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1.0 SCOPE

This specification lists approved suppliers for various wrought steel types and product forms. This specification further qualifies 1E0024 Wrought Steel – General Requirements and is applicable to all 1E wrought steel specifications qualified by 1E0024, although it may not appear on the material specification or drawings.

2.0 APPLICATION

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2.1 Use of Figures and Appendix

2.1.1 Figure 1 - List of Caterpillar approved steel mills. Use of steel, from suppliers listed, is restricted to the product outlined in the figure and any other requirements of the individual Caterpillar 1E material specification. Figure 1 table headings are defined as:

2.1.1.1 Supplier - Supplier name and location. The suppliers are additionally subdivided by regions: Africa, Asia, Australia, Europe, North America and South America.

2.1.1.2 APP STAT - Approval Status. Steel Purchasing Technical Professionals are responsible for determining the level of approval (**L or A**), the caster classification, and the steel types each mill may supply.

Suppliers with Approved Status (**A**) have demonstrated satisfactory performance of production material over a sustained period. Use of steel from such melting mills is restricted only by the steel types (e.g., carbon, alloy, boron, etc.) listed for each supplier. Caster classification, reduction ratio, and other requirements of the individual Caterpillar 1E material specifications still apply.

| | | | |
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| WROUGHT STEEL – APPROVED SUPPLIERS | DATE 25 MAY 2018 | CHG NO 23 | NUMBER 1E1861 |

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Suppliers with Limited Approval status (**L**) have passed a preliminary evaluation with regard to their capabilities. Unrestricted use of steel from such melting mills is allowed only for direct purchases by Caterpillar. Steel from Limited Approved melting mills used by suppliers of purchased finished parts shall be approved on a heat-by-heat basis by the dispositioning facility prior to use. Prior to awarding a mill fully approved status, satisfactory performance of production material shall be demonstrated over a sustained period.

2.1.1.3 CRNK SHFT - Crank Shaft approval. Steel mills approved to produce steel for crankshafts are indicated by the presence of an approved code in the crankshaft column of Figure 1. If a "Y" appears in the approval column, then the mill has been approved to produce crankshaft steel. In all cases of crankshaft steel application requirements, the minimum reduction ratio, from cast product size to mult size, shall be met in addition to steel making approval.

2.1.1.4 CAST PROD - Cast Product type as defined by the supplier: Ingot, Bloom, Billet, or Slab.

2.1.1.5 VAC DEG - Vacuum Degas capability of the mill, Y = Yes and N (or blank) = No.

2.1.1.6 CAST CLS - Caster Class as defined in 1E2700 - Wrought Steel - Solidification and Quality Control.

2.1.1.7 AS-CAST SIZE - Cast product size as defined by the supplier for each cast product type. Size of tapered ingots is defined as the cross section at mid-height.

2.1.1.8 STEEL TYPES - Types of steel each supplier has been approved to supply:

Carbon - Plain carbon grades include modified SAE 10xx, 11xx, 12xx, and 15xx grades.

Structural - Structural steel grades that have defined mechanical properties (or expected mechanical properties) such as 1E0065, 1E0166, 1E0170, 1E0357, 1E1006, 1E1247, 1E1883, 1E1863, 1E4663, and other non-quench and tempered structural steel grades.

Alloy - Low allow steel grades like 40XX, 41XX, 50XX, 51XX, and 86XX.

Boron - Boron grade steels that have an ideal diameter (DI) and/or Jominy callout per the material specification. Boron containing steels without DI and/or Jominy Hardenability callout are not considered "Boron" grades in Caterpillar® terminology and are not expected to conform to Paragraph 5.3 of 1E0024 or to report any Jominy data.

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Microalloy Bar - Steel alloyed with V, Nb, and/or Ti, which will achieve defined mechanical properties upon controlled cooling from forging or subsequent thermo-mechanical processing. The mill shall demonstrate steel production with no detrimental segregation product.

Special Cleanliness - Special cleanliness grade steel that meets the requirements of the indicated 1E2661 level.

Special Alloy - Caterpillar proprietary steels intended for special applications that require specific steel making process and quality control.

Heat Treated - The mill can provide quench and tempered heat treated plate.

1E1106 - The mill can provide 1E1106 steel.

Note: Other steel types may appear in the Approved Steel Suppliers Table for specialized cases.

2.1.1.9 CODE - Three-digit supplier code assigned by Caterpillar Inc.

2.1.2 Figure 2 - List of Caterpillar approved rolling and heat treat mills. The materials used by rolling and heat treat mills shall be supplied by Caterpillar approved mills listed in Figure 1.

2.1.3 Figure 3 - List of Caterpillar approved suppliers for tubular products. The figure includes the manufactured types that each mill may supply, approval for cold drawn tubing, and special applications. The materials for tubular product shall be supplied by Caterpillar approved mills listed in Figure 1.

2.1.3.1 APPROVED STEEL SUPPLIERS FOR ROLLOVER, TIP-OVER AND FALLING OBJECT PROTECTIVE STRUCTURES (ROPS, TOPS AND FOPS)

Flat and bar ROPS material shall be procured from fully approved mills of the caster class required by the material specification. Approved ROPS suppliers for tubing are indicated as ROPS-approved in the Special Application Approvals column of Approved Suppliers for Tubular Products in Figure 3. **This specification is in no way intended to supersede the material property verification and documentation requirements that are contained in the individual ROPS material specifications.** Mills are required to submit heat data (chemistry, tensile, and Charpy impact results) to the dispositioning facility for all product going into a Caterpillar ROPS structure. Product samples are required upon request.

2.1.4 Figure 4 - List of Caterpillar approved processors for flat steel cut to length for sheet and plate. Figure includes approved process type used by each supplier. The materials used by flat steel processors shall be supplied by Caterpillar approved mills listed in Figure 1.

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2.1.5 Appendix A - List of Unapproved mills. There are steel mills capable of producing steel to Caterpillar 1E material specifications that have not been evaluated by Caterpillar but have been assigned a Caterpillar three-digit supplier code. Purchased-Finished parts suppliers who choose to procure steel from unapproved mills shall contact the regional dispositioning facility (See Table 1) to request authorization to use that source. Approval will be granted on a heat-by-heat basis, and approval will depend on the end use application and on Caterpillar's experience and familiarity with the mill's capabilities. This approval will be granted only if the requesting supplier accepts full responsibility for performance and reporting of all specified test data to the dispositioning facility. Steel specifications with a Caster Class 5 may be purchased from mills listed in Appendix A or from other unapproved mill, however the part producer is responsible for ensuring the material meets all specification and functional requirements.

2.1.5.1 To begin the approval process, a business case shall be submitted to Caterpillar Purchasing - Steel Segment. The business case will be reviewed to determine if mill development is justified.

3.0 STEEL MILL DATA SUBMISSION REQUIREMENTS AND DISPOSITIONING

3.1 Fully Approved steel mills shall report steel mill test data via EtQ or EDI for 1E material specifications used for Caterpillar components, regardless of manufacturing location. These mills will comply with requests from the Caterpillar Development Engineer or Dispositioning Engineer, including providing additional testing and steel samples for audits.

3.2 Limited Approved Steel Mills shall report steel mill test data, via EtQ or EDI for 1E material specifications used for Caterpillar components, regardless of manufacturing location. Limited Approved mills shall comply with requests from the Caterpillar Development Engineer, including providing additional testing and steel samples to further development towards fully Approved Status. Per 1E0024, mills with Limited Approval status shall not ship material until notification is received that submitted material heat data is approved.

3.3 Dispositioning inquiries shall be directed to the appropriate Caterpillar disposition contact in Table 1. Most regions have more than one potential disposition contact therefore it is important to establish which contact would handle the inquiry based on the facility using the material in question. Contact information is provided in Table 2.

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| Dispositioning Region | Disposition Contact: |
|-----------------------|----------------------|
| Africa | Grenoble |
| Australia | IMT |
| Asia | CMT, IMT |
| Europe | Grenoble, Mec-Track |
| Japan | Akashi |
| North America | ITDD AMT, CMSA |
| South America | CBL |

Table 1

| | | | |
|-------------|--|-----------|--|
| Grenoble | Caterpillar France S.A. 40-48 Avenue Leon Blun B.P. 55X 38041 Grenoble Cedex 9 France Phone: 011-33-4-76-23-74-45 Fax: 011-33-4-76-23-72-07 | Mec-Track | Caterpillar Mec-Track Via Muzza Spadetta, 30, 40053 Valsamoggia BO, Italy Phone +39 051 836111 Fax: +39 051832175 |
| IMT | Caterpillar India Private Ltd. India Materials Technology Melnallathur, Thiruvallur Tamilnadu Pin – 602004 India Phone: 91-44-47600151 Ext. 4151 Fax: 91-44-47600444 Email: India_Steel_Help_Desk@cat.com | CMSA | Caterpillar Mexico S.A. De C.V. Apartado Postal 237 Santa Caterina, N.L. Mexico C.P. 66350 Phone: 011-52-83-19-3348 or 011-52-83-19-3379 Fax: 011-52-83-19-3399 |
| Akashi | Caterpillar Japan Ltd. Akashi Facility 1106-4 Shimizu, Uozumi-Cho Akashi-Shi, Hyogo-Ken Phone: 81-78-944-1231 Fax: 81-78-943-0759 | CBL | Caterpillar Brasil Ltda. Rod. Luiz de Queiroz, km 157 Unileste Piracicaba/São Paulo 13420-900 Brazil Phone: +55 2106 2309 Email: desuo_andre_l@cat.com or tavolari_tiago@cat.com |
| ITDD AMT | Caterpillar Inc. Technical Center - Building TC-K Quality Services 14009 Old Galena Rd Mossville, IL 61552 Fax: 309-675-3974 Email: quality_services@cat.com | CMT | China Materials Technology No. 169 Hai Bin Jiu Road Tianjin Port Free Trade Zone Tianjin, P.R. China 300456 Phone: 86-22-5988-2216 Fax: 86-22-5988-2606 Email: china_steel_quality@cat.com |

Table 2

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4.0 REFERENCES

Abbreviations 1E0011
Caterpillar Specifications 1E0024, 1E0065, 1E0166, 1E0170, 1E0271, 1E0357, 1E0713,
1E1106, 1E1473B, 1E1586, 1E1883, 1E2661, 1E2661A,
1E2661B, 1E2700, 1E2824, 1E4616
Caterpillar Manufacturing Practices MQ1000-501

