

# Novus Bolting



Manufacturers and distributors of sealing and jointing materials.



Novus Sealing the worldwide reputed manufacturer of gaskets, seals, jointing and modified PTFE material now supplement its product portfolio with a bolting range including stud bolts, threaded bar and fasteners responding to market demand in offering complete sealing solutions - the one stop sealing shop.

Our bolting range is manufactured to national and international standards together with specific customer designs.

**Typically supplying the requirements of Oil, Gas, Offshore Power Generation, Shipping, Building, Instrumentation and General Industries.**



### Where used

Flange Assembly, Offshore, Valves, Heat Exchangers, Pressure Vessels, Compressors, Gas, Steam and Water Turbines, Marine and Stationary Diesel Engines, Civil and Defence Nuclear Industry, Hydraulic Power Plants, Power Generation and Transmission, Transport (Railways Shipping), Civil Engineering, Furnaces and Crushers for Cement Industries



Also in this publication



## Stud-Bolts

A complete range of Stud-Bolts, threaded bar and nuts. Materials and size information.



## Bolt-Lube

Assembly Lubrication and Anti-Seize Compound. Product Specification



## Training

Training Courses and Training Information and Training Aids

# Bolting

Novus Sealing have a full range of bolting products manufactured in an extensive range of materials with a wide choice of finishes and treatments. All products are machined to fine tolerances and to high performance specifications to meet the rigorous demands of world-wide industries.

Novus Sealing continues to invest in quality and environmental systems and is fully accredited to both ISO 9001 and ISO 14001.



AS/NZS ISO 9001:2000  
Lic: QEC 5296  
SAI Global



## Materials and Finishes

### Carbon & Alloys

Mild Steel  
080M40 (EN8)  
605M36 (EN16)  
708M40 (EN19)  
817M40 (EN24)  
826M40 (EN26)  
ASTM A193/A320 Grades  
B5, B7, B7M, B16, B16A, L7, L7M, L43  
DUREHETE\* 900, 950, 1055  
JETHETE\*  
ESSHETE\*  
Chrome Moly and Chrome Moly Vanadium

### Nickel Alloys & Duplex

Monel\* 400 & K500  
Inconel\* 600, 601, 625, 718  
Incoloy\* 800HT, 825, 925  
Hastelloy B2, C22, C276  
UNS31254 (2545MO\*)  
UNS532550 (Ferralium 255\*)  
UNS32750  
UNS32760  
ASTM A453 Grade 600  
Zeron 100\*  
Carpenter Alloy 20\*  
Nimonic 75, 80A, 90  
Titanium Alloys

### Stainless Steel

A2 & A4 Class 50, 70 & 80  
300 & 400 Series  
C-80  
ASTM A193 / A420 Grades  
B8, B8M, B8TX Class 1 &  
B8X, B8MX, B8TX  
B8C  
B6  
17-4 PH  
FV5208  
Nitronic\* 50 & 60  
904L

### Non-Ferrous

Hiduron\*  
Marinel\*  
Aluminium Bronze  
Silicon Aluminium  
Bronze  
Phosphor Bronze  
Naval Brass  
Brass  
Cupro Nickel 70/30, 90/10  
Aluminium  
Nylon  
PTFE

### Surface Coatings

Bright Zinc  
Zinc & Passivated  
Zinc Nickel  
Hot Dip Galvanised  
Phosphate  
Molykote  
PTFE  
Sheradised  
Electroless Nickel  
Cadmium  
Zinga

### Heat Treatments

Hardening & Tempering  
Normalising  
Nitriding  
Case Hardening  
Age Hardening  
Through Hardening

