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Hot-Rolled, Cold-Rolled and
Surface Coated Steel Sheets
and Electronics and Instrumentation

Development of Self-lubricating Steel Sheet "RIVER ZINC R FS"

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Synopsis :

The self-lubricating steel sheet RIVER ZINC(R) FS, which obviates the need for oiling and subsequent degreasing in the forming process, is described. This functional pre-coated material is based on an electrogalvanized sheet, which is under-coated with chromate and top-coated with resin containing an organic lubricant. It was found that the powdering phenomenon, which lowers the formability in practical press forming, could be reproduced by a continuous cup-drawing test at a high drawing speed of 500 mm/s. The test results indicate that antipowdering and deep drawability resistance can be achieved by coating with vinyl-acetate-added polyolefin wax at a coating weight of 0.4 to 1.4 g/m² and then baking at 120 to 180 °C. The resulting self-lubricating steel sheet has excellent press formability in addition to good corrosion resistance, anti-fingerprint quality and good spot weldability. RIVER ZINC FS is particularly suitable for manufacturing electrical appliances.

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Development of Self-Lubricating Steel Sheet

"RIVER ZINC® FS"*



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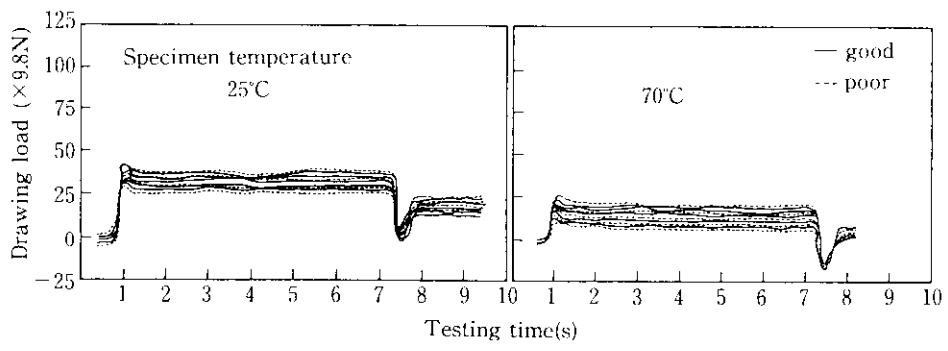
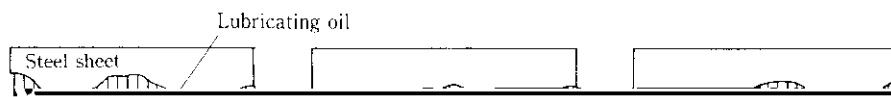


Fig. 3 Drawing load of several specimens

After considering the value of this testing method, press formability has been evaluated by the limiting

with same LDR value had different powdering resistance, it was concluded that the type of resin had more

As a result, (LDR) value of the high speed domain of the resin is the same as the LDR of the resin.



(a) Hydrodynamic lubrication

(b) Mixed lubrication

(c) Boundary lubrication

Fig. 8 Schematic diagram of lubrication

← Sliding direction



evaluated by a salt spray test on the flat sheet and press-formed part according to JIS Z 2371. Anti-fingerprint

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acetate has been found to provide the best lubricating qualities. The high- T_g resin is effective for coating the steel sheet without thermally decomposing