FOR PUBLIC RECORD

23 October 2018

THE DIRECTOR – INVESTIGATIONS 4

Anti-Dumping Commission
GPO Box 2013
Canberra ACT 2601

Dear Director,

Re: Review of Measures 489 – Steel Reinforcing Bar exported from South Korea and Taiwan

This submission is made in the absence of an opportunity for Liberty Steel to provide the Commission with an exporter visit briefing for Wei Chih Steel Industrial Co., Ltd **(Wei Chih)** in advance of commencement of the verification visit. Matters addressed in this submission are considered important by the Australian industry, and go to the technical aspects of:

- Model matching; and
- Theoretical to actual weight sales adjustment.

1. Model Control Codes

Wei Chih has ACRS accreditation in Australia for rebar (straight lengths only, not coil) produced to the Standard AS/NZS 4671:2001 Grade 500N for a range of nominal diameters from 12 to 40mm:

WEI CHIH STEEL

WEI CHIH STEEL INDUSTRIAL COMPANY LTD
TAINAN, TAIWAN

has satisfied the Authority that it complies with the relevant ACRS Quality and Operations Assessment Procedures. Where appropriate, and as listed below, it manufactures products as indicated by "√" below and is entitled to use the ACRS mark with these products.

Products manufactured :

Bar	12, 16 mm	✓
	20, 24, 28 mm	✓
	32, 36, 40 mm	✓

The goods exported to Australia by Wei Chih are likely to be Grade 500N only.
To ensure the most appropriate domestic grades are selected for comparison to the exported (Grade 500N) goods, Liberty Steel proposes the following Model Control Codes be applied:

Item	Category	Sub category
1	Prime	P: Prime NP: Non Prime
2*	Minimum yield strength specified by Standard produced to	<= 300MPa : Min yield strength less than or equal to 300MPa > 300MPa to <= 480MPa : Min yield strength greater than 300MPa but less than or equal to 480MPa > 480MPa to < 550MPa : Min yield strength greater than 480MPa but less than 550MPa >= 550MPa : Min yield strength greater than or equal to 550MPa
3**	Maximum Carbon Equivalent Value specified by Standard produced to	CES : Max Carbon Equivalent specified in Standard grade chemistry CEN : Max Carbon Equivalent not specified in Standard grade chemistry
4	Nominal diameter	<12mm >= 12mm to 16mm > 16mm to 32mm > 32mm
5	Length	<= 6m : less than or equal to 6m long > 6m to 12m : greater than 6m up to 12m long >12m: greater than 12m long

Note criteria for Items 2 & 3 must be compared based on the requirements specified in the AS/NZS or applicable Taiwanese domestic standard to which grades have been produced. It is not accurate or technically valid to compare minimum yield strengths achieved based on individual test certificates which are only representative of a batch of steel and necessarily need to exceed the minimum requirements of the given Standard i.e. you cannot "grade up" based on a batch test certificate meeting a higher strength grade's requirements. The grey-shaded sub-categories in the table are indicative of Grade 500N specified requirements.

*Minimum yield strength is considered the top criterion to match with the minimum 500MPa yield strength required for AS/NZS 4671:2001 Grade 500N exported to Australia. Reinforcing bar is selected based on this key property which is why the minimum yield strength is often reflected in the grade naming convention for Standards.

**Considered very important to match as the presence of a Carbon Equivalent specification in a Standard indicates chemistry control required for welding. Known welding procedures would exist for these grades. Grades that do not have a carbon equivalent specified are not pre-qualified/intended for welding and ought not be matched to Grade 500N.

The Wei Chih website provides a table containing several grades of rebar produced to various Standards, including grade 500N produced to AS/NZS 4671 (refer Table 2, below).

Based on a comparison of the Standards and Grades listed with the requirements for Grade 500N in terms of minimum yield strength and carbon equivalence, the grades produced (if sold domestically) by Wei Chih which are considered to be the most comparable to grade 500N, are the following:

Table 1: Wei Chih grades considered most comparable

Standard & Grade	Minimum Yield Strength (MPa)	Max %Carbon Equivalent (product)
AS/NZS 4671:2001 – Grade 500N	500MPa	Specified (max 0.46)
CNS 560:2006 – Grade SD490	490MPa	Specified (max. 0.59)
BS 4449:2005 – Grade B500B	500MPa	Specified (max. 0.52)