\* Registered Trademark

**Stud-Bolts with 2 Heavy Hexagonal Nuts ASTM A193 B7 Stud-Bolts / A194 2H Nuts**

Diameter Inches	Length Inches	Quantity per Box	Weight Kg per Box	Diameter Inches	Length Inches	Quantity per Box	Weight Kg per Box	Diameter Inches	Length Inches	Quantity per Box	Weight Kg per Box		
1/2" UNC	2	200	19.2	3/4" UNC	3	60	19.2	1" UNC	4.1/4	30	22.4		
	2.1/4	180	10.2			3.1/4	60			19.9	4.1/2	25	19.2
	2.1/2	160	17.8			3.1/2	60			20.6	4.3/4	25	19.6
	2.3/4	150	17.5			3.3/4	50			17.6	5	25	20.3
	3	140	17		4	50	18.4		5.1/4	25	20.8		
	3.1/4	140	17.7			4.1/4	50		18.9	5.1/2	25	21.3	
	3.1/2	140	18.5			4.1/2	50		19.5	5.3/4	25	21.9	
	3.3/4	130	17.8			4.3/4	50		20.1	6	25	22.4	
	4	100	14.2		5	50	20.7		6.1/4	20	18.3		
	4.1/4	100	14.7			5.1/4	50		21.3	6.1/2	20	18.8	
	4.1/2	100	15.2			5.1/2	40		17.5	6.3/4	20	19.2	
	4.3/4	100	15.7			5.3/4	40		17.9	7	20	19.6	
	5	80	12.9		6	40	18.5		7.1/4	20	20		
	5.1/4	80	13.4			6.1/4	40		18.9	7.1/2	20	20.4	
	5.1/2	80	13.8			6.1/2	40		19.3	7.3/4	20	20.9	
	5.3/4	80	14.2			6.3/4	40		19.6	8	20	16	
6	80	14.6	7	40	20.3	8.1/4	15	16.3					
5/8" UNC	2.1/2	100		19	7.1/4	40	20.7	8.1/2	15	16.6			
		2.1/4		100	19.8	7.1/2	35	18.6	8.3/4	15	16.9		
		3		100	20.6	7.3/4	35	19	9	15	17.2		
		3.1/4	100	21.4	8	35	19.4	9.1/4	15	17.6			
	3.1/2	100	22.2	8.1/4		35	19.8	9.1/2	15	11.9			
	3.3/4	90	20.7	8.1/2		35	20.2	7/8" UNC	6	15	17.9		
	4	80	19	8.3/4		30	20.6			6.1/4	15	18.3	
	4.1/4	70	17.2	3.1/2	35	21.2	6.1/2			15	18.7		
	4.1/2	70	17.8		3.3/4	40	20.3			6.3/4	15	19.1	
	4.3/4	70	18.4		4	40	20.9		7	15	19.5		
	5	70	18.9		4.1/4	40	21.6			7.1/4	15	19.9	
		5.1/4	60	16.7	4.1/2	40	22.2			7.1/2	15	20.3	
		5.1/2	60	17.2	4.3/4	40	22.9			7.3/4	15	20.7	
		5.3/4	60	17.7	5	35	20.6		8	15	21.1		
	6	60	18.2	5.1/4	35	21.2	1.1/8" UNC		8	15	21.5		
		6.1/4	60	18.6	5.1/2	35				21.7	8.1/4	15	21.9
6.1/2		60	19.1	5.3/4	30	19.1				8.1/2	15	21.9	
6.3/4		60	19.6	6	30	19.6				8.3/4	15	22.4	
7	25	17.9	6.1/4	30	20	9			15	22.8			
	7.1/4	25	16.4	6.1/2	30				20.5	9.1/4	15	23.2	
	7.1/2	25	18.7	6.3/4	30				21	9.1/2	10	15.7	
	7.3/4	25	19.1	7	25			17.9	8	15	21.1		
8	25	19.6	7.1/4	25	16.4	8.1/4		15		21.5			
	8.1/4	35	20.6	7.1/2	25	18.7		8.1/2		15	21.9		
	8.1/2	35	21.2	7.3/4	25	19.1		8.3/4		15	22.4		
	8.3/4	30	19.1	8	25	19.6		9	15	22.8			

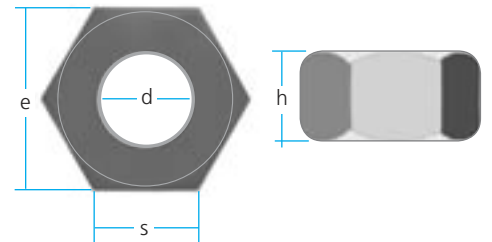
**Stud-Bolts with 2 Heavy Hexagonal Nuts** ASTM A193 B7 Stud-Bolts / A194 2H Nuts

