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Specification of Rail Cutting Wheel(Abrasive Disc)
Specification No.- TM/SM/2
(Revision 01 of 2020)

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1.0 Scope:

This specification covers the functional and technical requirements with testing details of Abrasive Rail Cutting Wheel(Abrasive Disc) which is used to cut rails. The rail cutting wheel (abrasive disc) will be termed as abrasive disc in this specification.

2.0 Reference :Following specification has been referred to in this specification. Updated copy of the specification shall be available in the works of the manufacturer/ supplier.

- (i) TM/SM/01 Rev. 01 of 2020– Specification of Abrasive Rail Cutter.
- (ii) EN 12413 (Safety requirement for Bonded Abrasive Products)

3.0 Materials, processing and workmanship:

- 3.1 The abrasive disc shall be so designed that it may be used with abrasive rail cutter with ease. The abrasive disc shall have the technical features mentioned in clause no. 4.0.
- 3.2 The materials shall be such that, the disc periphery does not break/chipped off during cutting operation. The disc shall be capable of cutting of rails of any section up to 65 kg/m and of any metallurgy up to 90 UTS.
- 3.3 The bore and diameter of the abrasive disc shall make it compatible to use with RDSO/Railway Board approved abrasive rail cutter as per specification no. TM/SM/1 Rev. 01 of 2020.
- 3.4 The abrasive disc during cutting operation shall not lose its abrasive particles rapidly so that it can retain its discard diameter upto the specified number of cuts.
- 3.5 The disc materials shall be such that, there shall be no fumes/smokes emitted during the cutting operation. The physical stability to retain the disc flat in new condition and during cutting operation shall be sufficient.

4.0 : Technical Features:

i)	Diameter	400+5mm -3mm
ii)	Thickness	4.0±0.25mm
iii)	Bore	22.23+0.5mm -0.0mm
iv)	Nominal Size	400mmx4mmx22.23mm
v)	Operating speed	≤ 4800r.p.m(approximately)
vi)	Self-life of Disc	Min. 02 years
vii)	Cutting timings	(using RDSO/Railway Board approved abrasive rail cutter machine as per RDSO specification no. TM/SM/01 Rev. 01 of 2020) a)60 kg/m, 90 UTS rails 5 min. b)60 kg/m, 72 UTS rails 5 min. c)52 kg/m, 90 UTS rails 4 min. d)52 kg/m, 72 UTS & others 4 min. 2 min.
viii)	Discard Diameter	Discard Diameter 260mm. In order to ensure proper cutting material, total depth of cutting material available (diameter of the disc minus discard diameter) shall be minimum 140 mm.
ix)	Atmospheric condition	a)Ambient temperature: -5 ⁰ C to 55 ⁰ C

		b)Humidity(Relative): up to 100% c)Dust condition: extreme dusty
x)	No. of cuts to be given by each disc	Min. 7 cuts on 52 Kg/90 UTS and min. 06 cuts on 60 Kg/90 UTS at discard diameter of 260 mm

5.0 Type Tests:

Type tests are meant to be conducted on samples at the time of initial approval. The manufactures/supplier shall produce four samples of the abrasive disc.

Following type tests shall be carried out on the samples:

5.1 Visual & dimensional check:

The abrasive disc shall be visually checked for any crack, uneven periphery, warpage etc. The dimensions shall also be checked.

5.2 Test for fitment of the abrasive disc to the abrasive rail-cutting machine:

The abrasive disc shall be fitted to the spindle of the Abrasive Rail-Cutting Machine. Fitting of the disc to the Abrasive Rail Cutter shall be easy and the abrasive disc when fitted to the spindle of the Abrasive Rail Cutter shall be self-centered automatically.

