



POF 1262
(FOREIGN SUPPLIES)

Government of Pakistan
PAKISTAN ORDNANCE FACTORIES
TENDER ENQUIRY

To

M/s

Dear Sirs,

Reference : TENDER ENQUIRY NO. 0065/FP/GDL/54

DATED 07-NOV-24

You are requested to submit quotations for the item(s) noted in the schedule to the tender. Please note the following instructions for filling the tender:-

1. SUBMISSION OF TENDER

- 1.1 Tenders will be opened at 11:00 hours on 16-DEC-24 at Bidding Centre adjacent to Rabita Hall, POF Wah Cantt. Quotation must be submitted electronically on www.ebidding.pof.gov.pk as well as in hard form (duly sealed in envelope) before 30 minutes of opening time. The tender received late will not be entertained. You may witness the opening of the tender if you so desire. If a representative is deputed, he should bring a letter of authority from you.

Tender Enquiry No: 0065/FP/GDL/54
Tender to be opened on: 16-DEC-24
Address as follows:-

(www.ebidding.pof.gov.pk) BID CENTER

ADJACENT TO RABITA HALL

POFs, WAH CANTT.

2. GENERAL INSTRUCTIONS REGARDING PREPARATION OF QUOTATIONS

- 2.1 **For Materials**, the prices should be filled in column 5 and delivery date in column 6 of the schedule to this Tender Enquiry. As per **PPRA Rule 36(b)** i.e **Single Stage two envelope method** will be utilized for "Open competitive bidding." Moreover, technical & commercial evaluation of Bids will be carried out strictly as per PPRA rules and contract(s) will be awarded to the most advantageous bidder(s).

- 2.2 **For Plant and Machinery**, you are required to quote in two parts:-

Part I "Technical Offer": It should exclusively give technical details and literatures/brochures of the offered plant, machinery and equipment; validity date; delivery schedule; and signed undertaking to this Tender Enquiry. It must not indicate price, costs etc.

Cont....P-2

Part II "Commercial Offer": It should indicate the commercial terms e.g. price, terms of payment, mode of payment, mode of supply.

- 2.3 The quotation must remain valid for, at least 90 days from the date of opening of commercial tenders, extendable if so desired.
- 2.4 The quotation should hold good for any reduced or enhanced quantities without notice.
- 2.5 In the event of non-acceptance of offer, intimation may be given to the Tenderers on their request.
- 2.6 Conditional offers or alternative offers are likely to be ignored.
- 2.7 Quotations should be based on FOB. The consignment will be shipped through Pakistan National Shipping Corporation (PNSC). In case there is no PNSC service in the country of shipping, please quote on C & F basis. The freight should be indicated separately. Insurance premium should not be included in the quoted price. However, where insurance is considered necessary, advice to that effect should be given in the quotation.
- 2.8 Submission of the offer through an agent in Pakistan should be avoided. In case it is considered inevitable, the agent's quotation must invariably be accompanied by the original proforma invoice from the principals / manufacturers.
- 2.9 Country of origin and port of shipment to be stated.
- 2.10 Suppliers will render/attach necessary information regarding hazardous effects on environment, of the materials/products supplied by them, with their quotations and shipping/despatch documents.
- 2.11 If the requisite information is not furnished along with the quotation or offer received is not in conformity with the requirement of the T.E, such offer shall be ignored.

3. INSPECTION

- 3.1 Supplies shall be subject to the inspection and acceptance by the competent inspection authority nominated by the Purchaser, who will arrange it at his own cost. Inspection facilities such as tools, test equipment, instruments etc will, however, be provided by the Suppliers in accordance with the relevant specifications
- 3.2 Where considered necessary by the Purchaser, stores may be obtained on Warranty/Guarantee, subject to inspection on receipt. Rejected stores will be removed and replaced with the acceptable stores by the Supplier at his own expense, within a specified time.

3.3 TENDER SAMPLE

Purchase officer may require a tender sample, and the same must be provided within two weeks of receipt of intimation to this effect. Tender sample must be according to the description given in Tender Enquiry. Firm that fail to provide tender sample within stipulated time will not be entertained excepting the established and reputable firms who have either previously satisfactorily supplied the same or similar stores or have submitted an acceptable sample thereof against previous T.E.