Table 2 : Wei Chih Rebar Specification Table

規格表 SPECIFICATION

標準 Standard	號數 Designation	標稱直徑 Nominal dia (mm)	單位重量 Unit weigh (kg/m)	容許差 Tolerance (%)
CNS 中國國家標準 560 A2006	D10	9.53	0.560	±7
	D13	12.7	0.994	
	D16	15.9	1.56	±5
	D19	19.1	2.25	
	D22	22.2	3.04	
	D25	25.4	3.98	
	D29	28.7	5.04	±4
	D32	32.2	6.39	
	D36	35.8	7.91	
	D39	39.4	9.6	
	D43	43.4	11.4	
	D50	50.2	15.5	
	D57	57.3	20.2	

標準	號數	標稱直徑 Nominal dia (mm)	單位重量 Unit weigh (kg/m)	容許差 Tolerance (%)
JIS 日本工業標準 G3112 2010	D10	9.53	0.560	±6
	D13	12.7	0.995	
	D16	15.9	1.56	±5
	D19	19.1	2.25	
	D22	22.2	3.04	
	D25	25.4	3.98	
	D29	28.6	5.04	±4
	D32	31.8	6.23	
	D35	34.9	7.51	

標準	號數	標稱直徑 Nominal dia (mm)	單位重量 Unit weigh (kg/m)	容許差 Tolerance (%)
ASTM 美國材料試驗學會 A615、A706	3	9.5	0.560	±6
	4	12.7	0.994	
	5	15.9	1.552	±5
	6	19.1	2.235	
	7	22.2	3.042	
	8	25.4	3.973	
	9	28.7	5.03	±4
	10	32.3	6.404	
	11	35.8	7.907	
	14	43	11.38	
	18	57.3	20.24	

標準	號數	標稱直徑 Nominal dia (mm)	單位重量 Unit weigh (kg/m)	容許差 Tolerance (%)
BS 英國國家標準 BS 4449：1988/1997/2005	10mm	10	0.616	±6.5
	12mm	12	0.888	±4.5
	13mm	13	1.042	
	16mm	16	1.579	
	20mm	20	2.466	
	25mm	25	3.854	
	28mm	28	4.834	
	32mm	32	6.313	
	40mm	40	9.864	
	50mm	50	15.413	

標準	號數	標稱直徑 Nominal dia (mm)	單位重量 Unit weigh (kg/m)	容許差 Tolerance (%)
AS 澳洲國家標準 AS NZS 4671:2001	10	10	0.888	±4.5
	12	12	1.58	
	16	16	2.47	
	20	20	3.95	
	24	24	4.93	
	28	28	6.31	
	32	32	7.99	
	36	36		

標準	號數 symbol		鋼胚之化學成分(ladle analysis)						鋼筋之機械性質		
			C(%) max	Si(%) max	Mn(%) max	P(%) max	S(%) max	Ceq(%) max	降伏強度 Yield Strength N/mm²	抗拉強度 Tensile Strength N/mm²	伸長率 percentage of elongation (%)
中國國家標準 CNS 560 A2006	光面鋼筋	SR240	-	-	-	0.060	0.060	-	240以上	380以上	No.2 25以上
		SR300	-	-	-	0.060	0.060	-	300以上	440以上	No.2 20以上
	竹節鋼筋	SD280	-	-	-	0.060	0.060	-	280以上	420以上	No.2 18以上
		SD420	0.34	0.55	1.80	0.060	0.060	0.59	420~540	620以上	No.2 16以上
		SD490	0.34	0.55	1.80	0.060	0.060	0.59	490~625	620以上	No.2 12以上
		*SD280W	0.32	0.55	1.55	0.045	0.045	0.55	280~380	420以上	No.2 18以上
		*SD420W	0.32	0.55	1.55	0.045	0.045	0.55	420~540	550以上	No.2 16以上
		SD280	-	-	-	0.060	0.060	-	280以上	420以上	No.2 18以上
		SD420	0.34	0.55	1.80	0.060	0.060	0.59	420~540	620以上	No.2 16以上
		SD490	0.34	0.55	1.80	0.060	0.060	0.59	490~625	620以上	No.2 12以上
		*SD280W	0.24	0.65	1.65	0.045	0.045	0.50	280~380	420以上	No.2 18以上
		*SD420W	0.24	0.65	1.65	0.045	0.045	0.50	420~540	550以上	No.2 16以上
	Ceq*%= C + (Mn/6+Cu/40+Ni/20+Cr/10+Mo/50+V/10)%。 註*具有良好焊接性，1.25%。										

標準	號數	標稱直徑 Nominal dia (mm)	單位重量 Unit weigh (kg/m)	容許差 Tolerance (%)
JIS 日本工業標準 G3112 2010	D10	9.53	0.560	±6
	D13	12.7	0.995	
	D16	15.9	1.56	±5
	D19	19.1	2.25	
	D22	22.2	3.04	
	D25	25.4	3.98	
	D29	28.6	5.04	±4
	D32	31.8	6.23	

