



# HILTI HRD 8-10 Frame Anchor

**MFPA Fire Assessment**

**GS 3.2/16-294-1 (25.11.2021)**



## Mfpa Leipzig GmbH

Leipzig Institute for Materials  
Research and Testing

Testing, Inspection and  
Certification Authority for  
Construction Products and  
Constructions Types

Business Division III:  
Structural Fire Protection  
Head of Division:  
Dipl.-Ing. Michael Juknat  
Tel.: +49 (0) 341-6582-134  
Fax: +49 (0) 341-6582-197  
brandschutz@mfpa-leipzig.de

Work Group 3.2  
Fire Behaviour of Building  
Components and special  
Constructions

Contact Person:  
Dipl.-Ing. S. Bauer  
Tel.: +49 (0) 341-6582-194  
s.bauer@mfpa-leipzig.de

### Notice of extension of the validity of the Advisory Opinion No. GS 3.2/16-294-1 from 22 August 2016

25 November 2021

No. Copy 1

**Subject matter:** Hilti frame anchor HRD 8 and HRD 10  
Fire protection assessment concept to determine the  
resistance under shear load of the Hilti frame anchor  
HRD 8 und HRD 10.

**Client:** Hilti Entwicklungsgesellschaft mbH  
Hiltistraße 6  
86916 Kaufering

**Person in charge:** Dipl.-Ing. S. Bauer


**Validity:** 21 August 2026

This notice extends the period of validity of the Advisory Opinion No. GS 3.2/16-294-1 from 22 August 2016.


This notice is only valid in conjunction with the Advisory Opinion No. GS 3.2/16-294-1 from 22 August 2016 and may only be used in conjunction with it.

The results of the tests exclusively relate to the items tested. This document does not replace a certificate of conformity or suitability according to national and European building codes.

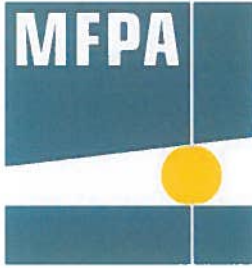
Leipzig, 25 November 2021

  
Dr.-Ing. habil. J. Schmidt  
Managing Director



  
Dipl.-Ing. S. Bauer  
Project Engineer

This document may only be reproduced in its unabbreviated form. All publication, even in excerpts, requires the prior written permission of Mfpa Leipzig GmbH. The legal binding form is the written German form with the original signatures and original stamp of the authorized signatory / signatories. General terms and conditions of Mfpa Leipzig GmbH are valid.



# MFPA Leipzig GmbH

Testing, Inspection and Certification Authority for  
Construction Products and Construction Types

Leipzig Institute for Materials Research and Testing  
Business Division III - Structural Fire Protection

Dipl.-Ing. Sebastian Hauswaldt

Work Group 3.2 - Fire Behaviour of Building Components and special  
Constructions

Dipl.-Wirtsch.-Ing. S. Kramer

Tel.: +49 (0) 341-6582-194

s.kramer@mfpa-leipzig.de

---

## Advisory Opinion No. GS 3.2/16-294-1

22 August 2016

No. Copy 1

---

*Translation of the original German document GS 3.2/16-294-1*

**Subject matter:** Hilti frame anchor HRD 8 and HRD 10  
Fire protection assessment concept to determine the resistance under shear load of the Hilti frame anchors HRD 8 and HRD 10

**Client:** Hilti Entwicklungsgesellschaft mbH  
Hiltistraße 6  
D – 86916 Kaufering

**Date of order:** 18. Juli 2016

**Person in charge:** Dipl.-Wirtsch.-Ing. S. Kramer

**Validity:** 21. August 2021

This document consists of 3 pages of text.

This advisory opinion replaces the advisory opinion GS 3.2/10-157-1 from 2<sup>nd</sup> September 2010

---

This document may only be reproduced in its unabbreviated form. All publication, even in excerpts, requires the prior written permission of MFPA Leipzig GmbH. The legal binding form is the written German form with the original signatures and original stamp of the authorized signatory / signatories. General terms and conditions of MFPA Leipzig GmbH are valid.

---

Gesellschaft für Materialforschung und Prüfungsanstalt für das  
Bauwesen Leipzig mbH (MFPA Leipzig GmbH)

Head Office: Hans-Weigel-Str. 2b – 04319 Leipzig/Germany  
Managing Director: Prof. Dr.-Ing. Frank Dehn  
Comm. Register: Local Court Leipzig HRB 17719  
VAT-ID: DE 813200649  
Tel.: +49 (0) 341-6582-0  
Fax: +49 (0) 341-6582-135

## 1 Objective and request

On 18 July 2016, Hilti Entwicklungsgesellschaft mbH commissioned MFGPA Leipzig GmbH with the fire protection assessment of Hilti frame anchors HRD 8 and HRD 10 under load applied transversely to the anchor axis.