4. ACCEPTANCE OF OFFERS

- 4.1.1 The procuring agency may reject all bids or proposals at any time prior to the acceptance of a bid or proposals. The procuring agency shall upon request communicate to any supplier or contractor who submitted a bid or proposal, the grounds for its rejection of all bids or proposals, but is not required to justify those grounds.

4.1.2 Procuring agency shall incur no liability, solely by virtue of its invoking sub-rule (1.1) towards suppliers or contractors who have submitted bids or proposals.

4.1.3 Notice of the rejection of bids or proposals shall be given promptly to the concerned suppliers or contractors that submitted bids or proposals.

4.2 PERFORMANCE BOND

(a) The successful bidder will provide Performance Bond at the rate up to 10% of F.O.B value of the contract in favour of Controller Military Accounts (CMA) POF Wah Cantt. The Performance Bond will be furnished in the form of Deposit At Call Receipt (CDR) from any scheduled bank in Pakistan or an unconditional bank guarantee on prescribed proforma covered by any scheduled bank in Pakistan. The performance Bond shall be furnished within 45 days from the date of opening of Letter of Credit. It shall be valid for a period of 12 months after the date of expiry of letter of credit. If the Performance Bond is not furnished within the prescribed time of 45 days, the Purchaser reserves the right to:

- i. Impose penalty @ 1% per month of the value of CDR/BG.
(Clause-42 (a i) is not applicable in case of procurement of Plant/Equipment/Machinery items).

OR

- ii. Cancel the contract and make other arrangements for purchase of the stores at the risk and expense of the Supplier.

(b) No Performance Bond will be required if the total FOB value of the contract is less than US \$50,000 and contract is placed directly on the foreign Supplier.

4.3 FAILURE TO SUPPLY THE STORES

All deliveries must be completed by the specified date. If the failure to deliver the stores within the scheduled time should have arisen from "Force Majeure", which the purchaser may admit as reasonable ground for further time, he will allow such additional time as he may consider to have been required by the circumstances of the case. Otherwise, he will be entitled, at his discretion, to cancel the contract; and/or, claim liquidated damages upto 2% but not less than 1% of the contract price of the items and their quantities for each and every month or part of a month, beyond the specified delivery date, during which these may not be delivered, subject to a maximum of 10% of the total contract value of the particular stores which remained unsupplied either in part or in full: or, to purchase from elsewhere, the unsupplied stores at the risk and cost of the supplier:

4.4 PAYMENT

Payment will normally be made by means of irrevocable letter of credit. Unless otherwise stated 90% payment will be released on submission of despatch documents to Bank while balance 10% payment will be released on receipt and acceptance of store by the consignee.

All Bank charges incurred in Pakistan in connection with the establishment of L.C. will be borne by the Purchaser, whereas all Bank charges incurred in connection with drawing of payment including charges for confirmation of L.C. by the advising Bank/Foreign Bank will be borne by the Supplier.

5. BID Security

5.1 A copy of Bid Security should accompany the tender in shape of deposit at call receipt/Pay Order/Banker Cheque from scheduled bank drawn in favour of :-

GM-PP&C-POF GDL

5.2 Bid security instrument in original must be provided on the day/date of tender opening in the Bid Center as under:

- a. Registered/indexed firms including foreign firms - 2% of quoted value subject to the maximum ceiling of Rs. 0.5 Mn.
- b. Registered/un-indexed firms including foreign firms - 3% of quoted value subject to the maximum ceiling of Rs. 0.75 Mn.
- c. Un-Registered firms including foreign firms - 5% of quoted value subject to the maximum ceiling of Rs. 1.00 Mn.
- d. Gov. organization/Production Units/State owned enterprises/welfare projects of Svcs HQ - Rs 0.5 Mn can be waived off on request by DG(C).
- e. Bid money will be returned to unsuccessful (less first three lowest quotee firms) bidders on opening of commercial offers
- f. Bid money will be returned to successful bidders on submission of performance bond/unconditional B.G.
- g. Bids will be conditionally accepted if Bid Money deposited by firms is less than the given amount. However, the firms will be required to deposit additional amount within 10 x days of opening of Bids.
- h. Offers received without Bid Security will not be entertained.
- i. Bid Money will be forfeited in case the quotation is withdrawn before the expiry of its validity date.

6. SECURITY OF INFORMATION

The tenderer and his employees must not communicate any information relating to the sale/purchase of stores under this enquiry to any person other than the manufacturer or to any press or agent not authorised in writing by POFs to receive it.