標準	號數	降伏強度 Yield Strength N/mm²	抗拉強度 Tensile Strength N/mm²	伸長率 percentage of elongation (%)
JIS 日本工業標準 G3112 2010	SD295A	295~390	440以上	No.2 16以上
				No.14A 17以上
	SD295B	295~390	440以上	No.2 16以上
				No.14A 17以上
	SD345	345~440	490以上	No.2 18以上
				No.14A 19以上
	SD390	390~510	560以上	No.2 20以上
				No.14A 17以上
	Ceq= C + Mn/6			

標準	號數	降伏強度 Yield Strength N/mm²	抗拉強度 Tensile Strength N/mm²	伸長率 percentage of elongation (%)
韓國國家標準 KS D3863 2007	SD300	300以上	440以上	No.2 16以上
				No.3 18以上
	SD400	400以上	560以上	No.2 16以上
				No.3 18以上
	SD500	500以上	620以上	No.2 12以上
				No.3 14以上
	* Ceq% = C + (Mn/6 + Cr/5+V/5+Mo/5 + Cu/15+Ni/15)%			

標準	號數		鋼胚之化學成分(ladle analysis)						鋼筋之機械性質		
			C(%) max	Si(%) max	Mn(%) max	P(%) max	S(%) max	Ceq(%) max	降伏強度 Yield Strength N/mm²	抗拉強度 Tensile Strength N/mm²	伸長率 percentage of elongation (%)
韓國國家標準 KS D3863 2007	光面鋼筋		-	-	-	0.060	-	-	320以上	440以上	2號 22以上
											3號 18以上
	竹節鋼筋		-	-	-	0.060	-	-	300以上	420以上	2號 20以上
											3號 16以上
			-	-	-	0.060	-	-	350以上	490以上	2號 16以上
											3號 12以上
		*SD400W	0.22	0.55	1.40	0.040	0.040	0.55	400~540	560以上	2號 14以上
		*SD500W									3號 12以上
	Ceq*%= C + (Mn/6+Cu/40+Ni/20+Cr/10+Mo/50+V/10)%。 註*具有良好焊接性，1.25%。										

標準	號數		鋼胚之化學成分(ladle analysis)						鋼筋之機械性質		
			C(%) max	Si(%) max	Mn(%) max	P(%) max	S(%) max	Ceq(%) max	降伏強度 Yield Strength N/mm²	抗拉強度 Tensile Strength N/mm²	伸長率 percentage of elongation (%)
BS 英國國家標準 BS 4449：1988/1997/2005	光面鋼筋	250	0.27	-	-	0.065	0.065	0.45	250以上	抗拉/降伏≧1.15倍	22以上
	竹節鋼筋	460	0.27	-	-	0.055	0.055	0.54	460以上	抗拉/降伏≧1.08倍	12以上
		460B								抗拉/降伏≧1.08倍	14以上
			Ceq%= C + (Mn/6+Cr/5+Mo/5+V/5+Ni/15+Cu/15)%，N≦0.012								Ag≧5%
		B500B	0.24	-	-	0.055	0.055	0.52	500以上	抗拉/降伏≧1.08倍	Ag≧5%
	Ceq*%= C + (Mn/6+Cr/5+Mo/5+V/5+Ni/15+Cu/15)%，N≦0.014，Cu≦0.85										

標準	號數		鋼胚之化學成分(ladle analysis)						鋼筋之機械性質		
			C(%) max	Si(%) max	Mn(%) max	P(%) max	S(%) max	Ceq(%) max	降伏強度 Yield Strength N/mm²	抗拉強度 Tensile Strength N/mm²	伸長率 percentage of elongation (%)
AS 澳洲國家標準 AS NZS 4671:2001	竹節鋼筋	500N	0.22	-	-	0.050	0.050	0.46	500~650	抗拉/降伏≧1.08倍	14以上 Ag≧5%
	Ceq*%= C + (Mn/6+Cr/5+Mo/5+V/5+Ni/15+Cu/15)%。										

Wei Chih's response to the exporter questionnaire for *Review No. 489* suggests that they may be attempting to group grades (and request physical characteristic adjustments) based on cost to produce rather than selling price, as their response to E2.1 indicates:

"refer to table below which shows chemical and mechanical properties of export and domestic goods which are a function of the input billet characteristics and production process".

Also, the exporter's response to question G5.2 suggests a *"different input billet, production process and chemical composition"* is used for exported goods compared to goods sold in the domestic market.