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|---|-------------|--------------|------------------|------------|-------------|--|--|------|
| Africa | | | | | | | | |
| ArcelorMittal South Africa (Formerly Mittal South Africa) (Vanderbijl, S. Africa) | A | | Slab | Y | 1A | 210 mm Min | Carbon, Boron, Alloy, Structural | 196 |
| Asia | | | | | | | | |
| Aichi Steel Works (Nagoya, Japan) | A | | Bloom | Y | 1A | 370 x 480 mm | Carbon, Boron, Alloy | 176 |
| Asil Celik (Bursa, Turkey) | A | | Ingot | Y | 1 | | Carbon, Boron, Alloy | 199 |
| | L | | Billet | Y | 1A | 240 mm SQ 300 mm RD 280x300 mm | Carbon, Boron, Alloy, Special Cleanliness (1E2661A) | 352 |
| BaoShan Iron & Steel Co. Ltd, No. 1 Steelmaking Plant (Shanghai, P.R.C.) | A | | Slab | Y | 1B | 250x950-1930mm, 300/250/220 x 1300- 2300 mm | Carbon, Alloy, Heat Treated, Structural | 168 |
| BaoShan Iron & Steel Co., Ltd., Special Steel Branch, West Plant (Shanghai, P.R.C.) (Formerly Baosteel Special Steel Co., Ltd.) | A | | Billet/ Bloom | Y | 1A | 140 mm SQ to 220 mm SQ | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 228 |
| BaoShan Iron & Steel Co., Ltd, Steelmaking plant EAF Branch Works (Shanghai, P.R.C.) | A | Y | Round Billet | Y | 1A | 178 mm RD 153 mm RD | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 227 |
| CERI (Yingkou) Equipment Technology Co., Ltd. (Yingkou, Liaoning, P.R.C) | L | | Bloom | Y | 3 | 200x380mm Dia. 300/380/400/450/ 500/600 mm | Carbon, Alloy, Boron | 428 |
| Changshu Longteng Special Steel Co., Ltd., EAF Works (For long production line) (Changshu, Jiangsu, P.R.C.) | L | | Billet/ Bloom | Y | 3 | 150x150 to 260x340 | Carbon, Alloy, Boron | 303 |
| China Steel Corp. (Kaohsiung, Taiwan, R.O.C.) | L | | Bloom | Y | 1A | 220 x 240 mm | Carbon, Boron, Alloy | 238 |
| Daido Steel (Myagi, Japan) | A | | Ingot | Y | 1 | | Boron, Alloy, Special Cleanliness (1E2661A) | 142 |
| Daye Special Steel Co. Ltd / Hubei Xin Yegang Co. Ltd, BOF Steel Making Line (Huang Shi, Hubei, P.R.C.) | A | | Billet/ Bloom | Y | 1A | 1# 410x530 2# 180x220, 300x400 1# Dia. 390/460 2# Dia. 270/330 mm | Carbon, Alloy, Boron, Microalloy, Special Cleanliness (1E2661B) | 333 |

Figure 1 (Continued on next page)

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|-------------|--------------|--------------|------------|-------------|---|---|------|
| Daye Special Steel Co. Ltd / Hubei Xin Yegang Co. Ltd, 60t EAF Steel Making Line (Huang Shi, Hubei, P.R.C.) | A | Y | Ingot | Y | 1 | 505x505mm SQ, 3t (Possible for large ingot, 4.7t, 5t, 9t etc.) | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 219 |
| | A | | Billet/Bloom | Y | 1A | 180 – 240 mm SQ 350 x 470 mm, 270 – 460 mm RD | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 353 |
| Dongbei Special Steel Group Co. Ltd, Fushun Plant. (Formerly Liaoning Special Steel Group) (Fushun, Liaoning, P.R.C.) | A | | Ingot | Y | 1 | 565 x 437 mm 670 x 565 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 220 |
| | A | | Billet/Bloom | Y | 1A | 200 mm SQ 240 mm SQ 320 X280 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 354 |
| ESSAR Steel Limited (Hazira, India) | A | | Slab | Y | 1B | 210, 220, 260 X 800-2000 mm | Carbon, Alloy, Heat Treated, Structural | 241 |
| GJ Steel (Suriyawong, Bangrak, Bangkok, Thailand) | L | | Slab | | 3 | 60 x 900 – 1600 mm | Carbon, Alloy, Structural | 308 |
| Godo Steel Ltd. (Himeji, Japan) | A | | Bloom | Y | 1A | 220 x 250 mm 250 x 300 mm | Carbon, Boron, Alloy | 216 |
| Gunung Raja Paksi PT (Kabupaten, Bekasi, Indonesia) | L | | Slab | | 1B | 220 - 250 mm x 800 - 2100 mm | Carbon, Alloy, Structural | 450 |
| Henan Jiyuan Iron & Steel (Group) Co. Ltd (Jiyuan, Henan, P.R.C.) | L | | Billet/Bloom | Y | 1A | 1# 240 x 240, 2# 150 x 150, 5#, 400 x 500 (300 x 370, dia.600) | Carbon, Boron, Alloy, Special Cleanliness (1E2661A) | 431 |
| Hospet Steels Ltd. (Formerly Mukand Ltd / Kalyani Steel Ltd.) (Hospet, India) | A | | Billet/Bloom | Y | 1A | 160 to RD; 240X280 | Carbon, Boron, Alloy, Special Cleanliness (1E2661A) | 244 |
| Hunan Valin Xiangtan Iron & Steel Co. Ltd. (XISC) Steelmaking shop of wide/heavy plate plant (Xiangtan, Hunan, P.R.C.) | A | | Slab | Y | 1B | 180/220/260/300 x 1800-2300 mm (possible extend to 1200~2900mm) | Carbon, Alloy, Heat Treated, Structural | 336 |
| Hyundai Steel (Incheon, South Korea) | L | | Ingot | Y | 1 | | Carbon, Alloy | 286 |
| Inner Mongolia Baotou Steel Union Incorporated Co. Ltd--Steel making plant (Baotou, Inner Mongolia, R.R.C) | L | | Bloom | Y | 3 | 1#CC Dia 300/350/390/430 mm (dia. 270 potential) | Carbon, Alloy | 335 |
| ISMT (Formerly Indian Seamless Steels and Alloys Ltd.) (Jejuri, India) | A | | Billet | Y | 1A | 160 to 225 mm RD | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) | 268 |
| JFE Steel Corp. (Formerly NKK Bars & Shapes Co.) (Sendai, Japan) | A | | Bloom | Y | 1A | 310 x 400 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 174 |
| JFE Steel Corp. - Fukuyama (Fukuyama, Japan) | A | | Slab | Y | 1A | 220, 350, 300 mm | Carbon, Alloy, Heat Treated, Structural | 402 |

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|-------------|--------------|------------------|------------|-------------|---|---|------|
| JFE Steel Corp. - Keihin (Formerly Nippon Kokan Steel) (Keihin, Japan) | A | | Bloom | Y | 1A | 400 x 520 mm | Carbon, Boron, Alloy | 147 |
| | A | | Slab | Y | 1A | 250 mm | Carbon, Boron, Alloy, Heat Treated, Structural | 355 |
| JFE Steel Corp. – Mizushima (Formerly Kawasaki Steel) (Mizushima, Japan) | A | | Bloom | Y | 1A | 300 x 400 mm | Carbon | 144 |
| | A | | Slab | Y | 1B | 200 – 260 mm | Boron, Alloy, Structural | 356 |
| Jiangyin Xingcheng Special Steel Works Co. Ltd. Binjiang Phase I Production Line (Jiangyin, Jiangsu, P.R.C.) (Heat # Begins with "H") | A | | Billet/ Bloom | Y | 1A | 300 x 340 mm | Carbon, Boron, Alloy, Microalloy Bar, 1E1106, Special Cleanliness (1E2661B) | 226 |
| Jiangyin Xingcheng Special Steel Works Co. Ltd. Binjiang Phase II production line (Jiangyin, Jiangsu, P.R.C.) (Heat # Begins with "E") | A | | Billet/ Bloom | Y | 1A | 200mm SQ, 390 x 510 mm 220 to 600 mm RD | Carbon, Alloy, Boron, Special Cleanliness (1E2661A), Microalloy Bar, 1E1106 | 279 |
| Jiangyin Xingcheng Special Steel Works Co. Ltd. Binjiang Phase III, Bloom line of special plate branch (Jiangyin, Jiangsu, P.R.C.) (Heat # begins with "S") | A | | Billet/ Bloom | Y | 3 | 200x200, 240x240 (Dia. 280/330/350/380/390/45 0/500 mm) | Carbon, Alloy, Boron | 332 |
| Jiangyin Xingcheng Special Steel Works Co. Ltd. Binjiang Phase III, Slab line of special plate branch (Jiangyin, Jiangsu, P.R.C.) (Heat # begins with "S") | L | | Slab | Y | 1B | 150x1600-3250mm 200/250/300/370 x 1400-2600 mm | Carbon, Alloy, Heat Treated, Structural | 323 |
| Jiangyin Xingcheng Special Steel Works Co. Ltd. Huashan Plant (Jiangyin, P.R.C.) (Heat # Begins with "R") | A | | Billet/ Bloom | Y | 1A | 150 mm SQ 180 mm SQ | Carbon, Boron, Alloy, | 261 |
| JianLong Beiman Special Steel Co., Ltd. (Formerly Beiman Special Steel Co., Ltd, Beixing Plant) (Qiqiha'er, Heilongjiang, P.R.C.) | A | | Billet/ Bloom | Y | 3 | 180 x 180, 250 x 280, 240 x 240 mmDia. 450/550/650 mm | Carbon, Alloy, Boron | 324 |
| Jinan Iron & Steel Co., LTD, Steelmaking shop of wide/heavy plate plant (Jinan, Shandong, P.R.C) | A | | Slab | Y | 1B | 200 x 1700mm 270x2100mm 250/300/x1800~2300m m | Carbon, Alloy, Heat Treated, Structural | 272 |
| Jindal Iron & Steel Co. Ltd. (JSW) (Vijayanagar, India) | A | | Slab | | 1B | 220 X 800-1300 mm | Carbon, Alloy, Structural | 245 |

Figure 1 (Continued on next page)

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|-------------|--------------|--------------|------------|-------------|---|---|------|
| Jindal Steel & Power Ltd. (JSPL) (Angul, Odisha, India) | A | | Slab | Y | 1B | 200, 260, 300 mm x 1500-2300 mm | Carbon, Alloy, Heat Treated, Structural | 343 |
| JSW Steel Ltd. (Formerly Jindal Steel Works) Salem Works Tamil Nadu, India | A | | Billet/Bloom | Y | 3 | 340x400 mm 160 mm SQ 250 mm SQ 160-310 mm RD | Carbon, Alloy | 321 |
| Kangwon Industries, Ltd. (Pohang, S. Korea) | A | | Billet/Bloom | Y | 1A | 120 to 200 mm SQ 270 x 320 & 320 x 430 mm | Carbon, Boron, Alloy | 180 |
| Kobe Steel (Kakogawa, Japan) | A | | Bloom | Y | 1A | 380 x 600 mm 300 x 430 mm | Carbon, Boron, Alloy, Microalloy | 178 |
| Kobe Steel (Kakogawa, Japan) CC6 | L | | Bloom | Y | 1A | 380 x 600 mm 300 x 430 mm | Carbon, Boron, Alloy, Microalloy, Special Cleanliness (1E2661A) | 357 |
| Krakatau POSCO PT. (Krakatau, Indonesia) | A | | Slab | Y | 1A | 230 mm x 1100-2300 mm | Carbon, Alloy, Structural | 340 |
| Krakatau Steel PT (PERSERO) (Cilegon Banten, Indonesia) | A | | Slab | Y | 1B | 200 x 800-2080 mm | Carbon, Alloy, Structural | 297 |
| Laiwu Special Sub company of Shan Steel. (Laiwu, Shandong, P.R.C) | L | | Billet/Bloom | Y | 3 | 180mmX220mm, 260mmX300mm | Carbon, Alloy | 432 |
| Maanshan Iron and Steel Co., Ltd. No. 4 Steelmaking & Rolling Plant (Anhui Province, P.R.C) | L | | Slab | Y | 1B | 230 x 950 – 2150 mm | Carbon, Alloy, Structural | 326 |
| Mahindra Sanyo Special Steel Pvt. Ltd. (Formerly Mahindra Ugine Steel Co. Ltd.) (MUSCO) (Khopoli, India) | L | | Ingot | Y | 1 | 2, 3 and 6 ton | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 242 |
| | L | | Billet/Bloom | Y | 1A | 145X160 mm to 200X250 mm | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 360 |
| Mitsubishi Steel (Muroran, Japan) | A | Y | Bloom | Y | 1A | 515 X 370 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 146 |
| Nanjing Iron & Steel United Co, Ltd, EAF Plant (For Long Production Line) (Nanjing, Jiangsu, P.R.C) | A | | Billet/Bloom | Y | 1A | 150 mm SQ 150 x 220 mm to 320 x 480 mm 160 mm RD to 230 mm RD | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) | 288 |
| Nanjing Iron & Steel United Co., Ltd, Plate/Coil production line (Nanjing, Jiangsu, P.R.C) | A | | Slab | Y | 1B | 150 x 1600-3250 mm, 180/220/260 x 1600-2300 mm | Carbon, Alloy, Heat Treated, Structural | 280 |