WARNING

In case the firm abstain from making offers or fail to acknowledge the tender form by the specified date on three consecutive occasions, no further tender enquiry may be issued to them and their names would liable to be removed from the approved list.

Yours Faithfully

(IFTIKHAR AHMAD BAJWA)

G.M PP&C POF GDL.

for PAKISTAN ORDNANCE FACTORIES

Tele 0092-051-905526609

Fax 0092-051-9314099

Telex MDGDL@POF.GOV.PK

PAKISTAN ORDNANCE FACTORIES

POF 1262

SCHEDULE TO TENDER NO.

0065/FP/GDL/54

DATED

07-NOV-24

(1) FOR MATERIALS

(1)	(2)	(3)	(4)	(5)		(6)
Item No.	Description with Specs. etc.	Unit	Qty	Price Per Unit FOB or free delivery		Delivery Date
				In Figures	In Words	
1	ALUMINIUM ALLOY ROD DIA 12 MM - 0.7 MM, LENGTH 3000 MM GB/T 3191-1998 MAT NO 7A04.T6 OR ASTM B-221 7075 T6 CHEMICAL COMPOSITION Cu:1.4-2.0% Mg:1.8-2.8%, Mn:0.2 -0.6% Fe:0.50%, Si:0.5% Zn:5.0-7 %, Cr: 0.10-0.25%,Ti=0.10% Other Impurity Every kind 0.05%,Total 0.10% Al= Remain MECHANICAL PROPERTIES. Tensile Strength=490 MPa Min., Yeild Strength=370 MPa Min, Elongation=7% Min.,	KG	660			INSP AUTH: CIA OR HIS AUTHORIZED REP (90 DAYS FROM THE DATE OF OPENING OF LC)
2	ALUMINIUM ALLOY ROD DIA 12 MM - 0.7 MM, LENGTH 3000 MM GB/T 3191-1998 MAT NO 7A04.T6 OR ASTM B-221 7075 T6 CHEMICAL COMPOSITION Cu:1.4-2.0% Mg:1.8-2.8%, Mn:0.2 -0.6% Fe:0.50%, Si:0.5% Zn:5.0-7 %, Cr: 0.10-0.25%,Ti=0.10% Other Impurity Every kind 0.05%,Total 0.10% Al= Remain MECHANICAL PROPERTIES. Tensile Strength=490 MPa Min., Yeild Strength=370 MPa Min, Elongation=7% Min.,	KG	530			INSP AUTH: DIR QA OR HIS AUTHORIZED REP (90 DAYS FROM THE DATE OF OPENING OF LC)
3	ALUMINIUM ALLOY EXTRUDED BAR DIA 130 MM - 2.5 MM, LENGTH = 2030 + 10 MM GB/T 3191-1998 MAT NO 7A04.T6 CHEMICAL COMPOSITION Cu:1.4-2.0% Mg:1.8-2.8%, Mn:0.2 -0.60% Fe:0.50%, Ti = 0.10% Si : 0.50% Zn 5.0-7.0%,Cr: 0.10-0.25% impurity every kind 0.05%,Total 0.10% Al = Remain MECHANICAL PROPERTIES Tensile Strength=530 MPa Min. Yeild Strength=400 MPa Min, Elongation=6% Min.,	KG	122600			INSP AUTH: DIR QA OR HIS AUTHORIZED REP (90 DAYS FROM THE DATE OF OPENING OF LC)
	ALUMINIUM ALLOY EXTRUDED BAR DIA 130 MM - 2.5 MM,					

PAKISTAN ORDNANCE FACTORIES

POF 1262

SCHEDULE TO TENDER NO. 0065/FP/GDL/54

DATED 07-NOV-24

(1)	(2)	(3)	(4)	(5)		(6)
Item No.	Description with Specs. etc.	Unit	Qty	Price Per Unit FOB or free delivery		Delivery Date
				In Figures	In Words	
4	LENGTH = 2030 + 10 MM GB/T 3191-1998 MAT NO 7A04.T6 CHEMICAL COMPOSITION Cu:1.4-2.0% Mg:1.8-2.8%, Mn:0.2 -0.60% Fe:0.50%, Ti = 0.10% Si : 0.50% Zn 5.0-7.0%,Cr: 0.10-0.25% impurity every kind 0.05%,Total 0.10% Al = Remain MECHANICAL PROPERTIES Tensile Strength=530 MPa Min. Yeild Strength=400 MPa Min, Elongation=6% Min.,	KG	151050			INSP AUTH: CIA OR HIS AUTHORIZED REP (90 DAYS FROM THE DATE OF OPENING OF LC)