## 2 Description of the tested construction

The test report PB III/B-07-306 [2] forms the basis for the advisory opinion. The name of the Hilti frame anchor HRD U8 from the test report [2] has been changed to HRD 8 as per ETA-07/0219 from 2. October 2012 [5]. The Hilti frame anchors HRD 8 and HRD 10 were assessed based on the Technical Report TR 020 *Evaluation of Anchorages in Concrete concerning Resistance to Fire* [1].

## 3 Advisory opinion

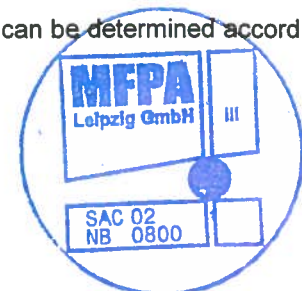
The Hilti frame anchors HRD 8 and HRD 10 have corresponding material parameters in the areas relevant to transverse stiffness. This is why the fire-resistance class of the Hilti frame anchor HRD-U8 under shear load indicated in test report PB III/B-07-306 [2] is applicable to the Hilti frame anchors HRD 8 and HRD 10. The characteristic parameters for shear load are shown in Table 1.

Due to the high-temperature behaviour of stainless steel in comparison to carbon steel under the same load, the values indicated in Table 1 are also applicable to the special stainless steel screws.

Table 1 maximum shear load

Hilti frame anchor			HRD 8	HRD 10
Screw diameter [mm]			6	7
Stress cross section $A_s$ [mm <sup>2</sup> ]			22.9	35.3
<b>Steel failure</b>				
<b>Characteristic steel tension</b>				
30 min	$\sigma_{Rk,s.fi(30)}$	[N/mm <sup>2</sup> ]	83.0	53,8
60 min	$\sigma_{Rk,s.fi(60)}$	[N/mm <sup>2</sup> ]	61.1	39,7
90 min	$\sigma_{Rk,s.fi(90)}$	[N/mm <sup>2</sup> ]	43.7	28,3
120 min	$\sigma_{Rk,s.fi(120)}$	[N/mm <sup>2</sup> ]	30.6	19,8
<b>Characteristic shear loading capacity</b>				
30 min	$V_{Rk,p.fi(30)}$	[kN]		1.9
60 min	$V_{Rk,p.fi(60)}$	[kN]		1.4
90 min	$V_{Rk,p.fi(90)}$	[kN]		1.0
120 min	$V_{Rk,p.fi(120)}$	[kN]		0.7

The characteristic parameters for other types of failure under shear load can be determined according to the simplified verification procedure of TR020 [1].



#### 4 Special notes

The above advisory opinion only applies to Hilti frame anchors HRD 8 and HRD 10 in standard concrete which are installed according to the client's installation instructions.

The assessment only applies in combination with reinforced concrete ceilings of strength class  $\geq$  C 20/25 and  $\leq$  C 50/60 according to EN 206-1: 2000-12, that can be classified in at least the fire-resistance class corresponding to that of the plugs. In addition, the notes contained in DIN EN 1992-1-2 (see section 4.5) on the avoidance of concrete spallation also apply. According to this, the moisture content must be less than three (or four according to the National Annex) -% by weight.

This document does not replace a certificate of conformity or suitability according to national and European building codes.

Leipzig, 22 August 2016



Dipl.-Ing. S. Hauswaldt

Head of Business Division



Dipl.-Wirtsch.-Ing. S. Kramer

Testing Engineer

#### Quellen

- [1] Technical Report TR 020 Evaluation of Anchorages in Concrete concerning Resistance to Fire: 2004-05 der European Organisation for Technical Approvals (EOTA)
- [2] Prüfbericht PB III/B-07-306 der MFWA Leipzig GmbH vom 05. September 2007: Prüfung nach DIN EN 1363-1: 1999-10 zur Ermittlung der Feuerwiderstandsdauer unter Querlastbeanspruchung für Hilti Rahmendübel HRD-U8
- [3] Untersuchungsbericht Nr. 3613-3891-1-Nau der MPA Braunschweig: Prüfung und Bewertung von in Stahlbeton gesetzten, durch Schrägzug belasteten Hilti Rahmendübel HRD-U10 auf Brandverhalten in Anlehnung an DIN 4102-2: 1977-09 zur Ermittlung der Feuerwiderstandsdauer
- [4] Geometrische und materialspezifische Gegenüberstellung des Hilti Rahmendübels HRD 8 und des Hilti Rahmendübels HRD 10, Schreiben vom 20. Juni 2010
- [5] Europäische Technische Zulassung ETA-07/0219 vom 2. October 2012