Figure 1 (Continued on next page)

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|--|--------------|---------------|------------|-------------|-------------------------------------|---|------|
| Nippon Steel & Sumitomo Metal, Kashima Works (Formerly Sumitomo Metal) (Kashima City, Japan) | A | | Slab | Y | 1A | 190 – 300 mm | Carbon, Boron, Alloy, Heat Treated, Structural | 169 |
| Nippon Steel & Sumitomo Metal, Kimitsu Works (Formerly Nippon Steel) (Kisarazu City, Japan) | A | | Slab | Y | 1A | 245 mm 320 mm | Carbon, Boron, Alloy, Heat Treated, Structural | 190 |
| Nippon Steel & Sumitomo Metal (Formerly Sumitomo Metal) (Kokura, Japan) | A | | Ingot | Y | 1 | | Carbon, Boron, Alloy | 151 |
| Nippon Steel & Sumitomo Metal, Muroran Works (Formerly Nippon Steel) (Muran City, Japan) | A | Y | Bloom | Y | 1A | 350 x 560 mm | Carbon, Boron, Alloy, Microalloy Bar | 148 |
| Nippon Steel & Sumitomo Metal, Nagoya Works (Formerly Nippon Steel) (Tokai City, Japan) | A | | Slab | Y | 1A | 245 mm 320 mm | Carbon, Boron, Alloy, Heat Treated, Structural | 217 |
| Nippon Steel & Sumitomo Metal, Wakayama Works (Formerly Sumitomo Metal) (Wakayama City, Japan) | A | Y | Ingot | Y | 1 | | Carbon, Boron, Alloy, Microalloy Bar, 1E2661A | 152 |
| Nisshin Steel (Kure, Japan) | A | | Slab | Y | 1A | 200 x 1220 mm | Carbon, Alloy, Structural | 234 |
| Pan'gang Group Chengdu Steel & Vanadium Co. Ltd. (CSST) -EAF plant (Chengdu, Sichuan, P.R.C) | L | | Billet Bloom | Y | 3 | Dia. 200-350mm | Carbon, Alloy | 337 |
| Panzhihua Iron & Steel Group Co., LTD (Panzhihua, Sichuan, P.R.C) | L | | Billet/ Bloom | Y | 1A | 280 x 325 mm 280 X 380 mm | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 252 |
| POSCO (Formerly Pohang Steel Co. Ltd., Pohang, Korea) | A | | Slab | Y | 1A | 200, 220 250, 300, 400 mm | Carbon, Boron, Alloy, Heat Treated, Structural | 173 |
| | L | | Billet | Y | 1A | 120 mm SQ 160 mm SQ | Carbon, Boron, Alloy | 361 |
| | L | | Bloom | Y | 1A | 300 x 400 mm | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) | 362 |
| POSCO (Gwangyang, Korea) | A | | Slab | Y | 1A | 300 mm, (400 mm from Posco, Pohang) | Carbon, Boron, Alloy, Structural (*) | 310 |
| | Note (*): 2:1 Reduction Ratio is permitted. 3:1 Reduction Ratio is still required for ROPs materials | | | | | | | |
| POSCO Specialty Steel Company (Chang Won City, South Korea) | L | | Ingot | Y | 1 | | Carbon, Alloy | 284 |

Figure 1 (Continued on next page)

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|-------------|--------------|------------------|------------|-------------|--|--|------|
| RMG Alloy Steel Ltd., (Formerly Remi Metals Gujarat Ltd.) (Bharuch, Gujarat, India) | A | | Ingot | Y | 1 | 340/418 – 800/975 mm SQ, 2-10t | Carbon, Boron, Alloy | 298 |
| | A | | Billet/ Bloom | Y | 1A | 150x150, 198, 232, 262 and 308 mm Oct, 280x350 mm | Carbon, Boron, Alloy, Special Cleanliness (1E2661A) | 363 |
| SAARLOHA Advanced Materials Private Ltd. (Formerly Kalyani Carpenter Special Steel Ltd.) (Pune, India) | A | | Ingot | Y | 1 | 370X285 mm to 790 X 660 mm 994 mm RD | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 243 |
| | A | Y | Billet/ Bloom | Y | 1A | 160X160 mm to 320X400 mm | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 358 |
| SAIL – Bokaro Steel Plant (Bokaro, India) | A | | Slab | | 1B | 200,225,250 X 940- 1850 mm | Carbon, Alloy, Structural | 267 |
| SAIL – Rourkela Steel Plant (Rourkela, India) | L | | Slab | Y | 1B | 180-120 x 600-1300 mm | Carbon, Alloy, Structural | 271 |
| SAIL – Rourkela Steel Plant, New Plate Mill (Rourkela, Odisha, India) | L | | Slab | Y | 1B | 220, 250, 300 X 1200 - 2400 mm | Carbon, Alloy, Structural | 433 |
| Sanyo Steel (Himeji, Japan) | A | | Bloom | Y | 1A | 380 x 490 mm | Carbon, Alloy, Special Cleanliness (1E2661A) | 177 |
| SeAH Besteel Corp. (Formerly Kia Steel Co., Ltd.) (Kunsan, S. Korea) | L | | Ingot | Y | 1 | | Carbon, Alloy | 104 |
| | A | | Bloom | Y | 1A | 370 x 480 mm | Carbon, Boron, Alloy | 364 |
| Shanxi Taigang Stainless Steel Co. Ltd. (TISCO) No. 2 Steelmaking plant (Shanxi, Taiyuan, P.R.C.) | A | | Slab | Y | 1B | 200/230 x 2150 mm | Carbon, Alloy, Structural | 338 |
| Shijiazhuang Iron & Steel Co. Ltd (Shijiazhuang, Hebei, P.R.C.) | A | | Billet | Y | 1A | 150 mm SQ 180 mm SQ 220x300 mm to 300x360 mm | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 273 |
| Shin Kansai Steel (Formerly Rinko Steel) (Osaka, Japan) | A | | Billet | | 3 | 100 to 210 mm SQ | Carbon | 209 |
| Suzhou Suxin Special Steel Co. Ltd (Suzhou, Jiangsu, P.R.C) | A | | Billet/ Bloom | Y | 1A | 160x160, 180x180, 195x195, 220x220, 240x240, 290x330 | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) | 287 |
| Tata Steel Ltd. (Formerly Tata Iron & Steel Co.) (TISCO) (Jamshedpur, India) | A | | Slab | Y | 1B | 210 X900-1550 mm | Carbon, Alloy, Structural | 240 |
| Tata Steel Ltd (Kalinganagar, Odisha, India) | L | | Slab | Y | 1B | 210 - 250 X 1000 - 2150 mm | Carbon, Alloy, Structural | 434 |
| Tianjin Pipe (Group) Co. (TPCO), No. 2 Steelmaking Plant (Tianjin, P.R.C.) | L | | Billet Bloom | Y | 3 | 150, 210, 250, 270 mm RD | Carbon, Alloy | 233 |
| Topy Industries (Toyohashi, Japan) | A | | Bloom | Y | 1B | 200 x 300 mm 280 x 550 mm | Carbon, Boron, Alloy | 161 |

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|---|-------------|--------------|--------------|------------|-------------|---|--|------|
| Usha Martin Limited- Usha Alloys and Steels Division, (Jamshedpur, India) | A | | Billet | Y | 3 | 130 x 130 mm to 300 x 360 mm | Carbon, Alloy, Boron, | 264 |
| Vardhman Special Steels, (Ludhiana, India) | A | | Billet | Y | 1A | 125 mm SQ 160 mm SQ 200 mm SQ | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) | 269 |
| Vizag Steel Plant (VSP) (Visakhapatnam, India) | L | | Bloom | | 3 | 320 x 250 mm 250 x 250 mm | Carbon | 270 |
| Wuhan Iron & Steel Co. Ltd., (Wuhan, Hubei, P.R.C.) | A | | Slab | Y | 1B | 210-250 x 900-1600 mm 230-250 x 1600-2150 mm | Carbon, Alloy, Heat Treated, Structural | 237 |
| Wuyang Iron and Steel Co. Ltd. Hansteel Group Corporation (Wuyang, Henan, P.R.C.) | A | | Ingot | Y | 1 | 1715x655 mm | Carbon, Alloy, Heat Treated, Structural | 192 |
| | A | | Slab | Y | 1B | 250,210,300mm x 1200- 1900 mm | Carbon, Alloy, Heat Treated, Structural | 365 |
| Wuyang Iron and Steel Co. Ltd–New production line. Hansteel Group Corporation (Wugang, Henan, P.R.C.) | A | | Slab | Y | 1B | 200 – 330 mm x 1300- 2500 mm | Carbon, Alloy, Heat Treated, Structural | 281 |
| Xining Special Steel Company Ltd.–No. 3 steelmaking plant (Xining, Qinghai, P.R.C) | L | | Bloom | Y | 1A | 250mmx280mm, 410mmx530mm | Carbon, Alloy, Boron, Special Cleanliness (1E2661A), Microalloy bar (1E1106) | 429 |
| Zenith Steel Group Co. Ltd, Electric Furnace Steelmaking Plant (Changzou, Jiangsu, P.R.C.) | L | | Bloom | Y | 1A | 220mm X 260mm | Carbon, Alloy, Boron | 448 |
| Australia | | | | | | | | |
| Bluescope Steel Ltd. (Formerly BHP) (Wollongong, NSW, Australia) | A | | Slab | Y | 1A | 230 mm 300 mm | Carbon, Boron, Alloy, Structural | 159 |
| Europe | | | | | | | | |
| ABS – Acciaierie Bertoli Safau (Udine, Italy) | A | | Ingot | Y | 1 | 450-900 mm RD 3.8-20t 500-710 mm SQ 4.5-6.5t 8-24 Faces Polygonal, 9.5-85t 900/ (300-600) mm Hollow RD, 17-10t | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 167 |
| ABS – Acciaierie Bertoli Safau (Udine, Italy) CC1 | A | | Bloom | Y | 1A | 200 mm RD, 220 mm RD, 270 mm RD, 310 mm RD, & 405 mm RD | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 366 |
| ABS – Acciaierie Bertoli Safau (Udine, Italy) CC2 (Luna Caster) | A | | Bloom | Y | 1A | 270 mm RD | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 367 |