**(2) For Plant & Machinery:
Specification:-**

- (3) Special Conditions**
- 01 Same (Single) competitive Unit Rate must be quoted against the same tendered items having same nomenclature.
 - 02 Full Qty having same nomenclature (against both inspection authorities) be quoted in all serial numbers, otherwise offer will be ignored.
 - 03 The case shall be processed / contract awarded to the most advantageous Bidder as per PPRA Rules, POF Purchase Procedure and keeping in view the T.E requirement/Terms & conditions
 - 04 Registered suppliers (with sales tax and income tax department) who are on Active Tax payer list (ATL) of FBR are also eligible to supply goods / services to Govt. Departments as per FOR terms and conditions .
 - 05 Payment to registered person shall be linked with Active Tax payer status of the suppliers as per FBR data base. If any registered supplier is not in ATL, his payment should be stopped till he files his mandatory returns and appear on ATL of FBR
 - 06 Prices per unit FOB / C&F / FOR or Free Delivery
 - 07 Fax /Email offer and offer without Bid security and tender fee will be rejected.
 - 08 Obtaining of Export permit is responsibility of the foreign firm / supplier
 - 09 Offers must remain valid for 90 x days (extendable) from the date of opening of commercial offers
 - 10 Sample to be provided by the firms within 15 x days of technical opening except last supplier
 - 11 Protocol of inspection will be followed as per inspection authority.

PAKISTAN ORDNANCE FACTORIES

SCHEDULE TO TENDER NO.

0065/FP/GDL/54

DATED

07-NOV-24

(4) Undertaking

Should our offer be accepted, we hereby undertake to supply the stores/render the services contracted on the basis of Conditions of Contract embodied in Form POF 1280, and to deposit the performance bond within the prescribed time, failing which it will constitute a breach of contract, and POF will have the right to purchase the stores/services elsewhere at our risk and cost.

Place _____

Date _____

Signature of the Tenderer _____

Name _____

Postion _____

Address _____

Income Tax G.I.R. No _____

①

(36)

Government specification of P.R. China

GB/T 3191-1998 ✓

Extrusion rods and bars of aluminium and aluminium alloy

1. Scope

(This specification provide the requirements, test method, inspection rule, mark, packing, transportation and storage etc of aluminum and aluminum extruding bar) **

This standard is applicable to aluminum and aluminum alloy extrusion round rods, square bar (hereinafter referred to as square bar) and hexagonal bar (hereinafter referred to as the hexagonal bar).

2. Reference specification

The article contained by following specifications through quote in this specification becomes the article of this specification. This specification was published, editions indicated is effective.

GB/T 228-87 Metal tensile test method

GB/T 3190-1996 Aluminium and aluminium alloy chemical composition

GB/T3199-1996 Packaging, marking, transportation, storage of Aluminium and Aluminium alloy product

GB/T 3246-82 Microstructure testing method of Aluminum and aluminum alloy products

GB/T3247-82 Macrostructure testing method of Aluminum and aluminum alloy products

GB/T6395-86 Test method of high temperature lasting of Metal tensile

GB/T6987-87 Aluminum and aluminum alloy chemical composition analysis method

GB/T16865-1997 Sample for tensile test of Aluminum, magnesium alloys processing products with

GB/T 17432-1998 Sampling method of chemical composition analysis of Aluminum and aluminum alloy

3. Order contracts content

The following content should be included by this specification of the products by the order contracts:

- a) Name of store
- b) Brand
- c) Temper
- d) Dimension
- e) Tolerance (if it is not mentioned, then as per lowest grade)
- f) Weight
- g) This standard number
- h) Choose items (For example whether high strength is required? Whether test of high temperature lasting is required? Whether stratification is not allowed? Whether coarse crystal ring is required? If it is noted, supplied by normal product)
- i) Out of this specification should be noted