5.3 Cutting Performance Test : The abrasive disc shall be fitted to an abrasive rail cutter (as per RDSO specification no. TM/SM/01 Rev. 01 of 2020) and shall be operated to cut 52 kg/m or 60 kg/m rails of 90UTS. Minimum 04 nos. discs shall be tested for cutting performance. The cutting timings shall be as per clause no. 4.0 (vii). Following details shall be recorded:

a) Cutting timing

b) Cutting tolerance (which shall be ± 0.5 mm in vertical and horizontal direction)

c) Diameter of the abrasive disc after each cut. The cutting test shall be continued upto discard diameter of 260 mm.

6.0 Inspection :

6.1 The inspection of abrasive disc during procurement shall be carried out by the purchaser zonal railways or any representative/agency authorized by CTE of zonal Railways. The cost of inspection and testing shall be borne by the supplier/ manufacturer. The arrangement for conducting all the tests shall be done by the manufacturer/supplier. Minimum level of inspecting official shall be SE (Section Engineer)/SSE.

6.2 (0.5)% or min 02 nos. of abrasive disc per lot/P.O. (randomly taken) shall be inspected for its performance as mentioned in clause no. 7.0. If the samples satisfy all the tests prescribed as per acceptance criteria, the lot is acceptable; otherwise, the lot is rejected.

6.3 After the abrasive discs supplied at consignee's end, the supply shall considered as complete only after conducting training on operation etc. is provided by the manufacturer/supplier as per clause 8.0.

7.0 Acceptance test:

S.N.	Testing Crieteria	Sample chosen
i)	Visual and dimensional check [as per clause 5.1and 4.0 (i) to (vi)]	(0.5)% or min 02 no. per lot
ii)	Test for fitment of the abrasive disc to the abrasive rail cutter[as per clause 5.2]	(0.5)% or min 02 no. per lot

iii)	Cutting performance test[as per clause 4.0 (viii) to (x) & 5.3{(a) to (c)}]	On randomly selected samples.
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8.0 Training:

Adequate training in operation and maintenance of the disc shall be imparted to railway operators by the manufacturer either at manufacturer's premises or at railway premises, as per the convenience of the purchaser/mutually agreed between the purchaser and the supplier, at the rate of two operators per lot of disc.

9.0 Documentation:

9.1 Copies of maker's test certificate guaranteeing the performance of the abrasive disc shall be supplied in duplicate with each lot of abrasive disc.

9.2 Detailed manual for safe operation and storage shall be supplied in duplicate along with each lot of abrasive disc.

9.3 The manufacturer of the abrasive disc shall provide warranty of the abrasive disc against any manufacturing defect or post manufacturing defect/ defect due to aging within expiry period and up to the discard diameter of 260 mm of the abrasive disc.

10.0 Marking:

Each abrasive disc shall be legibly and indelibly marked with the following details:

- (a) Name and trade mark of the manufacturer.
- (b) Year and month of manufacturing/batch number
- (c) Date of supply- within six months from date of manufacturing
- (d) Expiry date
- (e) Dimensions (external diameter, thickness and bore)
- (f) Maximum operating speed: (maximum possible speed that the disc can be safely used)
- (g) Specification mark (Type of abrasive grain size and hardness)
- (h) For declaration of conformity, the abrasive product shall be marked with EN 12413.

11.0 Packaging:

The abrasive discs, in suitable numbers shall be packed in thick transparent plastic/cover sheet and anti-moisture compound in small perforated sachet shall be placed inside into each plastic packing. The plastic pack shall be kept in cardboard/good, hard and thick paper boxes and each box shall be sealed. If number of such boxes in a consignment is more, a few numbers of boxes shall be kept in a wooden carton / suitable box and care shall be taken during transportation so that no moisture can percolate into the wooden/card board boxes and the abrasive disc do not break due to mishandling.

12.0 All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-8.1-11 dated 12.09.2018 (titled Vendor – Changes in approved status"), subsequent versions / amendments thereof shall be binding, and applicable on the successful manufacturers/suppliers in the contracts floated by Railways to maintain quality of products supplied to Railways.

13.0 Preference for 'Make in India': The Government of India policy on 'Make in India' shall be applicable for this specification.

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