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|---|-------------|--------------|-----------------|------------|-------------|--|--|------|
| ABS – Acciaierie Bertoli Safau (Udine, Italy) CC3 (Hercules Caster) | A | | Bloom | Y | 1A | 405 mm RD, 500 mm RD, 600 mm RD, 700 mm RD, 750 mm RD, and 850 mm RD | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 405 |
| ABS Sisak d.o.o., Sisak, Croatia | A | | Billet Bloom | Y | 1B | 210, 250, 280, 320, 410 mm RD, 160,170 mm SQ | Carbon, Alloy, Boron | 350 |
| ACP Oliner SpA (Civitate al Piano, Italy) | L | | Ingot | Y | 1 | 500/1450 mm RD, 4.7- 50t 1200/2200 mm Fluted, 18-105t 880/980-1825/2050 mm RD, 7-93t 410/475- 860/975 mm SQ, 2.6- 13.2 t 1420*420- 2085*725/1340*380- 2045*630 mm, 5-28t | Carbon, Alloy | 368 |
| | A | | Billet | Y | 3 | 100 mm to 140 mm SQ 100 mm to 135 mm RD | Carbon, Boron | 239 |
| ArcelorMittal Dabrowa Gornicza (Dabrowa Gornicza, Poland) | L | | Slab | Y | 3 | 220, 250, 300 mm 1000-2190 mm | Carbon, Alloy, Structural | 435 |
| ArcelorMittal Galati - Caster #1&4 (Galati, Romania) | A | | Slab | Y | 1B | 200-300 x 1050-1550 mm | Alloy, Carbon, Structural | 344 |
| ArcelorMittal Krakow (Krakow, Poland) | A | | Slab | Y | 1B | 175, 220 mm 740-1580 mm | Carbon, Structural | 346 |
| ArcelorMittal Ruhrort (Formerly Mittal Steel Ruhrort) (Duisburg, Germany) | A | Y | Bloom | Y | 1A | 320 mm x 320 mm SQ | Boron, Alloy, Special Alloy, Microalloy Bar, 1E1106, Special Cleanliness (1E2661A) | 187 |
| ArcelorMittal Warszawa (Formerly Mittal Siderurgia Huta LW) (Warsaw, Poland) | A | | Bloom | Y | 1B | 40 mm SQ 160 mm SQ, 220 mm SQ | Carbon, Boron, Alloy | 259 |
| ASCOMETAL (Usine de Fos-sur-Mer, France) | A | Y | Ingot | Y | 1 | Mid-Section 0.33 m ² , 6.2t Mid-Section 0.41 m ² , 7.5t | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 143 |
| ASCOMETAL (Usine d'Hagondange, France) | A | | Bloom | Y | 1A | 240 x 320 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 130 |
| ASCOMETAL (Usine des Dunes, France) | A | | Ingot | Y | 1 | 658/631 mm RD, 6.5t | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 126 |
| | A | | Bloom | Y | 1B | 254 mm RD to 325 mm RD | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 370 |
| Ascoval (Formerly V&M Saint-Saulve Steel Works) (Saint-Saulve, France) | L | | Bloom | Y | 1B | 140 to 310 RD | Carbon, Alloy | 294 |

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|---|---|--------------|--------------|------------|-------------|---|--|------|
| BGH Edelstahl Siegen GmbH (Siegen, Germany) | A | Y | Ingot | Y | 1 | | Carbon, Alloy, Special Cleanliness, Microalloy (1E2661A) | 121 |
| Bochumer Verein (Formerly Vereinigte Schiedwerke) (Bochum, Germany) | A | Y | Ingot | Y | 1 | | Carbon | 119 |
| British Steel Ltd. (Formerly Tata Steel UK Ltd.) (Lackenby, U.K.) | A | | Slab | Y | 1B | 225 mm to 295 mm | Carbon, Boron, Alloy, Structural | 132 |
| | A | | Bloom | Y | 1B | 254 mm SQ, 330 x 254 mm to 483 x 305 mm | Carbon, Boron, Alloy | 379 |
| British Steel Ltd. (Formerly Tata Steel UK Ltd.) (Scunthorpe, U.K.) | A | | Bloom | Y | 1B | 355 mm x 750 mm | Carbon, Boron, Alloy | 197 |
| | A | | Slab | | 1B | 230 mm X 305 mm | Carbon, Boron, Alloy, Structural (*) | 381 |
| | Note (*): 2:1 Reduction Ratio is permitted. 3:1 Reduction Ratio is still required for ROPs materials | | | | | | | |
| | A | | Bloom | Y | 1A | 330 x 254 mm to 483 x 305 mm | Carbon, Boron, Alloy | 382 |
| Cognor S.A. Stalowa Wola (Formerly Huta Stali Jakosciowych S.A. (also known as HSJ)) (Stalowa Wola, Poland) | A | | Bloom | Y | 1A | 270 X 320 mm | Carbon, Boron, Alloy, Special Cleanliness (1E2661A) | 222 |
| | L | | Slab | Y | 3 | 130 X 800 mm, 180 X 800 mm | Carbon, Boron, Alloy, Structural | 375 |
| Deutsche Edelstahlwerke GmbH (Formerly Edelstahlwerke) (Witten [Formerly located in Krefeld], Germany) | A | Y | Ingot | Y | 1 | 412.5 – 625 mm | Carbon, Boron, Alloy, Special Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 140 |
| | A | | Bloom | Y | 1B | 475 X 340 mm | Carbon, Boron, Alloy, Special Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 371 |
| Deutsche Edelstahlwerke GmbH (Formerly Krupp Stahl) (Siegen, Germany) | A | Y | Ingot | Y | 1 | | Alloy, High Carbon, Special Cleanliness (1E2661B) | 135 |
| | A | Y | Billet | Y | 1A | 265 mm SQ | Low Carbon, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 372 |
| Dillinger (Dillingen/Saar, Germany) (ArcelorMittal Group) | A | | Ingot | Y | 1 | | Carbon, Boron, Alloy, Heat Treated, Structural | 373 |
| | A | | Slab | Y | 1B | 200 mm - 600mm | Carbon, Boron, Alloy, Heat Treated, Structural | 110 |
| Duferco Makstil (Zelezara, Macedonia) | L | | Slab | N | 1B | 200 and 250 mm | Carbon, Structural | 277 |
| Duferdofin Nucor (San Zeno Naviglio (BS) Italy) | A | | Billet | Y | 1B | 160 and 200 mm | Carbon, Alloy, Boron | 442 |

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|---|-------------|--------------|------------------|------------|-------------|---|--|------|
| Edelstahlwerke Buderus A.G. (Wetzlar, Germany) | A | Y | Ingot | Y | 1 | | Boron, Alloy, Special Cleanliness (1E2661A) | 103 |
| GMH (Formerly Georgsmarienhütte) (Germany) | A | | Ingot | Y | 1 | | Carbon, Boron, Alloy, Special Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 137 |
| | A | | Billet/ Bloom | Y | 1A | 165 mm SQ 230 mm SQ | Carbon, Boron, Alloy, Special Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 374 |
| Hüttenwerke Krupp Mannesmann GmbH (Duisburg, Germany) | L | | Bloom | Y | 3 | 180 to 406 mm RD | Carbon, Alloy | 295 |
| Ilseburger Grobblech (Salzgitter, Germany) | A | | Slab | Y | 1B | 250 mm | Carbon, Structural | 275 |
| INDUSTEEL (Charleroi, Belgium) (Formerly Fabrique de Fer) (ARCELOR Group) | A | | Slab | Y | 1B | 300 x 2150 mm | Carbon, Alloy, Boron, Structural | 105 |
| ISD Alchevsk Iron and Steel Works (AMK) (Luhansk Region, Ukraine) | A | | Slab | Y | 1B | 200 – 300 mm | Carbon, Alloy, Structural | 327 |
| ISD Huta Czysta (Czestochowa, Poland) | A | | Slab | Y | 1A | 225 mm x 1100 mm to 2000 mm | Carbon, Alloy, Structural | 101 |
| Lech – Stahlwerke GmbH (Meitingen, Bavaria, Germany) | A | | Billet | Y | 1A | 170 mm SQ 200 mm SQ | Boron, Alloy, Special Cleanliness (1E2661A) | 186 |
| Liberty Steel (Formerly Tata Steel UK Ltd.) (Rotherham, U.K.) | A | Y | Ingot | Y | 1 | | Carbon, Boron, Alloy, Special Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 128 |
| | A | Y | Bloom | Y | 1A | 560 x 400 mm 180 mm SQ 210 mm SQ | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 380 |
| Liberty Steel (Formerly Tata Steel Specialty) (Stocksbridge, U.K.) | A | | Ingot | Y | 1 | 653/490-721/550 mm SQ 5.4-6.6t 619/598-860/845 mm RD 6.1-12.8t 660-915 mm RD 4.3-8.2t 555 mm SQ 4.3t | Carbon, Boron, Alloy, Special Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 134 |
| Metinvest Azovstal (Mariupol, Ukraine) | L | | Slab | Y | 1B | 220 – 300 mm | Carbon, Alloy, Heat Treated (A514), Structural | 329 |
| NLMK (Lipetsk, Russia) | A | | Slab | Y | 1B | 200 – 250, 310 & 355 mm | Carbon, Alloy, Structural | 328 |
| NLMK (Verona, Italy) | L | | Ingot | Y | 1 | 5 – 81 T | Carbon, Alloy, Boron | 315 |

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|---|-------------|--------------|------------------|------------|-------------|---|---|------|
| OEMK (Oskol Electric Steel Works) (Stary Oskol, Belgorodskaya Oblast, Russia) | L | | Bloom | Y | 1A | 360 x 300 mm | Carbon, Boron | 254 |
| OMK Strip Mill (Vyksa, Russia) | L | | Slab | Y | 1B | 70-90 mm x 830-1830 mm | Carbon, Alloy, Structural | 341 |
| Ovako Bar AB (Formerly Ovako Steel) (Smedjebacken, Sweden) | A | | Billet | | 1B | 200 mm SQ | Carbon, Alloy, Boron | 120 |
| Ovako Imatra Oy AB (Formerly Imatra Steel Oy) (Imatra, Finland) | A | | Bloom | Y | 1B | 370 x 310 mm | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) | 204 |
| Ovako Sweden AB (Formerly Ovako Steel (Hofors, Sweden) | A | | Ingot | Y | 1 | | Alloy, 1E1106, Special Cleanliness (1E2661B) | 171 |
| Riva Acciaio (Stabilimento di Caronno, Italy) | A | | Billet | N | 3 | 100 mm - 160 mm SQ 145 mm RD | Carbon, Boron, Alloy, Microalloy Bar | 221 |
| | A | | Billet | Y | 1A | 200 mm SQ 260 mm SQ | Carbon, Boron, Alloy, Microalloy Bar | 378 |
| Riva Acciaio (Stabilimento di Lesegno, Italy) | A | | Billet | Y | 1A | 160 mm SQ | Carbon, Boron, Alloy, Microalloy Bar | 129 |
| Saarstahl Voelklingen GmbH (Saar-Brucken, Germany) | A | Y | Billet/ Bloom | Y | 1A | 125 mm SQ to 240 mm SQ 240 x 320 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 127 |
| Severstal (Cherepovets, Russia) | A | | Slab | | 1B | 250 x 1020-1850 mm | Carbon, Structural | 236 |
| Sidenor (Basauri Plant) (Formerly GerdauSidenor) (Basauri, Spain) | A | | Billet | Y | 1A | 155 mm SQ 185 mm SQ | Carbon, Boron, Alloy, Special Cleanliness (1E2661A) | 118 |
| Sidenor (Reinosa Plant) (Formerly GerdauSidenor) (Santander, Spain) | A | | Ingot | Y | 1 | | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 195 |
| SIDMAR, (Gent, Belgium) (ARCELOR Group) | A | | Slab | Y | 1B | 950 mm-2630 mm 220 mm | Carbon, Structural | 248 |
| SIJ Acroni D.O.O. (Formerly Acroni) (Jesenice, Slovenia) | A | | Slab | Y | 1B | 200-300x1050-1550 mm | Carbon, Structural | 235 |
| | L | | Slab | | 1B | | Alloy, Heat Treated | 235 |
| Sollac Fos (Fos-Sur-Mer, France) (ARCELOR Group) | A | | Slab | Y | 1A | 220 mm | Carbon, Boron, Alloy, Structural | 194 |
| SSAB (Formerly Rautaruukki Oyj Raahe Works) (Raahe, Finland) | A | | Slab | Y | 1B | 210x (900-1900) mm (175 -270) x 1800 mm 210x(900-2000) mm | Carbon, Alloy, Heat Treated, Structural | 231 |
| Stahlwerk Bous GmbH (Germany) | A | | Ingot | Y | 1 | | Carbon, Alloy, Boron | 290 |
| | L | | Bloom | Y | 1B | | Carbon, Alloy, Boron | 406 |
| Svenskt Stal AktieBolag (SSAB) (Oxelosund, Sweden) | A | | Slab | Y | 1B | 220 x 1700 mm 290 x 1700 mm | Boron, Alloy, Heat Treated, Structural | 189 |
| Tata Steel Europe (Formerly Tata Steel) (Hoogovens, Netherlands) – plate | A | | Slab | Y | 1B | 200 mm – 225 mm | Carbon, Structural | 170 |

