

DIN EN 16028:2012-10 (E)

Railway applications - Wheel/rail friction management - Lubricants for trainborne and trackside applications

Contents		Page
Foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	9
4	Legislative compliance	10
5	Approval procedure	10
6	Control and monitoring of product	11
6.1	Manufacturing process	11
6.2	Type tests	12
6.3	Routine tests	12
7	Technical datasheet	12
8	Tests	12
8.1	Explanation of Annex A: Tables A.1 to A.4	12
8.2	Key to Annex A table columns `Type`, `Routine` and `Datasheet`	13
8.3	Key to Annex A table column `Use`	13
9	Packaging, labelling and storage	13
Annex A (normative) Requirements for lubricants and testing		15
Annex B (normative) Water wash-off test		27
B.1	Purpose	27
B.2	Short description	27
B.3	Conditions for testing	27
B.4	Test process	27
Annex C (informative) Corrosion test on steel		30
C.1	Purpose	30
C.2	Short description	30
C.3	Conditions for testing	30
C.4	Test process	31
Annex D (informative) Behaviour at an elevated temperature - Adhesion on steel sheet		32
D.1	Purpose	32
D.2	Short description	32
D.3	Conditions for test	32
D.4	Test process	32

Annex E (informative) Determination of the volatile constituents in greases	34
E.1 Purpose	34
E.2 Short description	34
E.3 Conditions for testing	34
E.4 Test process	35
E.5 Recording of test results	35
Annex F (informative) Peak forming and droop	36
F.1 Purpose	36
F.2 Short description	36
F.3 Conditions for testing	36
F.4 Test process	36
Annex G (informative) Low-temperature torque (rheometer measurement at -20 °C and - 30 °C)	39
G.1 Purpose	39
G.2 Short description	39
G.3 Conditions for test	39
G.4 Test process	40
Annex H (informative) Miscibility with flange/rail lubricants in use - greases	43
H.1 Purpose	43
H.2 Short description	43
H.3 Conditions for testing	43
H.4 Test process	44
Annex I (informative) Miscibility with flange/rail lubricants in use - oils	45
I.1 Purpose	45
I.2 Short description	45
I.3 Conditions for testing	45
I.4 Test process	46
Annex J (informative) Determination of low temperature cone penetration of greases	47
J.1 Purpose	47
J.2 Short description	47
J.3 Conditions for test	47
J.4 Test process	47
Annex K (informative) Functional test on specific equipment	49
K.1 General	49
K.2 Flowing behaviour of wheel-flange greases	49
K.3 Test of spraying of oils at various temperatures	51
Annex L (informative) Solid stick testing on twin-disc machine	55
L.1 Purpose	55
L.2 Short description	55
L.3 Conditions for test	55
L.4 Test process	58
L.5 Test results	58
Annex M (informative) Lubricant product performance - Field assessment	60
M.1 General	60
M.2 Product performance assessment	60
Bibliography	61