4. Requirement

4.1 Product categories

4.1.1 Brand, temper, size
 Brand, temper, size of bars Should be in accordance with table 1

Table 1 Brand, temper, size

Brand	Temper	Size mm			
		Dia of Round bar		Dia of square bar, hexagonal bar	
		Nomal Bar	High strength bar	Nomal Bar	High strength bar
1070A,1060,1050A,1035,1200,8A06,5A02,5A03,5A05,5A06,5A12,3A21,5052,5083,3003	H112, F, O	5-600	-	5-200	-
2A70,2A80,2A90,4A11,2A02,2A06,2A16	H112,F	5-600	-	5-200	-
	T6	5-150	-	5-120	-
7A04,7A09,6A02,2A50,2A14	H112,F	5-600	20-160	5-200	20-100
	T6	5-150	20-120	5-120	20-100
2A11,2A12	H112,F	5-600	20-160	5-200	20-100
	T4	5-150	20-120	5-120	20-100
2A13	H112,F	5-600	-	5-200	-
	T4	5-150	-	5-120	-
6063	T5,T6	5-25	-	5-25	-
	F	5-600	-	5-200	-
6061	H112,F	5-600	-	5-200	-
	T6	-	-	-	-
	T4	5-150	-	5-120	-

4.1.2 Example of Marking

a) The marking of round bar made by 2A12 Alloy, Temper T4, Dia 30mm, Grade B is as follows:

Bar 2A12- T4 Grade B Φ30 GB/T3191-1998

b) The marking of square bar made by 2A12 Alloy, Temper H112, Incircle Dia 30mm, Grade A High Strength is as follows:

Bar 2A12- H112 High Strength Grade A Square30 GB/T3191-1998

c) The marking of round bar made by 3A21 Alloy, Temper O Dia 30mm Length 2000mm, Grade D is as follows:

Bar 3A21- O Φ30X2000 GB/T3191-1998

4.2 Chemical composition

Chemical composition of bars should be in accordance with GB/T3190-1998

4.3 Size and tolerance

4.3.1 Diameter of Bars (Incircle diameter of square and hexagonal bar) and permitted tolerance should be in accordance with Table 2

Table 2 Diameter of Bars and permitted tolerance mm

Diameter	Permitted Tolerance			
	A	B	C	D
5 ~ 6	-0.30	-0.48	-	-
>6 ~ 10	-0.36	-0.58	-	-
>10 ~ 18	-0.43	-0.70	1.10	-1.30
>18 ~ 28	-0.52	-0.84	1.30	-1.50
>28 ~ 50	-0.62	-1.00	1.60	-2.00
>50 ~ 80	-0.74	-1.20	1.90	-2.50
>80 ~ 120	-	-1.40	2.20	-3.20
>120 ~ 180	-	-	2.50	-3.80
>180 ~ 250	-	-	2.90	-4.50
>250 ~ 300	-	-	3.30	-5.50
>300 ~ 400	-	-	-	-7.20
>400 ~ 500	-	-	-	-8.00
>500 ~ 600	-	-	-	-9.00

4.3.2 The straightness of bar, for the bars with diameter not more than 10 mm, bend that can be removed by handle pressing is allowed. Other bars should be in accordance with Table 3

Table 3 Straightness of bar

Diameter	Straightness not more than			
	Normal Grade		High Grade	
	Each Meter	Total Length L, m	Each Meter	Total Length L, m
>10 ~ 100	3.0	3.0XL, not more than 15	2.0	3.0XL, not more than 10
>100 ~ 120	6.0	6.0XL, not more than 25	5.0	5.0XL, not more than 20
>120 ~ 130	10.0	10.0XL, not more than 40	7.0	7.0 XL, not more than 30
>130 ~ 200	14.0	14.0XL, not more than 50	10.0	10.0 XL, not more than 40

Remark: 1. The value of straightness is bend after balance by self-weight when bars is placed on the table.

2. If length of bars is not more than 1m, Straightness is calculated by 1m.

4.3.3 Twisting degree of Square and hexagonal bars should be accordance with table 4

Table 4 Twisting degree of Square and hexagonal bars

Incircle Diameter mm	Twist not more than			
	Normal Grade		High Grade	
	1 Meter length	Total Length L, m	1 Meter length	Total Length L, m
≤14	60°	60°×L	40°	40°×L
>14 ~ 30	45°	45°×L	30°	30°×L
>30 ~ 50	30°	30°×L	20°	20°×L
>50 ~ 120	25°	25°×L	-	-

Remark: Twisting degree calculated by 1 meter, if length is less than 1 meter

4.3.4 Permitted tolerance of specified or double length of Bars

For specified and double length of bars, specified length is negotiated by supplier and buyer, the length permitted deviation is +20mm. Cutting allowance 5 mm for double length should be exist. When diameter is less than or equal to 50 mm, supply length is 1000-6000mm, When diameter is more than or equal to 50 mm, supply length is 500-6000mm.