Figure 1 (Continued on next page)

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WROUGHT STEEL – APPROVED SUPPLIERS

DATE
25 MAY 2018

CHG NO
23

NUMBER
1E1861

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|-------------|--------------|--------------|------------|-------------|--|--|------|
| Tata Steel Europe (Formerly Tata Steel) (Ijmuiden, Netherlands) – bar | L | | Billet | Y | 1B | 200 mm SQ | Carbon, Boron, Alloy | 181 |
| Tata Steel Europe (Formerly Tata Steel UK Ltd.) (Port Talbot, U.K.) | A | | Slab | Y | 1B | 225 mm | Carbon, Alloy, Boron, Structural | 223 |
| Tenaris (Formerly DST – SidocaCorp.) (Dalmine Bg, Italy) | A | | Bloom | Y | 1B | 145 – 395 mm RD | Carbon, Alloy, Microalloy | 114 |
| Tenaris Silcotub – Calarasi (Calarasi, Romania) | A | | Billet | | 1B | 148 to 260 RD | Carbon | 305 |
| Thyssen Krupp Stahl AG (Duisburg, Germany) | A | | Slab | Y | 1B | 218 – 320 mm X 1200- 2400 mm | Carbon, Alloy, Boron, Heat Treated, Structural | 229 |
| Trinecke Zelezarny Moravia Steel (Trinec, Czech Republic) | A | | Bloom | Y | 1B | 250X320 mm, 320, 470 mm RD | Carbon, Alloy, Boron, Microalloy Bar | 230 |
| | L | | | | | | 1E2661A | |
| | A | | Bloom | Y | 1A | 410, 525 mm RD | Carbon, Alloy, Boron, Microalloy Bar | 383 |
| | L | | | | | | 1E2661A | |
| US Steel Kosice (Kosice, Slovakia) | A | | Slab | | 1B | 220 mm | Carbon, Structural | 276 |
| Venete SpA, (Padova, Italy) CC2 | A | | Billet | Y | 1A | 120 mm SQ 160 mm SQ | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 107 |
| Venete SpA, (Padova, Italy) CC3 | A | | Bloom | Y | 1A | 180 mm, 240 mm, & 280 mm SQ 280 mm & 350 mm RD | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 384 |
| Venete SpA, (Padova, Italy) CC4 | A | | Bloom | Y | 1A | 350 mm, 420 mm, 500 mm, 600 mm RD | Carbon, Alloy, Boron | 385 |
| Vitkovice Steel (Vitkovice, Czech Republic) | A | | Slab | Y | 1B | 145, 180, 250 mm, 900- 1580 mm | Carbon, Alloy, Structural | 347 |
| Voestalpine Stahl Donawitz GmbH (Leoben, Austria) CC2 | A | | Bloom | Y | 1B | 230 mm RD | Carbon, Alloy, Boron | 407 |
| Voestalpine Stahl Donawitz GmbH (Leoben, Austria) CC3 | L | | Bloom | Y | 1B | 280 x 390 mm | Carbon, Alloy, Boron | 408 |
| Voestalpine Stahl GmbH (Linz, Austria) | A | | Slab | Y | 1B | T:215, 250, 285 mm/W: 740,1650 mm | Carbon, Alloy, Heat Treated, Structural | 207 |
| North America | | | | | | | | |
| AK Steel – Middletown Works, Middletown, OH | L | | Slab | Y | 1B | 9" | Carbon, Structural | 056 |
| AK Steel (Formerly Severstal NA) (Dearborn, MI) | A | | Slab | Y | 1B | 8" | Carbon, Alloy, Boron, Structural | 094 |

Figure 1 (Continued on next page)

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| SUPPLIER | APP STAT | CRNK SHFT | CAST PROD | VAC DEG | CAST CLS | AS-CAST SIZE | STEEL TYPES | CODE |
|--|-------------|--------------|--------------|--------------|-------------|---|---|------|
| Altos Hornos de Mexico, S.A. (AHMSA) (Monclova, Coah, Mexico) | A | | Slab | | 1B | 8" | Carbon, Alloy, Boron, Structural | 046 |
| ArcelorMittal – Steelton LLC (Formerly Mittal Steel USA, Inc.) (Steelton, PA) | A | | Bloom | Y | 1B | 14.6"x 23.6" | Carbon, Alloy, Boron | 006 |
| ArcelorMittal Burns Harbor LLC (Formerly Mittal Steel USA, Inc – Burns Harbor) | A | | Slab | Y | 1B | 10" | Carbon, Alloy, Boron, Heat Treated, Structural | 007 |
| ArcelorMittal Cleveland Inc. (Formerly Mittal Steel USA, Inc – Cleveland, OH) | A | | Slab | Y | 1B | 9" | Carbon, Alloy, Structural | 030 |
| ArcelorMittal Coatesville LLC (Formerly Mittal Steel USA, Inc) (Coatesville, PA) | A | | Ingot | Y | 1 | | Carbon, Alloy, Boron, Structural | 052 |
| | A | | Slab | Y | 1B | 9" | Carbon, Alloy, Boron, Heat Treated, Structural | 387 |
| ArcelorMittal Dofasco (Formerly Dofasco Steel) (Hamilton, Ontario, Canada) | A | | Slab | Y | 1B | 8.5" | Carbon, Structural | 068 |
| ArcelorMittal Lazaro Cardenas (Formerly Mittal Steel Lazaro Cardenas) (Michoacan, Mexico) | A | | Slab | Y | 1B | 200 – 250 mm | Carbon, Alloy, Boron, Structural | 095 |
| ArcelorMittal USA – Indiana Harbor Works – Flat Carbon (Shop #3) (Formerly ArcelorMittal Indiana Harbor) | A | | Slab | Y | 1B | 10" | Carbon, Alloy, Structural | 018 |
| ArcelorMittal USA – Indiana Harbor Works – Flat Carbon (Shop #4) (Formerly ArcelorMittal Indiana Harbor) | A | | Slab | Y | 3 | 9.25" | Carbon, Alloy, Structural | 050 |
| ArcelorMittal USA, Inc – Riverdale (Formerly Mittal Steel USA, Inc) (Riverdale, IL) | L | | Slab | | 1B | 2" | Carbon, Alloy, Structural | 001 |
| Carpenter Technology Co. (Formerly Latrobe) (Latrobe, PA) | A | | Ingot | Y (VAR mill) | 1 | | Alloy, Special Cleanliness (1E2661B) | 019 |
| Charter Steel – Cleveland (Cuyahoga Heights, OH) | A | | Billet | Y | 1A | 7" SQ | Carbon, Alloy, Boron | 055 |
| Charter Steel – Saukville (Saukville, WI) | A | | Billet | Y | 1A | 5.5" SQ | Carbon, Alloy, Boron Special Cleanliness (1E2661A) | 025 |
| Ellwood National Steel (Irvine, PA) | A | | Ingot | Y | 1 | | Carbon, Alloy | 330 |
| Ellwood Quality Steels (New Castle, PA) | A | | Ingot | Y | 1 | 10" – 57.75" RD 10.5" x 52" – 51.8" x 72" | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 057 |

Figure 1 (Continued on next page)

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|---|-------------|--------------|--------------|------------|-------------|---|--|------|
| ESSAR Steel Algoma Inc. (Formerly Algoma Steel Corp. Ltd.) (Sault Ste. Marie, Ontario, Canada) | A | | Slab | | 1B | 8" | Carbon, Alloy, Boron, Heat Treated, Structural | 002 |
| | A | | Slab | | 1B | 72 – 85 mm | Carbon, Alloy, Structural | 388 |
| Evrar INC NA. Regina Steel (Saskatchewan, Canada) | L | | Slab | | 1B | 8" | Carbon, Alloy, Structural | 091 |
| Finkl and Sons Co. (Chicago, IL) | A | | Ingot | Y | 1 | 22 – 100" RD | Carbon, Alloy | 331 |
| Frisa Steel (Garcia, N.L. Mexico) | A | | Ingot | Y | 1 | 13"-38.5", 47", 56.5", 62", 76" RD, 39"X47" | Carbon, Alloy | 447 |
| | L | | Ingot | Y | 1 | | Boron | |
| Gerdau (Formerly Chaparral Steel) (Midlothian, TX) | A | | Billet | | 1B/3(*) | 6.5" SQ | Carbon, Alloy, Boron | 099 |
| Note (*): 1B for AI Fine Grain, 3 for V Fine Grain | | | | | | | | |
| Gerdau (Formerly Manitoba Rolling Mills) (Selkirk, Manitoba, Canada) | A | | Billet/Bloom | | 1B | To 16"x 10" | Carbon, Alloy, Boron | 063 |
| Gerdau - Long Steel NA (St. Paul, MN) | A | | Billet | | 1A | 5.5" SQ, 6.5" SQ | Carbon, Alloy, Microalloy | 010 |
| Gerdau Special Steel NA (Formerly MacSteel) (Monroe, MI) | A | | Billet | Y | 1A | 9.45" SQ | Carbon, Boron, Alloy, Microalloy Bar, Special Alloy, Special Cleanliness (1E2661A) | 072 |
| Gerdau Special Steel NA (Formerly MacSteel) (Ft. Smith, AR) | A | | Billet | Y | 1A | 6.5-9.25" RD | Carbon, Alloy, Boron, Microalloy Bar, Special Alloy, 1E1106, Special Cleanliness (1E2661A) | 038 |
| Gerdau Special Steel NA (Formerly MacSteel) (Jackson, MI) | A | | Billet | Y | 1A | 6.69" or 7" RD | Carbon, Boron, Alloy, Microalloy Bar, Special Alloy, 1E1106, Special Cleanliness (1E2661A) | 087 |
| IVACO Rolling Mills Ontario, Canada | L | | Billet | | 3 | 140 mm SQ | Carbon, Alloy | 039 |
| NLMK USA (Formerly Beta Steel Corp.) (Portage, IN) | L | | Slab | | 1B | 8.03" | Carbon, Alloy | 035 |
| North Star BlueScope (Delta, OH) | A | | Slab | | 1B | 4.0" | Carbon, Alloy, Structural | 098 |
| Nucor Steel Decatur, LLC (Decatur, AL) | A | | Slab | | 1A | 3.5" | Carbon, Alloy, Structural | 086 |
| Nucor Steel Arkansas (Hickman, AR) | A | | Slab | | 1B | 2" | Carbon, Structural | 093 |
| Nucor Steel Berkeley (Huger, SC) | A | | Slab | Y | 1B | 2" | Carbon, Alloy, Structural | 083 |
| Nucor Steel Gallatin (Formerly Gallatin Steel) (Ghent, KY) | A | | Slab | | 1B | 65 mm | Carbon, Alloy, Structural | 011 |

