5,500 employees and customers in approximately 90 countries.

Find out more at
alleima.com