4.3.5 Two ends of bars should be cut evenly.

4.3.6 Maximum fillet radius of square and hexagonal bars should be in accordance with table 5

Table 5 Maximum fillet radius of square and hexagonal bars

Incircle Diameter	Maximum fillet radius
<25	2.0
≥25-50	3.0
>50	5.0

4.4 Mechanical performance

4.4.1 Mechanical performance of bars at room temperature should be in accordance with the table 6. Table 6 Mechanical performance of bars at room temperature

Brand	Temper	Temper of sample	Dia (Incircle of Square and hexagonal bars) , mm	Tensile strength (MPa)	Yield Strength (MPa)	Elongation %		
				NOT LESS THAN				
1060	O	O	≤150	60 ~ 95	15	22		
	H112	H112		60	15-	22		
1070A	H112	H112		55	15	-		
1050A				65	20	-		
1200				75	20	-		
1035,8A06				O, H112	O, H112	≤120	-	25
3003	O	O		95 ~ 130	35	22		
	H112	H112		90	30	22		
3A21	O	O		≤165	-	20		
5A02				≤225	-	10		
5A03				175	80	13		
5A05				265	120	15		
5A06				315	155	15		
5A12				370	185	15		
5052				H112	H112	175	70	-
				O	O	175 ~ 245	70	20
2A11	H112	T42	≤150	370	215	12		
2A12	T4	T4	≤22	390	255	12		
			>22 ~ 150	420	275	10		
2A13			≤22	315	-	4		
			>22 ~ 150	345	-	4		

2A02	H112	T62	≤150	430	275	10
2A16				355	235	8
2A06			≤22	430	285	10
			>22 ~ 100	440	295	9
			>100 ~ 150	430	285	10
6A02			295	-	12	
2A50	T6	T6	≤150	355	-	12
2A70,2A80,2A90				355	-	8
2A14			≤22	440	-	10
			>22 ~ 150	450	-	10
6061	H112, T6	T62, T6	≤150	260	240	9
	T4	T4		180	110	14
6063	T6	T6	≤25	205	170	9
	T5	T5	≤12.5	150	110	7
			>12.5 ~ 25.0	145	105	7
7A04,7A09	H112, T6	T62, T6	≤22	490	370	7
			>22 ~ 150	530	400	6

4.4.2 Mechanical performance of high strength bars at room temperature should be in accordance with the table 7.

Table 7 Mechanical performance of bars at room temperature

Brand	Temper	Temper of sample	Dia (Incircle of Square and hexagon) mm	Tensile strength (MPa)	Yield Strength (MPa)	Elongation %
NOT LESS THAN						
2A11	H112, T4	T42, T4	20 ~ 120	390	245	8
2A12			20 ~ 120	440	305	8
6A02	H112, T6	T62, T6	20 ~ 120	305	-	8
2A50			20 ~ 120	380	-	10
2A14			20 ~ 120	460	-	8
7A04,7A09			20 ~ 100	550	450	6
			>100 ~ 120	530	430	6

4.4.3 Alloy Bars 2A02,2A16 if high temperature lasting experiment is noted in the contract, mechanical performance should be in accordance with the table 8

Table 8 High temperature lasting mechanical performance

Brand	Temperature, °C	Yield Strength, MPa	Keeping time, h
2A02	270±3	64	100
		78	50
2A16	300±3	69	100

Remark: Alloy Bar, when not qualified at Yield 78MPa 50h, then result at 64MPa 100h is final

4.5 ^a Microstructure Macro

4.5.1 Crack and shrinkage tail of test pieces for microstructure is not allowed
Segregation congestion and non-metal slag inclusion is not allowed except 5A05, 5A06

4.5.2 For alloy bar 5A05 non-metal slag inclusion 0.4-0.5mm is allowed, but should not more than 5 point. Subject slag more than 0.5mm is not allowed. A little quantity less than 0.4mm slag inclusion is allowed.
For Alloy bar 5A06 a little quantity less than 0.1mm slag inclusion is allowed

4.5.3 Stratiform depth should not exceed half of negative deviation of bars, but must guarantee minimum diameter. For extruded bars which diameter is less than 120mm for blank of die and forge pieces stratification isn't allowed, but it should be noted in the contract. If both sides of supplier and purchaser can consult together, bars without stratification which diameter 120-300mm can be supplied.