In the event that the exporter is claiming that grades having the same input billet chemistry and the same rebar manufacturing process must necessarily be considered most alike due to the similar costs to produce, Liberty Steel strongly urges the Commission against applying this unauthorised approach to model matching. Adjustments based on physical or specification differences must be based on price comparability, not cost comparability – a grade SD280 rebar with a minimum yield strength of 280MPa and no specified carbon equivalent (for welding) CANNOT be considered most alike to grade 500N simply because they have both been produced using a non-alloyed billet and have similar costs to produce. Liberty Steel uses three (3) different processes to produce the same grade of rebar – Grade 500N. Customers purchase rebar based on the grade meeting the chemical and mechanical properties specified by the Standard – purchasing (and pricing) are not based on the way in which the product is made, that is an irrelevant consideration in the Australian market.

Similarly, in the Taiwanese domestic market, it is expected that Grade SD490 will sell for a higher price per tonne compared to Grade SD420 due to the higher minimum yield strength it will deliver, irrespective of the production process employed to produce that grade. Liberty Steel provides recent evidence of the typical price premium of USD[redacted]/t applied by a Taiwanese producer of rebar for grade SD490 over SD420 as CONFIDENTIAL ATTACHMENT A.

2. Basis of Sale – Theoretical versus Actual Weight

Reinforcing bar in straight lengths is commonly sold by rebar producers internationally on either a theoretical or actual weight basis (refer CONFIDENTIAL ATTACHMENT B for an example for Europe and CONFIDENTIAL ATTACHMENT C for the Asian region). The benefits of theoretical weight based sales applies to both the producer and the customer:

- the producer typically provides 3-5% (depending on the diameter and the Standard) less steel mass than the nominal mass per meter of length of rebar specified in the Standard for a given nominal rebar diameter (a yield saving to the producer)
- the customer pays a lower price per ton, knowing they are getting less steel for the same number of lengths of rebar in a bundle.

Whether rebar is sold on a theoretical or actual weight basis, as long as the producer stays within the permissible mass per meter tolerance specified by the Standard, either basis for sale meets the Standard requirements. CONFIDENTIAL ATTACHMENT C provides evidence of rebar pricing in the Asian region quoted on both theoretical and actual weight basis and a typical [redacted]% upward adjustment applied to convert from pricing on a theoretical weight basis to an actual weight price. Table 2 (above) shows the permissible mass per meter tolerance (specified by the Standards) that Wei Chih produces to in fact varies between ± 4-7% depending on the nominal rebar diameter - most mills selling on a theoretical weight basis would roll to negative 3-6% tolerance to ensure they stay within a safe tolerance to meet the Standard requirements for those nominal diameters while optimising steel yield.

The United States International Trade Commission (USITC) noted in its 2016 preliminary findings report for its *Investigation relating to Steel Concrete Reinforcing Bar from Japan, Taiwan, and Turkey* that:

"Data for producers in Taiwan may not reconcile due to inventories being measured in actual weight while shipments are measured in theoretical weight."[1]

The extract below from the Commission's visit report for Wei Chih in *Investigation No.264* provides some indication of sales on both theoretical and actual weight basis.

> *"Wei Chih advised that sales to xxxxxxxxxxxxxxxxxxxxx were based on theoretical weight. However, some sales to xxxxx were based on theoretical weight and others were based on actual weight. Wei Chih stated that xxxxx advised which weight basis to use for each order and that this is recorded in the sales contract and on the invoice. Wei Chih advised that for sales based on theoretical weight, it uses a factor of xxxx % (determined internally). The price is the price negotiated but the delivery quantity is xxxxxx of the stated quantity."*[2]

Wei Chih's exporter questionnaire response for *Review No. 489* has been made confidential with respect to disclosure of key aspects including grades considered most comparable to the export grade and basis of sale. Liberty Steel urges the Commission to ensure that the basis of sale for all domestic and export sales is very clearly established and prices compared on a like-for-like basis as it is likely that Wei Chih conclude domestic and export sales of rebar on either a theoretical or actual weight basis.

In conclusion, Liberty Steel seeks careful consideration by the Commission of the issues raised in this submission when reviewing the exporter's information provided. Liberty Steel further requests that, notwithstanding the Commission's exception-based methodology of public reporting, disclosure nevertheless be made available in the Exporter's visit report with specific reference to the Commission's findings in relation to model matching (i.e. which grades have been selected as most comparable and the reasoning behind any adjustments made), and with regard to the Commission's findings on the basis of sale i.e. whether both domestic and export sales were on a theoretical or actual weight basis or a combination and the reasoning behind adjustments made.

FOR AND ON BEHALF OF THE AUSTRALIAN INDUSTRY APPLICANT

[1] https://www.usitc.gov/publications/701_731/pub4648.pdf at Pg 127

[2] EPR 264 Folio No. 061/Pg11