Figure 1 (Continued on next page)

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|--|---|--------------|--------------|------------|-------------|------------------------------|---|------|
| Nucor Steel Hertford County (Formerly Winton, NC) (Cofield, NC) | A | | Slab | Y | 1B | 6" | Carbon, Alloy, Heat Treated, Structural | 084 |
| Nucor Steel Indiana (Crawfordsville, IN) | A | | Slab | Y | 1B | 50 mm | Carbon, Alloy, Structural | 066 |
| Nucor Steel Nebraska (Norfolk, NE) SBQ Mill Only | A | | Billet | Y | 1A | 6 5/8" SQ | Carbon, Alloy, Boron, Microalloy Bar, Special Cleanliness (1E2661A) | 085 |
| Nucor Steel Memphis, Inc. (Memphis, TN) | A | | Bloom | Y | 1A | 267 mm RD to 511 mm RD | Carbon, Alloy, Boron, Special Alloy, Special Cleanliness (1E2661B) | 005 |
| Nucor Steel Tuscaloosa, Inc. (Formerly Corus) (Tuscaloosa, AL) | A | | Slab | | 1B | 5" | Carbon, Alloy, Structural | 042 |
| Republic Steel (Formerly RES – Canton) (Canton, OH) | A | | Bloom | Y | 1A | 10"X 13" CastRolled | Carbon, Alloy and Boron | 028 |
| | A | | Billet | Y | 1A | 7.5" and 9.75" SQ (Flexcast) | Carbon, Alloy and Boron | 390 |
| | A | | Ingot | Y | 1 | 610 mm to 940 mm RD | All Bar Grades | 391 |
| SSAB North American Division (Formerly IPSCO Steel Inc. Mobile) (Axis, AL) | A | | Slab | Y | 1B | 6" | Carbon (*), Alloy, Heat Treated, Structural (*) | 097 |
| | Note (*): 2:1 Reduction Ratio is permitted for Carbon and Structural 3:1 Reduction Ratio is still required for ROPs materials | | | | | | | |
| SSAB North American Division (Formerly IPSCO Steel Inc.) (Montpelier, IA) | A | | Slab | Y | 1B | 6" | Carbon (*), Alloy, Boron, Structural (*) | 026 |
| | Note (*): 2:1 Reduction Ratio is permitted for Carbon and Structural. 3:1 Reduction Ratio is still required for ROPs materials | | | | | | | |
| Steel Dynamics Inc. (Formerly Severstal Columbus) (Columbus, MS) | A | | Slab | Y | 1A | 2.65" x 36-74" | Carbon, Alloy, Structural | 033 |
| Steel Dynamics, Inc. (Butler, IN) | A | | Slab | | 1B | 2" | Carbon, Structural | 003 |
| Steel Dynamics, Inc. (Columbia City, IN) | A | | Bloom | Y | 1B | 14"x10" | Carbon, Alloy, Boron | 081 |
| Steel Dynamics, Inc. (Pittsboro, IN) | A | Y | Bloom | Y | 1A | 14.1"x10.3" | All Bar Grades, 1E1106, Special Cleanliness (1E2661A) | 060 |
| Steel of West Virginia, Inc. (Huntington, WV) | A | | Billet | | 5 | 4" – 8" SQ | Carbon, Structural | 048 |
| Stelco Hamilton Works (Formerly US Steel Canada) (Hamilton, Ontario, Canada) | A | | Slab | N | 1B | 9.45" | Carbon, Alloy, Boron, Structural | 051 |
| Stelco Lake Erie Works (Formerly US Steel Canada) (Nanticoke, Ontario, Canada) | A | | Slab | Y | 1B | 9.45" | Carbon, Alloy, Structural | 054 |
| Ternium (Hylsa) (Mexico S.A.) | A | | Slab | | 1B | 54 mm | Carbon, Alloy, Structural | 088 |

Figure 1 (Continued on next page)

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|--|-------------|--------------|--------------|------------|-------------|---|---|------|
| The Timken Co., Faircrest Plant (Canton, OH) | A | Y | Ingot | Y | 1 | 28" SQ | All Bar Grades, 1E1106, Special Cleanliness (1E2661B) | 401 |
| | A | | Bloom | Y | 1A | 18"x24" | Carbon, Alloy, Boron, Special Cleanliness (1E2661A) Special Alloy | 409 |
| The Timken Co., Harrison Plant (Canton, OH) | A | Y | Bloom | Y | 1A | 11"x 14 3/4" | All Bar Grades, 1E1106, Special Cleanliness (1E2661B) | 031 |
| Tubos de Acero de Mexico S.A. (TAMSA) (Veracruz, Mexico) | A | | Ingot | Y | 1 | 530 & 600 RD | Carbon, Alloy | 034 |
| | A | | Billet | Y | 1B | 215 – 370 mm RD | Carbon, Alloy | 393 |
| US Steel (Div. Of USX Corp.) (Gary, IN) | A | | Slab | Y | 1B | 9", 12" | Carbon, Alloy, Boron, Structural | 036 |
| US Steel Granite City Works (Formerly National) (Granite City, IL) | A | | Slab | | 1B | 8.75" | Carbon, Alloy, Structural | 071 |
| US Steel Great Lakes Works (Formerly National) (Ecorse, MI) | A | | Slab | Y | 1B | 10" | Carbon, Alloy, Structural | 092 |
| South America | | | | | | | | |
| ArcelorMittal Monlevade (Joao Monlevadi, MG, Brazil) | L | | Billet | | 3 | 155 mm SQ | Carbon, Alloy, Boron | 436 |
| ArcelorMittal Tubarao (Formerly CST) (Serra, ES, Brazil) | A | | Slab | Y | 1B | 200- 250 mm | Carbon, Alloy, Structural | 317 |
| Companhia Siderurgica Nacional (CSN) (Volta Redonda, RJ, Brazil) | L | | Slab | Y | 1B | 250 mm | Carbon, Alloy, Structural | 318 |
| CSP - Companhia Siderurgica do Pecem (Sao Goncalo do Amarante, CE, Brazil) | L | | Slab | Y | 1A | 220-300 x 1100-2300 mm | Carbon, Alloy, Structural | 437 |
| GERDAU – Acos Finos Piratini (Charqueadas, Rio Grande do Sul, Brazil) | A | | Ingot | Y | 1 | 785 – 894 mm OCT X 1750MM | Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 165 |
| | A | Y | Billet | Y | 1A | 150 mm SQ 240 mm SQ | Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661A) | 394 |
| GERDAU – Acos Villares (Pindamonhangaba, Brazil) | A | | Ingot | Y | 1 | 513 mm & 536 mm SQ 528 X 628 mm & 581 X 716 mm | Carbon, Boron, Alloy, Microalloy Bar, Special Cleanliness (1E2661B) | 157 |
| Gerdau Acominas (Ouro Branco-MG, Brazil) | L | | Slab | Y | 1B | 220, 250 thick x 900 – 2100 wide | Carbon, Alloy, Structural | 319 |
| Gerdau Acominas (Ouro Branco-MG, Brazil) | A | | Bloom | Y | 1A | 300 x 460 | Carbon, Alloy, Boron | 395 |
| Gerdau Acominas (Ouro Branco-MG, Brazil) | A | | Billet | Y | 1A | 130 – 180 mm SQ | Carbon, Alloy, Boron | 396 |

Figure 1 (Continued on next page)

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|--|-------------|--------------|--------------|------------|-------------|---|--|------|
| MWL Brazil (São Paulo, Brazil) | L | | Ingot | Y | 1 | 378-487 mm RD 415-456 mm SQ 421x1029 mm | Carbon, Alloy, Boron | 438 |
| Ternium S.A. (Formerly Thyssen Krupp - TKCSA) (Santo Cruz, RJ, Brazil) | A | | Slab | Y | 1B | 255 mm | Carbon, Alloy, Structural | 320 |
| Usiminas (Ipatinga, MG, Brazil) | A | | Slab | Y | 1B | 200/250 mm | Carbon, Boron, Alloy, Heat Treated, Structural | 185 |
| Usiminas (Cubatão, Brazil) | A | | Slab | Y | 1B | 210/260 mm | Carbon, Alloy, Heat Treated, Structural | 201 |
| Vallourec & Sumitomo Tubos do Brasil, Jeceaba City - MG, Brazil | A | | Bloom | Y | 1A | 270, 310, 406 mm RD | Carbon, Alloy, Boron | 334 |
| Vallourec Tubos do Brasil S.A. (Belo Horizonte, MG, Brazil) | A | | Bloom s | Y | 3 | 180, 230 mm RD | Carbon, Alloy | 403 |
| Villares Metals - S.A. (Sumaré, Sao Paulo, Brazil) | A | | Ingot | Y | 1 | | Boron, Alloy | 155 |