4.5.4 ^a Microstructure for bars which diameter is less than 20mm is not inspected.

4.5.5 If coarse crystal ring is required and noted in the contract. Depth of coarse crystal ring of microstructure test pieces should be in accordance with the table 9. When Depth of coarse crystal ring is more than table 9, mechanical performance at room temperature can be inspected. When performance is in accordance with requirement of contract, mention-above coarse crystal ring is allowed.

Table 9 Permitted maximum depth of coarse crystal ring mm

Brand	Depth of coarse crystal ring, not more than	
	Normal grade	High Grade
2A02	5	-
2A11, 2A12, 7A04, 7A09	8	3
6A02, 2A50, 2A14	8	3

Remark: High grade is only for Round bar diameter 20-120mm and Incircle dia 20-100mm of Square and hexagonal

4.6 Microstructure ✓
Microstructure of bars aren't allowed to overturn

4.7 Surface quality

4.7.1 Scale, crack, bubble, coarse scratch and corrosion spots on surface of bars aren't allowed.

4.7.2 Shallow pit, scratch, color of oxidation, fine black and white spots and helical brightness strip caused by straightening on the surface of bars which depth is not exceed diameter permitted deviation are allowed. Peeling can be scraped, but the minimum diameter of bars should be guaranteed.

5. Test method

5.1 Analyze method of chemical composition
Analyze method of chemical composition should be in accordance with GB/T6987

5.2 Test method of Mechanical performance
Mechanical performance of bars at room temperature should be in accordance with GB/T 228

5.3 Test method of High temperature lasting performance
High temperature lasting performance test of bars should be in accordance with GB/T 6395

5.4 Test method of Macrostructure
Macrostructure of bars should be in accordance with GB/T3247

5.5 Test method of Microstructure
Macrostructure of bars should be in accordance with GB/T3246

5.6 Test method of dimension
Diameter of bars can be checked by measured tools with precision not less than 0.02mm, length is measured by ruler

5.7 Inspection method of surface quality
Surface quality of bars is inspected by eyes. When depth of defect aren't confirmed, it can be measured after polish.

6: Inspection rules

6.1 Inspection and acceptance

6.1.1 Bars should be inspected by technical supervision department of supplier, and it guarantee that quality of product is in accordance with the requirement of this specification (or order contract). Certificate of quality should be written.

6.1.2 Purchaser have to do inspection for received products as per this specification. If inspection result is not in accordance with the requirement of this specification (or order contract), Purchaser should present to supplier as per GB/T3199, and it will be solved by negotiation between both side supplier and purchaser. If arbitration needed, the sampling for arbitration in Purchaser should be done by both side supplier and purchaser.

6.2 Grouping lot

Bars should be submitted to inspection and acceptance in batches. Each lot should be composed of same alloy state and standard. Each lot of alloy 2A02,2A16,2A70 must be composed of same melting. The weight of each lot decided by the supplier.

6.3 Inspection item

Surface quality, outline dimension deviation and mechanical performance of each lot of bars should be inspected. For bars which diameter is equal to or more than 20mm, macrostructure should be inspected. For quenched products, microstructure should be inspected.

6.4 Sampling position and quantity

6.4.1 Specimen of chemical composition is in accordance with GB/T17432.

6.4.2 Specimen of Mechanical performance in lengthways at room temperature

6.4.2.1 Mechanical performance test specimen in lengthways at room temperature should be in accordance with GB/T16865. One specimen is collected from each bars

6.4.2.2 Sampling pieces of mechanical performance test in lengthways at room temperature should be in accordance with table 10

Table 10 Sampling pieces of mechanical performance test at room temperature

Brand	Diameter (Incircle)	Specimen piece(Pcs/lot or Pcs/Furnace)	
		Piece	At least, piece
7A04,7A09,2A02,2A06,2A11,2A12,2A13,2A16	≤50	5	2
	>50	2	2
6A02,2A50,2A70,2A80,2A90,2A14,6063,6061	all	—	2
1070A,1060,1050A,1035,1200,8A06,5A02,5A03,5A05,5A06,3A21,5052,3003	all	2	2

Remark: Bars with requirement of proof stress or non-proportional elongation, sampling 2% of each lot but not less than 2 pieces

6.4.2.3 For high temperature lasting test sampling two pieces per melting lots, one piece of specimen per bars. Specimen should be cut front end of extruded bar

6.4.3 Macrostructure specimen will be cut from the tail end of bars. One specimen is cut from one bar, sampling quantity is as per table 11

Table 11 Sampling quantity for Macrostructure test

Brand	Sampling pieces	
	2, 3 Piece	At least, piece
5A02,5A03,5A05,5A06,5052,5A12	2	2
All other alloy	5	2

6.4.4 For microstructure specimen 2% of pieces will be taken from each lot (heat treatment batch) but it is not less than 2 pieces.