Diameter Inches	Length Inches	Quantity per Box	Weight Kg per Box	Diameter Inches	Length Inches	Quantity per Box	Weight Kg per Box	Diameter Inches	Length Inches	Quantity per Box	Weight Kg per Box
1.1/4" UNC	6	15	22.9	1.3/8" UNC	6.3/4	10	20.6	1.1/2" UNC	7.3/4	10	27.3
	6.1/4	15	23.4								
	6.1/2	15	23.9								
	6.3/4	15	24.5								
	7	15	25		7	10	21.1		7.1/4	10	21.5
	7.1/4	15	25.5		7.1/2	10	21.9		7.3/4	10	22.3
	7.1/2	10	17.3		8	10	22.7		8	10	27.8
	7.3/4	10	17.7		8.1/4	10	23.2		8.1/4	10	28.3
	8	10	18		8.1/2	10	23.6		8.1/2	10	28.8
	8.1/4	10	18.3		8.3/4	10	24		8.3/4	10	14.8
	8.1/2	10	18.7		9	5	12.2		9	5	14.9
	8.3/4	10	19		9.1/4	5	12.4		9.1/4	5	15.2
9	10	19.4	9.1/2	5	12.6	9.1/2	5	15.4			

**Heavy Hexagonal Nuts**

Nominal Size Diameter (d)	Number of threads per inch	Width across flats (s)		Thickness (h)		Width across corners (e)		Weight of 100 Nuts (kg)
		inch	mm	inch	mm	inch	mm	
3/8	16	11/16	17.5	3/8	9.1	3/4	19.7	1.4
7/16	14	3/4	19.0	7/16	10.7	7/8	22.0	1.9
1/2	13	7/8	22.2	1/2	12.3	1	25.4	3.0
9/16	12	15/16	23.8	9/16	13.9	1.1/16	27.0	3.7
5/8	11	1.1/16	27.0	5/8	15.5	1.1/4	31.2	5.4
3/4	10	1.1/4	31.7	3/4	18.7	1.3/8	35.7	8.8
7/8	9	1.7/16	36.5	7/8	21.8	1.5/8	41.6	13.5
1	8	1.5/8	41.3	1	25.0	1.7/8	47.2	19.3
1.1/8	8	1.13/16	46.0	1.1/8	28.2	2.1/16	52.0	26.9
1.1/4	8	2	50.8	1.1/4	31.0	2.1/4	57.8	35.7
1.3/8	8	2.3/16	55.6	1.3/8	34.1	2.1/2	63.5	46.3
1.1/2	8	2.3/8	60.3	1.1/2	37.3	2.3/4	69.3	59.5
1.5/8	8	2.9/16	65.1	1.5/8	40.5	2.15/16	75.0	73.6
1.3/4	8	2.3/4	69.8	1.3/4	43.6	3.1/6	78.6	92.7
1.7/8	8	2.15/16	74.6	1.7/8	46.8	3.3/8	85.5	109.5
2	8	3.1/8	79.4	2	50.0	3.9/16	90.0	135.8
2.1/4	8	3.1/2	88.9	2.1/4	56.0	3.15/16	100.0	190.3
2.1/2	8	3.7/8	98.4	2.1/2	62.3	4.3/8	111.6	256.0
2.3/4	8	4.1/4	108.0	1.3/4	70.0	4.7/8	124.3	335.0
3	8	4.5/8	117.5	3	76.2	5.3/8	135.3	432.0
3.1/4	8	5	127.0	3.1/4	80.9	5.3/4	146.5	543.0
3.1/2	8	5.3/8	136.5	3.1/2	87.3	6.3/16	157.2	694.0
3.3/4	8	5.3/4	146.0	3.3/4	93.7	6.5/8	168.6	824.0
4	8	6.1/8	155.6	4	100.0	7.1/16	179.5	991.0

**Heavy Hexagonal Nuts**



**How to order Stud-Bolts and Nuts**

A correct purchase order should contain the following information for Stud-Bolts and Nuts:-

- 1 Diameter and Length
- 1 Material
- 1 Quantity



## Assembly Lubrication and Anti-Seize Compound.

### Description

Novus Bolt-Lube is a high quality assembly and anti-seize compound and is designed for use on fasteners operating on process plant where arduous conditions may be encountered.

### Service

Novus Bolt-Lube has been formulated to provide easier assembly and disassembly of fasteners therefore reducing the torque required to load and unload the joint. Due to the inclusion of an extreme pressure additive it provides additional protection against galling or seizure. The compound is water resistant and assures long-term protection against rust and corrosion.

### Material Properties

Novus Bolt-Lube contains molybdenum disulphide (MoS<sub>2</sub>), graphite and other low-friction ingredients in a non-setting form. The formulated blend is carefully controlled to ensure consistency of lubricating and anti-seize properties along with low-friction characteristics.