Figure 1

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|--|-----------------|---|------|
| THESE MILLS ARE ONLY APPROVED TO FURTHER PROCESS MATERIAL MELTED AT APPROVED MILLS THE APPROVED MELTING MILL MUST BE IDENTIFIED IN THE TEST CERTIFICATE | | | |
| SUPPLIER | APPROVAL STATUS | PROCESS TYPE | CODE |
| Asia | | | |
| Dongkuk (Dangjin, South Korea) | Approved | Rolled Slabs Sourced from Approved Mills | 307 |
| Dongkuk (Pohang, South Korea) | Approved | Rolled Slabs Sourced from Approved Mills | 285 |
| Gunawan Dianjaya Steel PT (Surabaya, Indonesia) | Approved | Rolled Slabs Sourced from Approved Mills | 296 |
| Kobe Steel (Kobe, Japan) | Approved | Rolled Slabs Sourced from Approved Mills | 145 |
| LPN Plate Mill (Bangkok, Thailand) | Approved | Rolled Slabs Sourced from Approved Mills | 309 |
| Sahaviriya Plate Mill (SPM) (Bangpakong, Thailand) | Limited | Rolled Slabs Sourced from Approved Mills | 311 |
| Sahaviriya Steel Industries (SSI) (Prachuap Kirikhan Province, Thailand) | Limited | Rolled Slabs Sourced from Approved Mills | 312 |
| Australia | | | |
| Bisalloy Steel Pty Ltd. (Wollongong, NSW, Australia) | Approved | Heat Treated, Sourced from Approved mills | 232 |
| Europe | | | |
| Dillinger France (Dunkerque, France) | Approved | Rolled Slabs Sourced from Approved Mills | 193 |
| ISD Huta Czerwostochowa (Czerwostochowa, Poland) | Approved | Heat Treated (Up to 51 mm) | 376 |
| Liberty Steel - Dalzell (Formerly Tata Steel – Dalzell Works) (Motherwell, Lanarkshire Scotland, ML1 1PU) | Limited | Rolled Slabs Sourced from Approved Mills | 313 |
| NLMK Clabecq (Formerly Duferco Clabecq) (Clabecq, Belgium) | Approved | Rolled Slabs Sourced from Approved Mills, Heat Treated | 198 |
| SSAB Borlange (Borlange, Sweden) | Limited | Rolled Slabs Sourced from Approved Mills | 439 |
| OMK Plate Mill (Vyksa, Russia) | Limited | Carbon, Alloy, (Rolled Slabs Sourced from Approved Mills) | 342 |
| Tata Steel – Clydeside Works Cambuslang, Glasgow Scotland, G72 7TX | Limited | Heat Treated Plates Sourced from Tata – Dalzell Works and Tata – Scunthorpe | 314 |
| Trametal (Giglio di Nogaro/Udine, Italy) | Approved | Rolled Slabs Sourced from Approved Mills | 278 |
| North America | | | |
| AM/NS Clavert (Formerly Thyssen Krupp Steel USA) (Calvert, AL) | Approved | (Rolled Slabs from TKSA, Brazil) Carbon, Alloy | 316 |
| ArcelorMittal Steel (Formerly US Steel (Div. Of USX Corp.)) (Gary, IN) | Approved | Heat Treated | 322 |
| Evrar Oregon Steel (Portland, OR) | Limited | (Rolled Slabs Sourced from Approved Mills) Carbon, Alloy, Heat Treated | 090 |
| JSW Steel USA (Formerly Jindal) (Baytown, TX) | Limited | Rolled Slabs Sourced from Approved Mills | 044 |

Figure 2

| | | | |
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| APPROVED SUPPLIERS FOR TUBULAR PRODUCTS | | | | |
|---|---------------|-------------------------|-------------------------------|------|
| SUPPLIER | TYPE | Approval for Cold Drawn | Special Application Approvals | CODE |
| Asia | | | | |
| BaoShan Iron & Steel Co., LTD Steel Tube Subcompany (Shanghai, P.R.C.) | Seamless | N | | 227 |
| Daye Special Steel Co. Ltd/ Hubei Xinyegang Co., Ltd. Steel Tube Plant Huangshi, Hubei, P.R.C. | Seamless | N | | 353 |
| ISMT Ltd (Formerly Indian Seamless Steels & Alloys Ltd.) Eden Park, Viman Nagar Pune – 411014, India | Seamless | Y | ROPS 1E1102 | 268 |
| JFE Tubing - Fukuyama (formerly Nippon Kokan Tubing) Fukuyama, Japan | SAW, Seamless | N | | 274 |
| Katakura Steel Tube 14-12, 6-Chome, Mitejima Nishiyodogawa-Ku Osaka, Japan | ERW, Seamless | Y | 1E1102 | 188 |
| Marcegaglia China Co., Ltd (Yangzhou, Jiangsu, P.R.C) | ERW, Seamless | Y | 1E1102 | 339 |
| Maruichi Steel Tube Ltd. 16 Ishizu Nishi-Machi Sakai Osaka, Japan | ERW | N | ROPS | 249 |
| Nippon Steel & Sumitomo Corporation Wakayama Works (Formerly Sumitomo Metal Industries Ltd.) 1850 Minato, Wakayama, Japan | Seamless | Y | | 152 |
| | ERW | N | | |
| Nippon Steel Metal Products Co. Ltd. 17-12 Kiba 2 Chome Koto-Ku, Tokyo, Japan | ERW | N | ROPS | 218 |
| Pan'gang Group Chengdu Steel & Vanadium Co. Ltd. (CSST) 159 FQM & 340 MPM line (Chengdu, Sichuan, P.R.C) | Seamless | N | | 337 |
| RMG Alloy Steel Ltd. (Formerly Remi Metals Gujart Ltd.) Bharuch, Gujrat, India | Seamless | N | | 363 |
| SeAH Steel Corporation 14-1, Jangheung-Dong Nam-Gu, Pohang Kyunbuk, Korea | ERW | N | | 301 |
| Shenyang Dongyang Special Section Tube Co., Ltd (TTS) Shenyang, Liaoning, P.R.C | Seamless | N | ROPS | 304 |
| Showa Steel Tube Works 3-158 Kaison-Cho Sakai City Osaka Japan | ERW, Seamless | Y | | 138 |
| Tianjin Pipe (Group) Corporation (TPCO) (Tianjin, P.R.C.) | Seamless | N | | |
| Tube Product India, Large Tube Mill Thiruttani, India | ERW | Y | | 349 |

Figure 3 (Continued on Next Page)

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| APPROVED SUPPLIERS FOR TUBULAR PRODUCTS | | | | |
|---|---------------|-------------------------|-------------------------------|------|
| SUPPLIER | TYPE | Approval for Cold Drawn | Special Application Approvals | CODE |
| Tube Products of India (Exports Division) Post Box No.18, Avadi Chennai - 600 054, India | ERW | Y | | 266 |
| EUROPE | | | | |
| ALESIO TUBI-ARCELOR Group 10040 La Loggia, Statale n20 Km 4 Torino, Italia | ERW | N | ROPS | 265 |
| ArcelorMittal (formerly Vallourec Composants Automobile Hautmont) 12 Rue Des Usines B.P.#127 59330 Hautmont, France | ERW | N | | 111 |
| ArcelorMittal (formerly Vallourec Précision Etirage Usine) Z.I. Vitry Marolles - B.P. 77 51303 Vitry, France | ERW | Y | | 251 |
| ArcelorMittal Tubular Products Lexy (Formerly Tuberope) 54720 Lexy, France | ERW | N | ROPS | 206 |
| Benteler Stahl/Rohr GmbH Residenzstr.1 33104 Paderborn, Germany | ERW, Seamless | N | | 302 |
| Corus Tubes - CorbyWorks P.O. Box 101 Weldon Road Corby, England NN175UA | ERW | N | ROPS | 215 |
| Metsec plc (formerly Metal Sections Ltd.) Broadwell Rd. Oldbury, W. Midlands, England B694HE | ERW | N | ROPS | 224 |
| Ovako Faluvagen, 813 82 Hofors, Sweden | Seamless | N | | 392 |
| Productos Tubulares S.A. *** Carretera Galindoa Ugarte 48510 Valle de Trapaga (Vizcaya), Spain | Seamless | N | | 203 |
| Sadef Bruggesteeweg 60 8-8830 GITS, Belgium | ERW | N | ROPS | 225 |
| Structo Box 1003 Storfors, S-68829, Sweden | Seamless | Y | 1E1102 | 213 |
| Tenaris (formerly DST - SidocaCorp.) P.ZZA Caduti 6 Lugilio 44 I-24044 Dalmine, Bg, Italy | Seamless | Y | 1E1102 | 114 |
| Tenaris Silcotub - Zalau Bd. Mihai Viteazul, 93 450131, Zalau, Salaj, Romania | Seamless | N | | 306 |
| Trinecke Zelezarny Prumyslova 1000, 739 70 Trinec, Czech Republic | Seamless | N | | 348 |

Figure 3 (Continued on Next Page)

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| APPROVED SUPPLIERS FOR TUBULAR PRODUCTS | | | | |
|--|---------------|-------------------------|-------------------------------|------|
| SUPPLIER | TYPE | Approval for Cold Drawn | Special Application Approvals | CODE |
| Vallourec (formerly V & M Tubes France - Aulnoye Mill) 64 Rue De Leval B.P. #159 59520 Aulnoye Aymeries, France | Seamless | N | | 210 |
| Vallourec (formerly V & M Tubes France - Deville Mill) 42 Rue Laveisiere B.P. #14 76250 Deville Les Rouen Cedex, France | Seamless | N | | 211 |
| Vallourec (formerly V & M Tubes France) Saint Saulve Tube Mill Zone Industrielle No. 4 B.P.#2 59880 Saint Saulve Cedex, France | Seamless | N | | 212 |
| Vallourec (formerly Vallourec & Mannesmann Tubes V & M Deutschland GmbH) Rather Kreuzweg 106 / 40472 Düsseldorf, Germany | Seamless | N | | 291 |
| Vallourec (formerly Vallourec & Mannesmann Tubes V & M Deutschland GmbH) The Dusseldorf-Reisholz Works Henkelstr. 209 40599 Dusseldorf, Germany | Seamless | N | | 292 |
| Vallourec (formerly Vallourec Industries - Laigneville Mill) Usine 3, Place de La Gare B.P. #8 60290 Laigneville, France | ERW | Y | | 112 |
| voestalpine Stahl Schmidhutenstrasse No. 5 3502 Krems Lerchenfeld, Austria | ERW | N | ROPS | 207 |
| Welser Profile A-3341 Ybbsitz, Austria | ERW | N | ROPS | 246 |
| North America | | | | |
| ABTube Avenida Adolfo Lopez Mateos 1220 San Nicolas de los Garza, NL, Mexico CP: 66497 | ERW | N | | 427 |
| AK Tube 30400 East Broadway Walbridge, OH 43465 | ERW | N | | 064 |
| ArcelorMittal Marion 686 West Fairground Street Marion, OH 43302 | ERW | N | ROPS | 017 |
| ArcelorMittal Shelby 123 W. Main St. Shelby, OH 44875 | ERW, Seamless | Y | 1E1102 | 023 |
| ArcelorMittal Tubular Products Monterrey Carretera Monterrey Saltillo Km. 28.2 Escobedo, N.L Mexico 66050 | ERW | N | ROPS | 426 |
| Atlas (formerly Copperweld) 1855 E. 122nd St. Chicago IL, 60633 | ERW | N | ROPS | 053 |

Figure 3 (Continued on Next Page)

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| APPROVED SUPPLIERS FOR TUBULAR PRODUCTS | | | | |
|--|---------------|-------------------------|-------------------------------|------|
| SUPPLIER | TYPE | Approval for Cold Drawn | Special Application Approvals | CODE |
| Atlas Tube 200 Clark St. Harrow, ON N0R1G0 | ERW | N | | 008 |
| Atlas Tube 5039 N Co Rd 1015 Blytheville, AR 72315 | ERW | N | ROPS | 004 |
| Bull Moose Tube Company 29851 County Road 20 West Elkhart, IN 46517 | ERW | N | ROPS | 065 |
| Jackson Tube Service 8210 Industry Park Drive Piqua, OH 45356 | ERW | N | | 096 |
| Maruichi Leavitt Pipe & Tube, LLC 1717 W. 115th St. Chicago, IL 60643 | ERW | N | ROPS | 445 |
| Metal-Matic Inc. 62 92nd Street, SE Minneapolis, MN 55414 | ERW | Y | | 040 |
| Metal-Matic Inc. 7200 S Narragansett Ave Bedford Park, IL | ERW | Y | | 040 |
| Metal Matic Inc. 1701 Made Industrial Dr. Middletown, OH 45044 | ERW | Y | | 446 |
| Plymouth Tube Co. Industrial Park Rd. Eupora, MS 39744 | ERW | Y | | 059 |
| Plymouth Tube Company Streator, IL | ERW, Seamless | Y | | 014 |
| Plymouth Tube Company Winamac, IN | Seamless | Y | | 013 |
| Prolamsa Carretera a Colombia Km. 5.75 Escobedo, N.L. Mexico C.P. 66052 | ERW | N | ROPS | 389 |
| PTC Alliance 500 Frank Yost Lane Hopkinsville, KY 42240 | ERW | Y | | 009 |
| PTC Alliance Beaver Falls Plant 4400 West Third Avenue Beaver Falls, PA 15010 | ERW, Seamless | Y | 1E1102 | 443 |
| PTC Alliance P.O. Box 2298 640 Keystone St. Alliance, OH 44601 | ERW | Y | 1E1102 | 444 |
| Roll Forming Corporation (RFC) 1205 North Access Road Jeffersonville, IN 47130 | ERW | N | ROPS | 079 |