6.5 Decision of inspection result

6.5.1 If test result of chemical composition and microstructure is unqualified, complete lot (Furnace) is unqualified. If dimension and surface quality is unqualified, single pieces is unqualified.

6.5.2 If test result of one specimen in mechanical performance test is unqualified, double specimens (not including unqualified bars) should be sampled from this lot (Furnace) for retest. If retest is qualified, this lot (furnace) is qualified (not including unqualified bars in first time). If result of retest is still unqualified, this lot is unqualified, but it can be inspected piece by piece by supplier, and qualified bars can be delivered.

6.5.3 If high temperature lasting performance is unqualified, unqualified bars is rejected. Double specimen should be sampled from this lot for retest. If result of retest is qualified, this lot is qualified. If result of retest is still unqualified, this lot is unqualified, but it can be inspected piece by piece by supplier, and qualified bars can be delivered.

6.5.4 For bars with shrinkage tail, coarse crystal ring and stratification, retest after cutting length of unqualified bars is allowed, until it will be qualified. Other bars or will be inspected piece by piece, qualified bars will be delivered, or tail of other bars by maximum length that was cut in retest to qualified will be cut, then will be delivered. When other defect is appeared, this lot will be negotiated by supplier and purchaser.

7. Marking, Packing, Transportation, Storage

7.1 Marking

7.1.1 Following marking should be typed on qualified bars :

- a) Stamp of technical supervision department of supplier
- b) Brand of alloy
- c) Temper
- d) Lot number

7.1.2 For Bars with diameter more than 35mm a), b), c), d) is typed on front end; For Bars with diameter more than 20 mm less than 35mm b), c) is typed on front end, a), d) is typed on marking papers; For bars with diameter less than 20mm a), b), c) d) is typed on marking papers. For bars with diameter more than 20mm "W" is typed on tail of bars

7.1.3 Marking of bars should meet with GB/T3199

7.2 Packing, Transportation, Storage

Bars with diameter less than 50mm (diameter less than 30mm for temper T4, T5, T6) should be bundling then packed into box with waterproof and moisture proof material. Weight of wooden box normally is not more than 300kg. Iron box can be more than 300kg but not more than 1000kg; Bars with diameter more than or including 50mm (diameter more than or including 30mm for temper T4, T5, T6) is packed naked. If need



ably packed or other requirement, it should be noted in the contract. Other requirement is in accordance with GB/T3199.

7.3 Certificate of quality

Certificate of quality should be attached for each lot of bars. Noted

- a) Name of supplier
- b) Name of store.
- c) Alloy brand
- d) Size and precision
- e) Temper
- f) Lot number
- g) Net weight and pieces
- h) Test result of mechanical performance and marking of technical supervision department of supplier
- i) Number of this specification
- j) Date of packing

Appendix A
(Tip of the appendix)
Table of comparisons

New Brand	Old Brand	New Brand	Old Brand	New Brand	Old Brand
1070A	Replace L1	8A06	L6	6061	LD30
1060	Replace L2	3A21	LF21	2A11	LY11
1050A	Replace L3	2A02	LY2	2A12	LY12
1035	Replace L4	2A06	LY6	2A13	LY13
1200	Replace L5	2A16	LY16	2A14	LD10
5A02	LF2	2A70	LD7	2A50	LD5
5A03	LF3	2A80	LD8	6A02	LD2
5A05	LF5	2A90	LD9	7A04	LC4
5A06	LF6	4A11	LD11	7A09	LC9
5A12	LF12	6063	LD31		

Appendix B
(Tip of the appendix)
Table of comparisons

New temper	Old Temper	New temper	Old temper
H112	R	T5	RCS
O	M	T6	CS
T4	CZ		

Remark: Delivered store as old brand temper R with providing performance of specimen CZ,CS. , temper can be corresponding with new temper T42, T52