### Applications

Ensure the bolt and nut threads are clean before application. Apply Bolt-Lube lubricant liberally using a brush to the bolt and nut threads and to the face of the nut to be tightened. Do not apply grease or bolt lubricant to the joint face.

### Availability

Tins of 500 grammes come complete with integral brush applicator for ease of use. Available in 1kg Tin, 5kg Pail, 12.5 Pail and 20kg Pail.

**Other sizes available on request.**

PHYSICAL PROPERTIES	
Coefficient of Friction*	0.12
Temperature Range	-54 <sup>o</sup> C to 650 <sup>o</sup> C
Physical State	Semi-Solid Paste
Colour	Steel Blue
Odour	Petroleum
pH	Neutral
Boiling Range/Point	316 <sup>o</sup> C
Melting Point	232 <sup>o</sup> C
Flash Point (PMCC)	221 <sup>o</sup> C
Auto Ignition Temperature	260 <sup>o</sup> C

\* The coefficient of Friction (CoF) is used in the calculations that determine the torque that should be applied to the bolts during assembly. In order to establish the CoF, Novus have developed a unique 'in house' test procedure, utilising specially adapted fasteners to measure bolt load. This test procedure accurately determines the CoF and provides a method for verifying consistency of product from batch to batch.

### Bolting Instructions

#### Bolting

- Ensure the bolt and nut threads are clean. Apply bolt lubrication to the bolt and nut threads and to the face of the nut to be tightened. Do not apply grease or bolt lubricant to the joint face. After cleaning and lubrication it should be possible to run the nut along the full length of the bolt by hand. If this is not possible the bolts and nuts should be refurbished or replaced.
- Scrape, wire brush or file as necessary the back face of each flange where the bolt heads and nuts are to sit, ensuring that the surfaces are clean and flat.
- If possible use hardened flat washers to ensure even transfer of the load.

#### Installation

- Ensure that the gasket is installed centrally.
- It is recommended that the bolts are tightened using a controlled method such as torque or tension. If using a torque wrench, ensure that it is accurately calibrated.
- Tighten bolts in a star-like crossing pattern in the following sequence:
  - Finger tighten nuts
  - Tighten to 30% of the final load
  - Tighten to 60% of the final load
  - Tighten to full load
- Make a final tightening sequence, working around the flange, tightening each bolt in turn until the specified torque is achieved.

#### After Installation

- Check that the flange faces are parallel using a suitable tool e.g. Novus Flange Gap Tool.



## **Training Programme 'Control of Flanged Joints'**

The reliability of the flanged joint depends critically on competent control of the joint making process. It is common to put considerable effort into the design process only for improper assembly to lead to joint failure. Therefore it is important that joint making is undertaken by trained and validated technicians who have an understanding of the procedure and the underlying principles and practice.

The Control of Flanged Joints is an industry recognised training program designed to ensure that all individuals with responsibilities in connection with ensuring the safe control of flange joints are trained and validated as competent to undertake these responsibilities. The program, produced in conjunction with a major global petrochemical company and leading bolt service company, is based around a video presentation of best practices and utilises an intelligent bolting system to explain and demonstrate these principles. This unique training method allows key areas of joint making e.g. the need to use bolt lubricant, to be clearly understood.

The training covers a broad spectrum of topics which can be tailored to suit requirements including:

- \* **Introduction**
- \* **Leaks and Emissions**
- \* **Flange Design Issues**
- \* **Flange Joint Preparation and Assembly**
- \* **Systems and Procedures**
- \* **Records and Traceability**
- \* **Tightening Joints On-Line**
- \* **Emission Monitoring**
- \* **Control of Fugitive Emissions**



A DVD presentation explains the principles of best practice.



### **On-Site Bolting Service**

As part of our Bolting Programme we can test and recommend action and solutions to all your bolting problems, quality or safety control requirements in both our laboratory and on-site. We can also help with the training, information and technology of all flange and bolting problems - correct flange assembly, leakage issues, bolting stresses etc., and recommend the appropriate remedies and solutions. Please see our technical department for details.

Contact our Technical Department for full details



Novus Sealing and our distributors are fully committed to ensuring our customers throughout the world receive the highest level of quality and technical support for our products and services. Our technical specialists can provide expertise on all issues associated with sealing performance.

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