Figure 3 (Continued on Next Page)

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| APPROVED SUPPLIERS FOR TUBULAR PRODUCTS | | | | |
|---|----------|-------------------------|-------------------------------|------|
| SUPPLIER | TYPE | Approval for Cold Drawn | Special Application Approvals | CODE |
| Sharon Tube 20 Church Street Wheatland, PA 16161 | ERW | Y | | 386 |
| The Timken Co 1835 Dueber Avenue, S.W. Canton, OH 44706 | Seamless | N | | 031 |
| Tubos de Acero de Mexico S.A. (TAMSA) Veracruz, Mexico | Seamless | N | | 393 |
| USS Tubular Products (Formerly Lone Star Steel Co.) U.S. Highway 259 South Lone Star, TX 75668 | ERW | Y | | 062 |
| Welded Tube of Canada 111 Rayette Road Concord Ontario, Canada | ERW | N | ROPS | 061 |
| South America | | | | |
| Arverdi Metalfer Rodovia Engenheiro Ermenio de Oliveira Panteado, 2435, km 46 Joana Leite - Salto, SP, Cep: 13329-903, Brazil | ERW | Y | | 397 |
| Golin Rua Emília Golin, 50 Distrito Industrial São João da Boa Vista, SP, Brazil | ERW | N | | 398 |
| Nacional Tubos Rod. SP 147, Km 95 Limeira, SP, Brazil | ERW | N | | 399 |
| Tuberfil (Indaiatuba, SP, Brazil) (Tube) | ERW | N | | 369 |
| Tuper Av. Prefeito Ornith Bollmann, 1441, 89288-900 Sao Bento do Sul, SC, Brazil | ERW | N | | 441 |
| Vallourec Tubos do Brasil S.A. (formerly V&M do Brasil S.A.) Av. Olinto Meireles, # 65 Belo Horizonte - MG, Brazil | Seamless | Y | 1E1102 | 156 |
| voestapline Meincol R. Abel Postali, 539 - Distrito Industrial Caxias do Sul - RS, 95112-255, Brazil | ERW | N | | 404 |

Figure 3

| | | | |
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| APPROVED FLAT STEEL PROCESSORS | | APPROVED FLAT STEEL PROCESSORS | |
|--|----------------------|--|------------------|
| SUPPLIER | PROCESS TYPE | SUPPLIER | PROCESS TYPE |
| ABSTEEL Séptima Avenida #150, Monterrey 66000 Cd, Apodaca, N. L., Mexico | Stretcher Level Line | Plesa Steel, Monterrey Service Center Blvd. Milenium #5104 Apodaca, Nuevo León, Mexico CP 66600 | eDrive Leveling |
| Aceromex Carretera Laredo, km. 27 Ciénega de Flores, Nuevo León, Mexico C.P. 65550 | eDrive leveling | Serviadero Comercial Arco Vial Libramiento Noroeste Km 21.5 # 7007 General Escobedo, Nuevo León, México | eDrive Leveling |
| Central Coil Processing LLC 501 George Nelson Drive Portage, IN 46368 | Temper Mill | SSAB Central Inc. 1051 Tapscott Road Scarborough, Ontario M1X 1A1, Canada | Temper Mill |
| Feralloy Charleston Division 1020 North Steel Circle Huger, SC 29450 | Level Line | SSAB Minnesota Inc. 2500 West County Road B Roseville, Minnesota 55113-3873 | Temper Mill |
| Feralloy Midwest Portage 6755 Waterway Portage, IN 46368 | Temper Mill | SSAB Texas Inc. 13609 Industrial Road, Suite 114 Houston, Texas 77015 | Temper Mill |
| Feralloy Processing Company 600 George Nelson Drive Portage, IN 46368 | Temper Mill | Steel Technologies 307 Industrial Drive Clinton, NC 28328 | Level Line |
| Heidtman Steel 4400 County Road 59 Butler, IN 46721 | Stretcher Level Line | Steel Warehouse of Chattanooga 600 River Terminal Road Chattanooga, TN 37406 | Temper Mill |
| Kloeckner Metals (Formerly Namasco) 1090 North Steel Circle Huger, SC 29450 | Level Line | Steel Warehouse of Memphis 4768 Hungerford Road Memphis, TN 38175-2510 | Temper Mill |
| Olympic Steel 5060, 5080, & 5096 Richmond Road Bedford Heights, OH 44146 | Temper Mill | Steel Warehouse of Monterrey Antiguo Camino Escobedo - El Carmen 4000 General Escobedo N.L. MX C.P. 66052 | Temper Mill |
| Olympic Steel 6425 State Street Bettendorf, IA 52722 | Temper Mill | Steel Warehouse of South Bend 2722 West Tucker Drive Box 1377, South Bend, IN 46624 | Temper Mill |
| Plateplus Inc. (Formerly Cargill Steel) 4303 Kennedy Ave. East Chicago, IN 46312 | Temper Mill | Steel Warehouse of Quad Cities 4305 81st Ave West Rock Island, IL 61201 | Temper Mill |
| Plateplus Inc. (Formerly Cargill Steel) 2325 North St. Granite City, IL 62040 | Temper Mill | The Universal Steel Co. 6600 Grant Ave. Cleveland, OH 44105 | Strecher Leveler |
| | | Worthington - Porter 100 Worthington Dr. Porter, IN 46304 | Temper Mill |

Figure 4- Approved Steel Flat Processors

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APPENDIX A

Unapproved Suppliers with Three-Digit Codes by Region

Asia

| | |
|---|-----|
| Nippon Steel & Sumitomo Metal Corp. - Yawata Works (Formerly Nippon Steel) (Kitakyushu City, Japan) | 149 |
| Hengyang Valin Steel Tube Co., Ltd. (HYST) (Hengyang, Hunan, P.R.C) | 377 |
| Huaigang Special Steel Co., Ltd of Jiangsu Shagang Group (HuaiAn, Jiangsu, P.R.C.) | 449 |

Europe

| | |
|--|-----|
| Acciaierie Di Bolzano (Bolzano, Italy) | 183 |
| ArcelorMittal (Formerly Mittal Gandrange (Prior Ispat Gandrange)) (Gandrange, France) | 202 |
| BMZ Byelorussian Steel Works (Zhiobin, Gomel Region, Republic of Belarus) | 256 |
| Deltasider Cogne SpA (Cogne, Italy) | 102 |
| ESW RÖHRENWERKE (Eschweiler, Germany) (Tubing) | 263 |
| Hoesch Huettenwerke A.G. (Dortmund, Germany) (Possible it is now ThyssenKrupp Rothe Erde GmbH) | 115 |
| JSC Dnepropetstal (Cherepovets, Vologda, Russia) | 258 |
| LEALI (Borgo Valsugana – Italy) | 289 |
| Lenin Kohaszata Muvek, Hungary | 166 |
| Mannesmann (Düsseldorf, Germany) | 122 |
| MECHEL (Donetsk Electrometallurgical Plant) (formerly ISTIL) (Donetsk, Ukraine) | 255 |
| NLMK Clabecq (formerly Carsid) (Ittre, Belgium) | 205 |
| Nuova Deltasider Torino (Torino, Italy) | 117 |
| OVAKO (Formerly Fundia Steel, AB) (Koverhar, Finland) | 262 |
| Ovako Sweden AB (Formerly Ovako Hällefors AB) (Hällefors, Sweden) | 172 |
| Red October Volgograd Steel Works (Volgograd, Russia) | 253 |
| Rubiera Special Steel SpA (Formerly Ruberia SpA) (Rubiera, Italy) | 182 |
| Salzgitter A.G (Formerly Preussag Stahl A.G.) (Salzgitter, Germany) | 133 |
| Sidenor Azkoitia (Formerly Acerias Y Forjas De Azkoitia S.A.) (Azkoitia, Spain) | 162 |
| Sidenor Legazpi (Legazpi, Spain) | 283 |
| Sidenor Vitoria (Vitoria, Spain) | 260 |
| Thyssen Stahl A.G.-Krefeld (Krefeld, Germany) | 109 |
| Voest Alpine Schmidhüttenstrasse No. 5 3502 Krems Lerchenfeld Austria | 424 |

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APPENDIX A cont.

South America

| | |
|---|-----|
| Acesita - Cia. Acos Especiais Itabira (Timoteo, Brazil) | 153 |
| Acindar Grupo ArcelorMittal (Buenos Aires, Argentina) | 150 |
| Gerdau (Mogi das Cruzes, Brazil) | 154 |

North America

| | |
|--|-----|
| Alton Steel Co. (Formerly Laclede Steel Co., Alton, IL) | 020 |
| Commercial Metals Company (CMC) (Birmingham, AL) | 089 |
| Gerdau Ameristeel – Sand Springs (Formerly Sheffield Steel Corp.) (Sand Springs, OK) | 049 |
| Gerdau Corporation (Various Locations) (Unapproved Suppliers) | 037 |
| Greer Steel Co. (Dover, OH) | 032 |
| IRI International Corp. (Pampa, TX) | 070 |
| Kentucky Electric (Ashland, KY) | 074 |
| Koppel Steel Corp. (Beaver Falls, PA) | 073 |
| Lake Ontario Steel Co. (Whitby, Ontario, Canada) | 108 |
| Lasalle Steel (Hammond, IN) | 021 |
| Mittal Sidbec-Dosco (Formerly Ispat Sidbec-Dosco, Montreal, Quebec, Canada) | 058 |
| North Star Steel Co.-Wilton (Wilton, IA) | 080 |
| Northwestern Steel & Wire Co. (Sterling, IL) | 022 |
| Nucor Darlington (Darlington, SC) | 075 |
| Nucor Jewett (Jewett, TX) | 082 |
| Nucor Steel - Longview (Formerly LeTourneau Technologies, Inc.) (Longview, TX) | 067 |
| Republic Dunes (Gary, IN) | 024 |
| Republic Steel – Lorain (Formerly RES – Lorain) (Lorain, OH) | 077 |
| RG Steel (Formerly Severstal) (Sparrows Point, MD) | 047 |
| RG Steel (Formerly Severstal) (Warren, OH) | 029 |
| The Timken Co 1835 Dueber Avenue, S.W. Canton, OH 44706 | 422 |
| The Worthington Steel Co. (Cleveland, OH) | 045 |
| Wheeling-Pittsburgh Steel Company (Wheeling, WV) | 015 |

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